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# WORLD POPULATION AND FOOD SUPPLY AND DEMAND SITUATION

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## HEARINGS

BEFORE THE

SUBCOMMITTEE ON DEPARTMENT OPERATIONS

OF THE

## COMMITTEE ON AGRICULTURE HOUSE OF REPRESENTATIVES

NINETY-THIRD CONGRESS

SECOND SESSION

JULY 23, 24, AND 25, 1974

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# WORLD POPULATION AND FOOD SUPPLY AND DEMAND SITUATION

TUESDAY, JULY 23, 1974

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON DEPARTMENT OPERATIONS  
OF THE COMMITTEE ON AGRICULTURE,  
*Washington, D.C.*

The subcommittee met, pursuant to notice, at 1:05 p.m., in room 1302, Longworth House Office Building, Hon. E de la Garza (chairman of the subcommittee) presiding.

Present: Representatives de la Garza, Denholm, Matsunaga, Litton, Mathias, Mayne, Price, and Sebelius

Also present: Representatives Vigorito and Bergland.

Hyde Murray, associate counsel; Steve Allen, staff consultant; Steve Pringle, staff assistant; Perry Shaw, staff assistant; and Grady Smith, congressional fellow.

Mr. DE LA GARZA. The subcommittee will be in order.

Due to the House being in session, we are going to have some difficulty with Members' having to come and go from the House, but we will convene now and proceed as best we can under the circumstances.

The Department Operations Subcommittee has scheduled these hearings today, Wednesday, and Thursday, for the purpose of studying the world food supply, demand and population situation and world food reserves relative to the stocks on hand and the general policy question.

The subcommittee could not undertake a study of these important subjects at a more crucial time. I have received reports—and many of us have—of mass starvation that is occurring in several countries of the world at this very moment. The news reports state at times that foodstuffs that the United States and other countries have supplied are rotting in ports, are not reaching the people for whom it was intended.

Therefore, it is certainly important to hear from administration officials and others versed on this topic relative to the effort that the U.S. and foreign governments are presently putting forth to ease human suffering resulting from hunger and starvation. The subcommittee is not only interested in gathering additional detailed data on the existing crisis but is also deeply concerned about what steps are being taken in developing long-range solutions to food shortages and distribution problems around the world. This is a genuine effort by this committee to gather facts, accept recommendations, and possible implementation of corrective action.

I might add that this is a serious effort of this committee, none of us are running for President, or none of us are running for national

office. And I think that this would suffice to say that the effort of this committee is to gather the facts and see what we as a Congress can do in implementing the policy which would be formulated by the administration.

The World Food Conference of the Foreign Agricultural Organization is scheduled for later this year in Rome, and administration officials have promised to unveil a comprehensive food policy this month which purportedly will outline the U.S. position on the question of world food reserves. Certainly, we are interested in learning what progress the administration has made on this important and somewhat controversial subject.

I want to welcome all of you present today. We are indeed privileged to have the benefit of the testimony of such distinguished witnesses appearing before us.

At this time I would like to call upon Ambassador Edwin Martin, senior adviser to the Secretary of State and coordinator of the U.S. participation in the World Food Conference.

We are delighted to have you here, and we will be happy to hear from you at this time, Mr. Ambassador.

**STATEMENT OF EDWIN W. MARTIN, SENIOR ADVISER TO THE  
SECRETARY OF STATE, AND COORDINATOR OF U.S. PARTICIPATION  
IN THE WORLD FOOD CONFERENCE**

Mr. MARTIN. Thank you, Mr. Chairman.

I appreciate greatly this opportunity to appear before the subcommittee to discuss the present and prospective world food situation and what the United States is doing and should do about it.

An assessment of the demand and supply for food in the world and some suggestions about how we can improve the prospects will be presented by Dr. Paarlberg, Director of the Economic Research Service of the Department of Agriculture. Mr. Andrew Mair, Director of the Food Aid Office, will describe the present program and future plans of AID both for food aid and for assistance to agricultural production and nutrition. I will concentrate my remarks on issues we expect to be treated by the World Food Conference.

The decision that a World Food Conference should be held was based, I believe, on several different concerns. It helps to understand the often proclaimed "world food crisis" by distinguishing these several aspects of the food problem. I think there are at least four major issues.

First, it is unacceptable to mankind to be dependent globally on uncertain weather to avoid widespread famine, as we have been in 1973 and 1974. Better security against a repetition of this situation is required.

Second, while the best estimates we can now make of the world grain demand-supply situation indicate that, despite rapid population growth, with average weather we can produce enough between now and 1985 to feed everyone somewhat better than now, the production deficit of the developing countries and hence their need to import will tend to increase further. It is unsatisfactory for all concerned to have the food production of developing countries lag fur-

ther and further behind their needs, creating a balance-of-payments burden many of them cannot carry.

Third, it is also not acceptable that several hundred million people continue, despite all of our scientific progress and growth in control of resources, to be undernourished. They are not only witnesses of the failure of our societies to give them truly equal opportunities to benefit from our common progress, but they are sharply limited in their ability to contribute to that progress.

Fourth, if we look beyond 1985 to 2000, the picture is blurred, but it seems clear that population will still be growing rapidly and that the present quantity of land and fresh water on earth cannot be increased. To feed all the people will require enormous increases in the efficiency with which we can use land and fresh water and probably energy, too. The major scientific and technological breakthroughs necessary to preserve our free society may be achieved, but it will not be easy.

A major action item on our agenda, labeled "Food Security," will deal with point 1. Under it, we will be seeking agreement on general guidelines for a new system of food reserves and for new, better coordinated programs of food aid. While the coincidence of adverse conditions which has depleted world reserves may not be likely to recur, then again, it may. Without accepting that current cyclical theories about the weather, all somehow discouraging at this point in time, are proven, we just cannot count on good weather every year in enough of the right places to avoid emergencies. We clearly need to be better prepared for them than we were for the present one.

New approaches are also required by the fact that current U.S. agricultural policy, with its emphasis on market forces and land set-asides, precludes rebuilding the huge U.S. stocks that were everyone's protection against disaster until 1972.

From discussion at the FAO Conference last fall, there seems to be wide agreement among FAO members—not all key countries, by the way—on an international network of national stockpiles, with countries adopting stockpiling policies which conform to a set of general principles which would have been agreed internationally. It was also envisaged that each country would keep an international staff promptly informed about changes in its stock positions, crop prospects, and export or import plans. Once or twice a year, government representatives would meet to review each other's stockpiling policies and performance in relation to the agreed guidelines and to examine the future prospects as revealed by the data submitted.

For such a system to work, it is, of course, essential that both the major grain exporters and importers and even the occasional large importers participate fully, with a particular focus on those countries which have, in practice, played a major role in pushing import demands from time to time above trend levels.

How large the U.S. role would be or how we would handle it in such a system is not yet clear, nor do we know yet exactly, if agreement is not reached, what we might have to do to meet our desire to be able to help in emergencies, to provide food aid, and to be accepted as a reliable supplier by commercial importers.

I would wish to point out, however, that with varying degrees of flexibility, reserves can be as grain in storage on farms, with proces-

sors or traders, or in Government hands, in acreage which has been in production but is now idle, and in some flexibility, resulting from price and demand factors, in the rate at which grain is fed to animals. In any case, we are unlikely in the near future to be able to put aside much grain for multiyear stocks.

Food aid meets shortages caused by emergencies, weather-created or not, as well as in reducing the excessive number of undernourished people referred to in my point 3. I have little to say about where the Conference will come out on food aid policies in a new situation in which U.S. surpluses are not longer begging to be used.

However, I feel that a priority in the future should be given to the programs which try to reach people who, for one reason or another, do not get enough to eat through the normal functioning of the economy. I have especially in mind the so-called vulnerable groups—pregnant and nursing mothers and pre-school children whose malnutrition may have lifelong effects, though I would not stop here. They are being largely helped now by the voluntary agencies and the UNICEF and world food programs of the U.N.

Certainly, it should be easier in these new circumstances to avoid the discouragement of efforts to increase local food production which, it has sometimes been charged, was the result of large balance-of-payments food aid shipments. But we must also face the fact that we cannot tell how many years it will take for some of the more populous and poorest LDC's to adjust to their new foreign exchange burdens. Until they do, imported inputs necessary for increased food production may be scarce and resources for commercial importation of food limited. So long as these conditions persist, massive food aid may have to be continued as an emergency measure.

Two other action items on the Conference agenda deal with increasing the production of food in developing countries and improving the cost efficiency of its distribution, and the nutrition efficiency of consumption practices. Thus, they address directly the second and third of the issues I have underlined.

The United States feels strongly that since it is desirable that farmers, the lowest income group in most of these countries, improve their incomes, and essential that the undernourished consumers, a high percentage of the total, be able to buy food more cheaply, cost efficiency in food production must be pursued as much as volume increases. It was our initiative that led to inclusion on the agenda of distribution efficiency. Physical losses, transport delays, and the multiplication of middlemen's charges too often reduce availabilities and multiply prices to consumers. Finally, we have also stressed the need to discuss the role of the food processor and of the consumer in selecting and preparing foods so as to reduce nutritional deficiencies at the lowest possible costs.

Progress on none of these fronts will be quick or easy. The targets are widely dispersed, often resistant to necessary change either because of vested interests or because of the risks involved in new methods. To a very high degree, improvements depend on major initiatives by the governments of the developing countries and the support of their peoples, involving a priority for food production, distribution, and nutrition programs seldom accorded in the past.

If these new decisions are made, more capital and technical help from outside sources, often of a highly imaginative sort, will also be needed. Mr. Mair will deal with U.S. attitudes on this.

With respect to point 4, the outlook to 2000 and beyond, there is little one can say with precision now. It would seem, however, that with population increasing by at least 2 percent per year, with the quantity of usable land and fresh water limited, and with energy supplies possibly growing more costly, it is essential to seek urgently for ways to improve the efficiency of our use of land, water, and energy to produce food. Unless we can make major scientific breakthrough and then find better means than we have thus far to persuade farmers, big and small, poor and rich, to adopt them promptly, the food crisis of the present will, by 2000, look like a minor affair.

To survive at all, we would have to spend a far higher percentage of our incomes on food. For many, this would be impossible without enforcement of exceedingly complex and politically difficult income redistribution arrangements. Given this grim prospect, I feel sure that the World Food Conference will agree that it is necessary for the world community to support with its best brains and the money necessary, a major program of basic research designed to explore all possibilities for pushing back the present limits put by land, water, and energy to a long-term expansion of food production at reasonable costs.

Finally, we will be discussing international trade in foods as a tool for increasing the efficiency of the world food system. Given that our agenda is full and that trade negotiations cannot lead to binding agreements in the U.N. but only in GATT, we feel that this Conference should limit itself to calling attention to the desirability of lowering barriers to the import and export of foods and express the hope that the MTN can make progress in this direction. It is in some sense a middle position between the LDC's who want more and the EC which wants less, so it may have a chance of acceptance.

Visible and concrete progress on all these issues is a large order for any world conference, let alone the first on this subject and one allotted preparation time about one-third of that available to the U.N. Environment and Population meetings. Moreover, many governments face this year an unusually heavy burden of top-level decisionmaking on complex issues with technical elements not easy to define clearly and simply for political resolution. The unexpected twins of inflation and unemployment certainly loom large in the nightmares of many ministers, given the erosion of political support, if not serious unrest, which they create.

To them is now being added a shift of foreign exchange assets from most countries to a select few primary material producers without any precedents in its size and suddenness. Coping with its repercussions on international financial relationships and capital markets could alone occupy government leaders rather fully.

Nevertheless, I remain optimistic that we will all rise to the challenge so that the lives of people everywhere will be somewhat better in 5 years, in 10 years, perhaps even further in the future, than they are now.

MR. DE LA GARZA. Thank you very much, Mr. Ambassador.

I appreciate your being here.

Mr. Ambassador, has any serious consideration been given to replacing Public Law 480 with a world monetary fund which nations in severe need of food could draw money to purchase foodstuffs?

Mr. MARTIN. There has been, I think, no consideration of a new world fund to which various richer nations could contribute which would be used solely to buy foodstuffs.

There are two things under consideration which certainly relate to this point. The first is that as part of our discussions at the World Food Conference we will be reviewing the responsibilities of the various richer countries with respect to food aid programs as such. A number of other countries, as you know, have programs like our Public Law 480. Some of them provide food; some provide money with which to purchase food. And with some newly rich countries, it may be that others would wish to join in this effort. As a matter of fact, a small start has been made in that Saudi Arabia has contributed \$50 million to the world food program for use over the next 2 or 3 years.

On the other side, I think that it is fair to say that the efforts which are being made through the U.N. to raise funds for the most seriously affected countries, through efforts in the IBRD and the International Monetary Fund, to raise money from a variety of countries who do have liquid assets now to meet the balance-of-payments problems of the most seriously affected countries will, undoubtedly, provide resources for those countries to buy food commercially. This is a quite satisfactory way to do it, if it is more convenient to do it in this fashion.

What we are desirous of doing is meeting their needs for food imports, whether through additional funds to purchase imports or through additional food aid.

Mr. DE LA GARZA. What, if any, consideration has been given, or what would be your impression, as to how to solve the problems of politics within the problem countries?

Should a world or multinational organization superimpose itself on matters of feeding the people of them problem countries?

Mr. MARTIN. I am not sure to what extent you would have such a world or international organization intervene. My own impression would be that even the problem countries have a very strong feeling about their national sovereignty and their desire and right to make decisions affecting the feeding of their peoples themselves.

On the other hand, it is true that to the extent that they seek outside assistance and look for it, we can often work out matching arrangements in which, in return for help, they make changes in their policies. As a matter of fact, I suggested in my opening statement that there are cases in which a higher priority for food production, distribution, and nutrition, is, in our judgment, required from some of these countries. If it is given, then we are ready to give them more help. But they have to make the decision for themselves in the first instance. I do not think that we can expect a world organization to impose decisions on them, any more than we would expect a world organization to impose decisions on us about how much food aid we should give or how much reserves we should hold.

Mr. DE LA GARZA. I guess what I am trying to get at is, if you or our Government has made a decision as to what level of intervention, do we fulfill our moral obligation to the dying and hungry people when their own governments refuse or might be incapable of taking care of the situation, to what level of assistance do we go to fulfill our moral obligation?

Mr. MARTIN. I think that this is a very complex question which probably has to be worked out rather carefully in each individual case. Certainly, there are limits to which any outside country like the United States can go in helping people if there is no cooperation from the government and the peoples of the country that we are helping or trying to help.

I should say in this connection that there are cases, and I think good ones, in which for one reason or another the government has been blind to the problem as we have seen it, in which, through the various voluntary agencies like CARE and the religious relief services, et cetera, it has been possible to get food to people who need it without having the full cooperation of the government, but it is always much more difficult. We need to help where this is possible, but where it is not, I must say that while still preserving the importance of the individual case and what the nature of the problems are, there is a limit to what we can do.

Mr. DE LA GARZA. How would we see that some of the actions that we have taken or will take are for the long-range benefit of the people that we are trying to help?

For example, if we bring foodstuffs to one of the sub-Sahara countries in which the grazing is gone, no water for the cattle, do we go year after year, or do we try to implement by other means their future?

Mr. MARTIN. I am not an expert on the sub-Sahara African problem. Mr. Andrew Mair is better informed than I am.

My impression, though, from such contacts as I have had with this program, is that the kinds of issues that you have raised do exist, but to remedy the situation will require outside investment, providing opportunities for employment in new locations for nomads who no longer have adequate water where they have lived in the past. There is a dependence on us for that investment. We as bilateral donors and through the United Nations, which is working actively in coordinating the effort to help them, can influence these countries very substantially in what kinds of measures that they take for the longer term avoidance of a repetition of what has happened.

But in the last analysis, I am afraid that if the government of the country decides, "No; we will not accept the people or where they lived before, or we will accept them only on certain conditions," the government is sovereign.

Mr. DE LA GARZA. We are somewhat concerned about some of the actions that are taken, and I wonder if the World Food Conference will delve into situations such as this, that the world heralded with great acclaim the Aswan Dam, for example, in Egypt. And without specific personal knowledge, it is my understanding that it will displace as many arable lands as it has brought into production, and it will cause as many problems in one area as it will solve in the other.

Will you delve into that type of situation?

Would that be a factor?

Mr. MARTIN. I am quite sure we will not delve into specific situations like this, a very controversial issue on which, I think, it is a little early to draw final conclusions one way or the other. But we are very much interested in providing guidance and making arrangements to see that investments in food production in developing countries are made only after the most careful and wide-ranging evaluation of the impact, on food production, on ecology, and on other factors that must be taken into account.

There is some feeling that there has not been an adequate overall machinery to make these kinds of appraisals and that we need to emphasize a much more thorough study of what is required to insure that the net results will be beneficial. There undoubtedly have been many mistakes made. I think we are learning from these mistakes and developing people who have the knowledge and competence to do the work necessary to avoid mistakes in the future.

I might just add that as far as many project of this magnitude are concerned, one of the great difficulties is weighing the value of the various purposes for which they are undertaken. Usually, they are a combination of power production, flood control, and irrigation, and sometimes one is at the cost of the other. This is a very difficult judgment to make but one that should be made on the basis of the fullest possible knowledge of future consequences.

Mr. DE LA GARZA. We understand and concur in that.

Mr. Ambassador, you touched briefly on this, but I wonder, do you favor—or what would be your recommendation as to whether we have private- or Government-held grain reserves in the United States?

Mr. MARTIN. I am not in a position to make a recommendation on this at this time, Mr. Chairman. It is a question which involves a good many technical aspects, a lot of statistical analyses of the volume of reserves which would be required. It requires a knowledge of what other countries are prepared to do as a part of an international system and what obligations that would place on us in order to make the international system work.

These analyses are being made within the U.S. Government. Discussions are being held bilaterally with other governments at the present time. They will be held in more depth at a third meeting of our preparatory committee in September. Until all these inputs are on the table, I think that it is not possible to reach a final conclusion.

Mr. DE LA GARZA. The problem of population growth, Mr. Ambassador, do you feel that any real progress has been made in the less developed countries?

Mr. MARTIN. Yes; I do think that progress has been made, although, of course, not enough. If one looks back 10 years, shall we say, at the attitudes both in the developed and developing countries toward positive programs to curtail population growth, the difference in climates is quite remarkable. I can think of no sensitive public issue on which there has been as great a change in this short period of time in the whole of our social history.

Ten years ago there were only a handful of developing countries that had national programs. There were only two or three developed

countries who were prepared to assist national programs. The United Nations had consistently refused to take a stand on the question.

At the present time, most of the developing countries have national programs. Most of the donor countries are helping these national programs. The U.N., in a variety of bodies, has endorsed not only the idea of programs, but there is now a U.N. body exclusively charged with financing population control programs in developing countries. There are a number of countries, most of them small in population, which have made conspicuous progress so far in reducing birth rates and thereby reducing population growth rates.

In the larger countries, the administrative problems, the motivational issues, some of the difficulties with technology, have made progress less than what we would hope for.

It certainly is a high priority for the future for the world community at large. I think the fact that this priority is accepted is reflected in the willingness of the General Assembly of the United Nations to call for a United Nations Population Conference to be held next month with this objective as its purpose.

Mr. DE LA GARZA. You mentioned briefly, Mr. Ambassador, but I would ask you further, what efforts we have made to interest those countries currently accumulating foreign exchange to employ them in the areas of food production or food supply in the lesser developed countries?

Mr. MARTIN. I think that in public statements, in private negotiations, multilaterally and bilaterally, we, with a good many other countries and international institutions—like the Monetary Fund, the World Bank, and the United Nations—have a number of countries that have recently increased the volume of their liquid resources at rather astonishing rates, in part at the cost of foreign exchange losses of a rather serious character in a number of developing countries, should undertake programs, either bilaterally or multilaterally, to redress the balance.

We are continuing to press this point in all the forums in which we think it can be helpful—both in multilateral and bilateral negotiations and contacts, and in particular negotiations going on with some oil-exporting countries.

I think at the moment that our knowledge about the actual transfers of resources is rather limited. It is slow in getting underway. Countries that are not accustomed to being major donors do not adjust quickly; and the technical process is not simple. But we are hopeful that through these various channels substantial flow will occur, a large part of which, given the necessities of the most seriously affected countries, will have to be spent for food, fertilizers and other necessities to meet the food problems that these countries face.

Mr. DE LA GARZA. One final question from me, Mr. Ambassador, to what extent will we delve into our domestic problems of hunger or food requirements of our people at the World Food Conference?

Mr. MARTIN. I would not expect specific discussion in any degree of detail of the domestic problems of the United States. I think that there are aspects of the conference's work which will have an effect on it—our discussion of nutrition and consumption is not limited to the nutrition and consumption problems of developing countries, but

of all countries. Any discussion of an international system of national reserves inevitably has its impact on prices in developed as well as developing countries, and would have potential benefits or costs to domestic consumers of food in the United States, depending on whether we work out a good system or a bad system. But in some respects, these effects are indirect rather than direct.

However, I would on a somewhat broader basis say that any position that the U.S. advocates in the World Food Conference will have to take into account the impact of that position, if accepted, on both U.S. consumers and U.S. farmers. We are interested in both. We are also interested, as I have indicated, in the general U.S. economic situation as it might be affected by U.S. exports of food, as well as in a few small cases, U.S. import requirements.

Mr. DE LA GARZA. Thank you very much, Mr. Ambassador.

Mr. Mathias.

Mr. MATHIAS. I have no questions at this time, Mr. Chairman.

Mr. DE LA GARZA. Mr. Denholm.

Mr. DENHOLM. Thank you, Mr. Chairman.

Mr. MARTIN, what is the primary interest of the Department of State in the World Food Conference?

Mr. MARTIN. I would say our primary interest stems from two or three roles which the Department of State plays within the U.S. Government.

In the first place, a food crisis in any major country of the world has political implications. It affects the stability and strength of existing governments; it strengthens threats to governments; and consequently it affects their external policies and politics. These are matters with which we must be concerned anywhere in the world. Disturbance, disorders, social unrest have international implications in the kind of interdependent, instant communication world in which we live.

Secondly, the U.S. Department of State is responsible in an overall sense for the international economic policy of the United States, whether it is in the field of trade, aid or investment. And all of these matters do get involved in food questions. Food questions are a part of all of these issues, so that we are concerned with international arrangements with respect to trade in food and with respect to aid and investment, as it may affect food.

It is also true that there are a number of aspects of our security interests which can be influenced by the availability of U.S. food, however it is provided, in reinforcing or not reinforcing the strength and stability of governments in which we have a security interest, specifically.

Mr. DENHOLM. Thank you.

To recapitulate, the primary purpose is political, the secondary is economical and the third is a matter of national security?

Mr. MARTIN. Yes.

Mr. DENHOLM. Is the concept of humanity or morality an issue at the World Food Conference?

Mr. MARTIN. I would not say that morality is not an issue, if what you mean by morality is a humanitarian consideration for the people who do not get enough to eat. This certainly, in my judgment, is an integral part of any political interest. Politics, humanitarianism,

morality are all the same thing as far as I am concerned. And if people are not getting enough to eat, and we are concerned in a humanitarian sense, this is a part of our political concern for the position of that country—the opportunities for its people, its future attitudes toward the kind of society in which we want to live.

Mr. DENHOLM. Is the interest of the Department of State similar or the same as the interests of other participating agencies in the World Food Conference?

Mr. MARTIN. I am not sure that I could answer that question at the present time. We have not heard enough from other nations concerning their interests. We know what our own interests are.

I would say that to some extent, certainly, the major countries would share most of our interests. I would think that most of the developing countries would not have the kind of broad security, political interests that we have in what happens in other countries, but are interested primarily in what happens in their own country. They are not world powers in the same sense as the United States. The United States, therefore, has a wider responsibility.

Mr. DENHOLM. How many nations are expected to participate in the World Food Conference in Rome?

Mr. MARTIN. We do not have any count at the present time. I would assume—and I know the Secretariat is assuming—that over 100 nations will participate. We have had two preparatory committee meetings that have dealt with agenda and procedural matters, and about 60 or 70 have participated in each of them.

Mr. DENHOLM. How many of that number are food exporting nations?

Mr. MARTIN. In any major way, regularly, about a half a dozen.

Mr. DENHOLM. So the interest of most of them is a matter of obtaining adequate food, rather than exporting food and food products—is that correct?

Mr. MARTIN. That is correct. Most countries in the world today are food-deficit countries.

Mr. DENHOLM. How many nations of the world have food programs similar to or the same as the purposes of Public Law 480 of the United States?

Mr. MARTIN. I would think something between 15 and 20 countries. We have engaged in food aid programs either directly or bilaterally through the Food Aid Convention or through the World Food program as contributors. In a good many cases, since they are not food exporters, they purchase food to make their contribution, or import it to make their contribution, or they provide money which is used, say, by the World Food Program to purchase food or by the European Community in their joint effort to produce food which is made available for food aid, or it is used to finance the administrative costs and the transport costs of foods contributed by others.

Mr. DENHOLM. Will Russia participate in the World Food Conference this year?

Mr. MARTIN. They have participated in the two preparatory committee meetings. A Soviet national, at the Soviet's request, as one of the three Deputy Secretary Generals of the Conference. One of them is an American, John Hannah. One is an FAO official of Pakistan origin.

Mr. DENHOLM. Have we met with the participating nations in the world since the Russian grain sales of 1972?

Mr. MARTIN. We have had two preparatory committee meetings for the World Food Conference. In addition there have been some major FAO meetings—of which the Soviet Union is not a member. However, there have been a number of world meetings in which the food problem, was discussed.

Mr. DENHOLM. What impact did the Russian grain sales, made in 1972, have on the availability and the price level of grain to food deficit countries?

Mr. MARTIN. **Partly** as a result of the Russian grain sales and partly, also, as a result in the 1972-73 period, of a very rare combination of bad weather for growing grain in Australia, in South America, in Africa, in South Asia—it was an accumulation of events in that one 12 to 18 month period of which the Soviet short crop was perhaps the largest single factor, but by no means the total factor. The impact of this combination of factors has been, of course, a greatly increased scarcity and very high prices for grain which has concerned the developing countries seriously, and it is one of the reasons that they are keenly interested in having reserves of grain again and for the future and currently in getting more food aid and getting help so that they can increase their production and be less dependent upon the world market.

Mr. DENHOLM. I am very interested in your observations and your brief statement on a very complex problem today. Thank you very much.

Mr. DE LA GARZA. If the gentleman would yield to the other members; the Ambassador has a deadline, time-wise, so we will come back to you.

Mr. Sebelius.

Mr. SEBELIUS. I only have a few questions.

Does your planning stage go to the point where you have a tentative agenda?

Mr. MARTIN. We have a fixed agenda.

Mr. SEBELIUS. Would it be such that you could furnish the committee a copy of it?

Mr. MARTIN. Certainly; it is a public document.

Mr. SEBELIUS. One other question—is one of the items on the food agenda a world food bank or a food reserve?

Mr. MARTIN. One of the items on the agenda is entitled Food Security, including international exchange of information and coordination of policies in establishing a food reserve.

Mr. SEBELIUS. Yes. Thank you.

That is all, Mr. Chairman.

Mr. DE LA GARZA. Mr. Litton.

Mr. LITTON. Did you say that many of the countries are now maintaining a larger food reserve than they did when the United States had substantial stockpiles of food?

Mr. MARTIN. **I do not** think as yet, as far as we know, given the scarcity of grains and their high price, that there has been a buildup of reserves by any significant number of countries, if at all.

I think that there may well be an increased intention to do so, but at present price levels, I think most of them have decided that this

may not be the time to buy and build up their reserves. There have been some small indications that one or two major countries are thinking seriously about this, but it has not been translated into action, as far as I can tell at the present time.

Mr. LITTON. Are they thinking about this because of the recent shortage or are they thinking about it because of the change of the position of the United States relative to maintaining reserves or stockpiling of food?

Mr. MARTIN. I hope they are making the decisions on the basis of both considerations because I think both should be taken into account.

Mr. LITTON. You are really testifying then because the United States no longer maintains large stockpiles, other countries are planning to change their policy in their area of storing food.

Mr. MARTIN. I think you are right that they are planning to share. To what extent, we do not know.

One of the implications of this, of a very general character, is that the Director General of the FAO, Dr. Boerma, proposed an international network of national reserves last year to prevent a repetition of the recent shortage. This has been accepted in principle by all the major countries in FAO. That does not include the Soviet Union, which is not a member.

They are thinking about it seriously.

Mr. LITTON. Secretary Yeutter recently indicated that up until recent months, Japan has only carried something like a 60-day food supply, and many countries of the world have had very limited food supplies because they depended upon the United States to provide the necessary grain reserves to the world.

His position has been that the taxpayers of this country have had to pay the cost of maintaining food reserves for the entire world, and other countries should now pay their share.

Is that true?

Mr. MARTIN. Yes, sir.

Mr. LITTON. Thank you very much.

Mr. DE LA GARZA. Mr. Mayne.

Mr. MAYNE. Thank you, Mr. Chairman.

I certainly want to congratulate you, Mr. Ambassador, on your very fine statement. I note that you refer to a number of action items which will be on the agenda of the conference.

Does this mean that there will be action taken by voting at the conference which will bind the conferring nations through some commitment?

Mr. MARTIN. No. As indicated, at U.N. conferences, actions cannot be taken which bind participating nations. They are recommendations. They are undertakings, best efforts, urging countries to do this or that.

The only kind of binding actions that can be taken are instructions to other international bodies which are a part of the United Nations system to undertake certain tasks or setting up bodies to undertake certain tasks.

As far as action by member governments is concerned, legally binding arrangements are not possible.

Mr. MAYNE. Do I understand you correctly, then, that this international food conference could instruct agencies of the U.N., such as the FAO, to take certain specific action to commit shipments of food and so forth?

Mr. MARTIN. If they had the food, yes. They cannot have food unless individual countries make it available to them and they cannot commit the individual countries to make them available, but they can give them instructions about what to do with it.

If you are talking about the World Food Program as such, this has a separate line of authority in terms of a governmental committee which gives it instructions. The world food organization does not really have food. The Conference could instruct it, for example, to set up a committee in which we would discuss with other food aid donors our policies for food aid and exchange ideas.

This would be an example.

Mr. MAYNE. What you have stated about the food deficit nature of apparently some 90 percent of the countries which will be participating, it would seem apparent that in any voting on this subject the United States and other food exporting countries would be very much in the minority in any vote, would they not?

Mr. MARTIN. If you were voting on a straight kind of a vote, raw figures look that way. On the other hand, 90 percent of the countries, which are food deficit countries, depend on U.S. actions in order to be able to import food, on the United States and three or four other major food producers. I think that they realize that there is an interdependence here which is very important, and I do not think that they will be so blind as to take actions to dry up the source of supply, the only one that they have.

We are not without power.

Mr. MAYNE. I will just conclude with this question: Is there anything in the setting up of this world food conference, which would add to American vulnerability to being dictated to by the vote of the majority in the conference any more than is presently true in the meetings of the FAO?

Mr. MARTIN. No, there is nothing in this conference that would do so. In fact, we hope that the better understanding of the world food situation which this conference hopefully will create, and the degree of interdependence in the world will help the U.S. position rather than hamper it.

Mr. MAYNE. Thank you.

Mr. DE LA GARZA. Mr. Bergland.

Mr. BERGLAND. I have no questions.

Mr. DE LA GARZA. Mr. Vigorito.

Mr. VIGORITO. I have no questions.

Mr. DE LA GARZA. Does Counsel have any questions?

Mr. ALLEN. Thank you, Mr. Chairman I do have a couple of questions.

Mr. Ambassador, in the first full paragraph of your statement you say:

New approaches are also required by the fact that the current U.S. agricultural policy, with its emphasis on market forces and land set-asides, precludes building the huge U.S. stocks that were for everyone's protection against disaster until 1972.

Is it therefore your opinion that the Agriculture and Consumer Protection Act of 1973 be revised or repealed?

Mr. MARTIN. I would not think so.

Mr. ALLEN. Item No. 2. The next paragraph, you state that all key countries do not agree on the concept of world food reserves.

Which countries are in this group?

Mr. MARTIN. What I was referring to there is the fact that this discussion has taken place only within the Food and Agricultural Organization, and that the Soviet Union is not a member of the Food and Agricultural Organization.

Mr. ALLEN. Mr. Martin you are the U.S. Ambassador to the World Food Conference, but could you tell me if anyone from the Agriculture Department will be accompanying you?

Mr. MARTIN. I am merely in charge of preparations. That fact does not in any way influence the decision as to who will head the U.S. delegation. I presume it will be at a very senior level, and it certainly will include a substantial contingent from the Department of Agriculture.

Actually, I have with me in the State Department at the nomination of Secretary Butz, a senior agricultural official as my Deputy in the preparatory stage.

Mr. ALLEN. Then at this point in time, could you possibly name one specific individual who will be leading our delegation?

Mr. MARTIN. No. But it will not be me, I can assure you of that.

Mr. ALLEN. In your statement you talk about the middlemen in the food marketing chain, that the multiplication of the middlemen's charges too often reduce availabilities.

How would you propose to alter the situation. That is, would you advocate the elimination of the middlemen in some fashion?

Mr. MARTIN. In the United States we are way ahead in studying the techniques of marketing. This is a pioneer effort in our country that Europeans are just beginning to catch up with. We are giving some technical assistance, and I think we can give quite a bit more in how to organize markets, how to establish the market facilities, which will increase efficiency, reduce the number of middlemen, decrease the waste which goes on in many countries in a process that has grown up without any real analysis or study. This is being done by AID on a limited scale. We think it should be expanded.

Mr. ALLEN. In your testimony you state the food crisis of the present will by the year 2000 look like a minor affair.

What might we expect in the way of a "food crisis" by the year 2000, assuming all variables go against us?

Mr. MARTIN. The worst that we could expect is that a certain percentage of the population will not have enough to eat, and they will have no choice but to die.

Mr. ALLEN. Thank you, Mr. Chairman.

Mr. DE LA GARZA. Thank you very much, Mr. Ambassador. We appreciate this very much.

One final question. The United Nations Conference on the World Population that will be held in Bucharest next month, I understand, will we have representation? Do you know what our proposals will be or our interest in that respect?

Mr. MARTIN. I am not officially well informed to comment on that to you. You would have to take someone who has worked directly on the population issue.

Mr. DE LA GARZA. Thank you very much, Mr. Ambassador.

Mr. Denholm had one final question.

Mr. DENHOLM. Will Congress be consulted before any international agreements are made on food reserves?

Mr. MARTIN. I am sure that there will be full consultation with the Congress.

Mr. DENHOLM. Thank you very much.

Mr. DE LA GARZA. We thank you very much for being here, Mr. Ambassador and thank you for your cooperation. We would hope that you will have plenty of time to arrive at your next meeting.

Mr. MARTIN. Thank you very much. I appreciate it.

Mr. DE LA GARZA. Our next witness will be Dr. Paarlberg.

Doctor, I wonder if you would bear with us so we can recess for 10 minutes while we go to this vote that is being held on the floor.

If you would be so kind, we will be back directly.

[A brief recess was taken.]

Mr. DE LA GARZA. Thank you very much for bearing with us, Dr. Paarlberg. We will be very happy to hear from you at this time.

#### STATEMENT OF DON PAARLBERG, DIRECTOR OF AGRICULTURAL ECONOMICS, U.S. DEPARTMENT OF AGRICULTURE

Mr. PAARLBERG. Mr. Chairman: The Food and Agriculture Organization of the United Nations, as we know well, is deeply concerned over the current world food situation. Quoting from FAO's latest assessment: "History records more acute shortages in individual countries, but it is doubtful whether such a critical food situation has ever been so worldwide."

The U.S. Department of Agriculture is equally concerned—yet we are also hopeful. We believe the world can act to avert an agricultural doomsday. We think prospects are good that diets for most of mankind will improve over the next decade.

We are concerned because:

(1) The food supply of many of the developing countries is precariously dependent on the weather and outside aid. Here, we think most quickly of the drought-stricken Sahel.

(2) Hundreds of millions of people are poorly nourished today, and many are seriously threatened by food shortages.

(3) Population growth in the poor nations continues at an alarming rate (fig. 1).

(4) Per capita food supplies, because of population growth, are barely holding their own (fig. 2).

(5) The Green Revolution, while a vital force in agriculture, has faltered in some nations.

If, by combinations of acute blindness, utter stupidity, or gross inhumanity, the world ignores these problems, then unprecedented catastrophes could develop. I don't think the world will ignore them and herein lies the hope.

(1) There has been real progress, not deterioration, in total world food production over the past two decades.

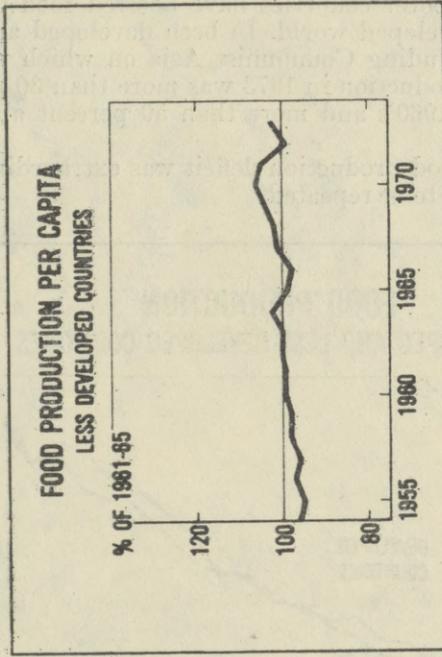


Figure 2

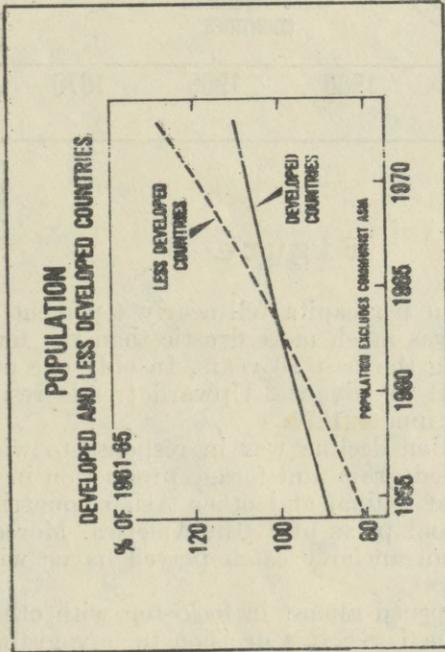


Figure 1

Since 1955, the poorer countries have boosted food output almost in step with the developed world. In both developed and less developed countries—excluding Communist Asia on which we don't have much data—food production in 1973 was more than 30 percent above levels of the early 1960's and more than 50 percent above the mid-1950's (figure 3).

(2) The recent food production deficit was extraordinary, perhaps unique, and unlikely to be repeated.

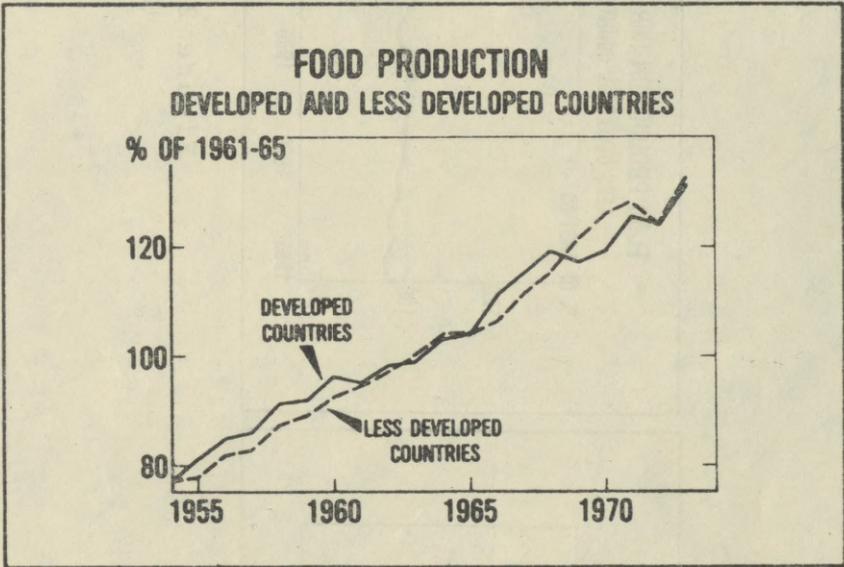


Figure 3

World food output per capita fell nearly 4 percent in 1972. This per capita decline was much more drastic than the four other falls that occurred during the past 20 years. In only one other year did total production fail to advance. Upward trends resumed in 1973 and are likely to continue in 1974.

The 1972 production decline was in response to widespread bad weather that curtailed grain and forage production in the U.S.S.R., People's Republic of China, and other Asian countries as well as Africa, Australia, and parts of Latin America. Moreover, a sharp drop in the Peruvian anchovy catch played havoc with the world protein meal supply.

These things happened almost in lock-step with other unique developments: (1) The U.S.S.R.'s decision to buy grain rather than engage in belt-tightening as it had done before during shortages; (2) The economic booms that the prosperous countries of the world experienced simultaneously, which sharply enhanced their consumer's food buying power; (3) The realignments of major currencies which

made our products a better buy in foreign markets; and (4) The U.S. Government's on-again, off-again price controls, ceiling, and export limitations.

(3) The grain stocks drawdown, due to 1972's short crops and 1973's strong demand, only temporarily reduced the ability to cover potential production deficits.

With prospects good for 1974 crops in major countries, world trade in wheat, corn, and rice may slow down during fiscal year 1975. From the 1974 crop, we expect to see increases in our carryover of wheat, rice, and feedgrains.

(4) **The United States** has what it takes to further improve the food situation.

The United States has the capacity to produce, by 1985:

A 9.1 billion bushel corn crops—versus perhaps 6 billion or more in 1974 (figure 4).

2.3 billion bushels of soybeans—1.4 to 1.5 billion in 1974 (figure 5).

2.3 billion bushels of wheat—1.9 billion in 1974 (figure 6).

Although these levels seem far-fetched in comparison with today's crop, we project that actual needs will rise close to them by 1985.

Mr. DE LA GARZA. May I interrupt there? Are these projections considering normal weather?

Mr. PAARLBERG. Yes, they are. They consider normal weather. Not the best weather possible, but they do not project deep and protracted droughts. They are, on the whole, favorable assumptions, Mr. Congressman.

Mr. DE LA GARZA. Thank you.

Mr. PAARLBERG. Most of these capacity gains would be due to higher yields per acre, with little additional U.S. cropland acreage necessary. To demonstrate the tremendous yield possibilities, the top 10 percent of producers in 1972 were obtaining 48 percent greater corn output per acre, 49 percent more winter wheat, and 60 percent more soybeans than the average U.S. yields per acre the same year.

(5) Worldwide potential for growing more food is also impressive.

The Green Revolution has demonstrated the vast improvements possible in yields per acre. Furthermore, **the world** is not yet farming even half the cropland that could be made available.

About 3.4 billion acres are being cultivated out of a possible 7.8 billion. This total acreage includes only the land getting enough rainfall so a crop could be made, and only the land within 50 miles of a possible means of transportation. (Admittedly, this land is less productive than land now in use.)

Much extra land is thus available if needed for growing crops. But new technology rather than new acreage is the real growing point for agriculture. The modernization of agriculture means that the sheer volume of land assumes declining importance while the use of manmade inputs becomes instrumental.

**One** of the most critical inputs for intensifying world agriculture is fertilizer. As we investigated the current situation, we determined that the current tight supplies are not due to a lack of raw materials but to a lack of investment. Based on present world capacity for nitrogen production, for example, we projected a deficit in world nitrogen supplies of several million tons by 1980. But spiraling fer-

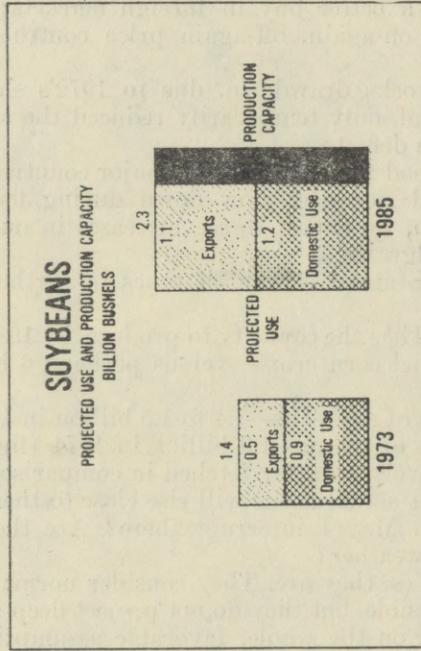


Figure 5

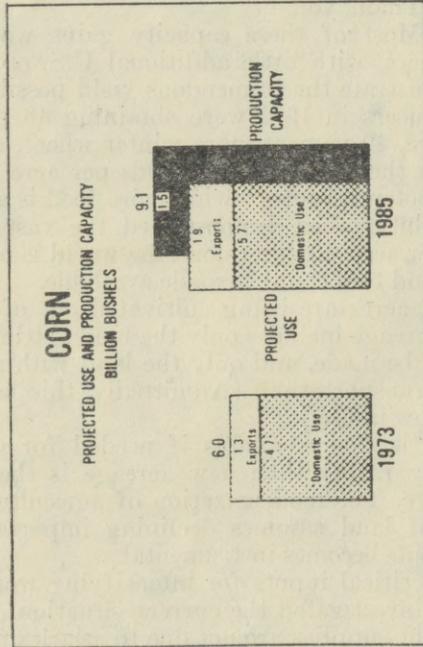


Figure 4

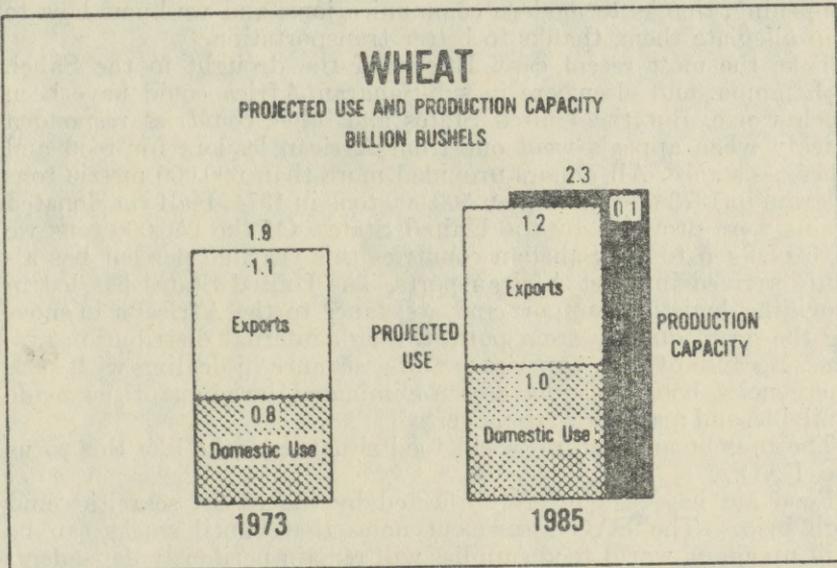


Figure 6

tilizer prices have brought out the investors. Recent announcements of new nitrogen fertilizer plants—30 in the Western Hemisphere alone—could add up to 10 million tons to world capacity. As these plants come on stream, we look for a possible surplus over annual needs in the late 1970's, and a near-balance situation around 1980. Based largely on new capacity, we also foresee a surplus for phosphate later in this decade, and a very modest surplus over needs by 1980.

And don't underestimate the ability of the people in the so-called poor countries. Many of these countries have the needed physical resources. They are looking to us for technical and financial help. And we are providing it \* \* \* assistance from our Government, our foundations, and other groups that are helping with research, extension, credit and the rest. But most of the job lies with the poor countries themselves. And they're making progress.

In the past decade, Asia and North Africa have seeded improved wheat and rice varieties over an area the equivalent of Iowa and Illinois combined. And they started almost from scratch. Allocations for agriculture are building up; investments in agriculture are growing. Less developed countries are building a trained corps of agriculturists, many of them studying in the United States. But much more needs to be done.

(6) Famine is not new but our ability to do something about it is.

There have always been famines. Between 108 B.C. and A.D. 1911, China had 1,828 of them.<sup>1</sup> But now we know about them as they are

<sup>1</sup> Don Paarlberg, "Prospects for Improving World Food Supply and Nutrition," *Food, Nutrition and Health—World Review of Nutrition and Dietetics*, M. Rechcigl, ed., S. Karger, Basel Publishers, Munchen, Switzerland, 1973.

happening, thanks to modern communications, and we know how to help alleviate them, thanks to better transportation.

Take the most recent case. Effects of the drought in the Sahel, in Ethiopia, and elsewhere in sub-Saharan Africa could have been much worse. But the United States and other countries responded quickly when appeals went out from African leaders for food and other assistance. All donors provided more than 600,000 metric tons of grain in 1973 and more than 500,000 tons in 1974. Half the donated grains were provided by the United States. Of the 250,000 tons we have pledged to the Sahelian countries this year, 90 percent has already arrived in West African ports. The United States has led in providing logistical support and assistance to the Africans in moving the grain quickly from ports through internal distribution systems. Because of U.S. experience and assistance in dealing with such emergencies, bottlenecks have been eliminated, large quantities made available, and mass starvation averted.

The present and future world food situation looks like this to us and FAO.

Food aid has been severely affected by the recent scarcities and high prices. The FAO assessment notes that "until stocks can be built up again, world food supplies will remain perilously dependent, as they were in 1973 and are again in 1974, on the harvests of a single year." We concur in FAO's comment that "the present volatile and uncertain situation therefore affords a particularly difficult vantage point from which to attempt to assess future prospects." Agricultural development during the 1974 season will have a considerable impact on the outlook for the world food situation in the short run and will affect the tone for the World Food Conference in Rome in November.

The FAO has recently completed a projection of trends in grain production and utilization by countries. The extrapolation of these trends would envision sizable increases in grain needs in developing countries and surpluses in developed countries by 1985, with an approximate theoretical balance at the world level.

Our Economic Research Service has also made projections that are now being refined and revised in connection with a major world food situation report we plan to publish in September. Our projections suggest that the developed grain exporting countries will be able to supply the less developed importing countries with increasing amounts of grain. The developed importing countries will increase their feed grain imports, but most of the developing countries will tend to import more wheat because their limited foreign exchange resources will cause them to give food grains priority over feed grains. However, some with abundant foreign exchange could show a rapid growth in imports of feed grains.

The possible increase in grain imports has been referred to as a food "gap" and implications have been drawn as to its unfortunate consequences, either in terms of the great burden on the balance of payments of the importing countries, or in terms of undesirable massive food aid programs. These concerns are appropriate. But, in evaluating them we should keep in mind that, in part, the "gap" is the result of assumed increases in per capita incomes and food con-

sumption in the developing countries. The problems of affluence are more tractable than the problems of poverty.

Neither the FAO nor ERS projections extend beyond 1985. However, if these trends were extended further, the food gap in the developing countries would continue to grow to a level unsupportable by their purchasing power and unacceptable as a continuing food aid program. The obvious implications are that the underlying trends must be changed. The growth in demand could be slowed by a slower rate of population growth—which nearly all agree would be desirable—and by a slower rate of growth of incomes—which few would accept as desirable for the developing countries. Supplies can be increased by increasing the resources devoted to research on agricultural technology adapted to the conditions of the developing countries; by increased investment in irrigation, fertilizer production, and other inputs; by improved infrastructure—credit facilities and transportation, for example—and by a change in policies so that the disincentives to agricultural production now existing in many developing countries can be changed to incentives. Incentives to greater agricultural production in developing countries could be aided by changes in agricultural and trade policies of developed countries. Some of these policies presently subsidize uneconomic competition in some commodities which developing countries could produce more cheaply than developed countries.

For 1974, the world grain crop is improved.

Grain is the central question. World grain production reached a new peak in fiscal year 1974 and was sharply above the trendline. Yet this wasn't enough to offset world needs, and grain reserves were further depleted. During fiscal year 1975, we expect another production boost, but the margin above the long-term trend will narrow from 1974. This projection includes the impact of adverse spring weather in parts of North America and Asia. Looking ahead for major grains:

Wheat production may be large enough to permit a slight recovery in world reserves by next summer, including an approximate doubling of our own wheat stocks to around 400 million bushels, still relatively low. World trade in wheat may be a little smaller during 1974-75, in part because of smaller purchases by the Soviet Union.

World feed grain stocks may increase considerably more, although much still depends on the outcome of our corn harvest. And our feed grain stocks may rise by the fall of 1975.

Rice supplies remain very tight. And little more can be said until performance of summer monsoons in Asia is evaluated. An eighth of the Asian rice acreage is planted in miracle rice varieties, which are most vulnerable to yield losses from short fertilizer supplies.

Fulfillment of these projections depends on agricultural performance in certain key countries as well as the impact of tight fertilizer supplies. Three nations produce much of the grain that is available for export:

The United States will have enough grain to match last year's record exports. But sensitive crop conditions have kept grain prices at high levels.

Canada may have more wheat and feed grains to export than last fiscal year. Although heavy spring rain reduced wheat planting, preliminary estimates are for a wheat crop of 16½ to 17 million metric tons, a little below last year.

Australia may have about a third more wheat to export, following a wheat harvest nearly double 1972's drought-reduced crop.

Several nations have especially large grain import needs:

While the Soviet Union will be in a net export position in fiscal year 1975, it will probably import some grain, but only a fraction of the 9½ million metric tons it purchased during fiscal year 1974. We recently estimated the Soviet grain crop at 215 million metric tons which would be 10 million tons above the plan level but down from the 1973 record of 222½ million metric tons.

India may need to call for food aid unless weather improves. Good rains last year promoted a near record food grain harvest. But this year's monsoon season began with June rainfall averaging 40 percent below normal in major farming regions. Good rains brought relief during early July but crops still hang in the balance. And even without further deterioration in crop prospects, Indian's grain imports may rise from 5½ million metric tons in the last fiscal year.

China had a dry winter and spring. Wheat output probably has been reduced and continuing dryness could hurt summer rice crops. Recent purchase from Canada of an extra million tons of wheat may signal intentions to buy more food grain from the West if domestic crops are short.

Africa is finally getting rain. Abundant rain has fallen in many areas of the east African drought zone. Season rains have started in the drought countries of the west but more moisture will be needed to grow normal crops.

Meanwhile, meat production is increasing. High prices and strong demand have encouraged a buildup in world livestock numbers, which will permit increasing slaughter for several years. With beef currently a surplus item in world trade and stocks accumulating, several countries are embarked on policies to limit imports.

**U.S. agricultural exports** are going to decline during fiscal year 1975. From their current level of \$21 billion, they may dip to \$17-19 billion, reflecting the larger world grain output, lower prices for the goods we export, and slower economic growth in some countries, affecting their purchasing power.

Extremely vital issues will be raised at U.N.'s World Food Conference in November.

(1) Measures for increasing food production in developing countries within a wider framework of development.

(2) Policies and programs for improving consumption patterns in all countries and aiming at insuring adequate availability of food in developing countries, particularly to vulnerable groups.

(3) Strengthening world food security through measures such as a better early warning and food information system, more effective national and international stockholding policies, and improved arrangements for emergency relief and food aid.

(4) Specific objectives and measures in international trade adjustment which are relevant to the food problem, including measures

aimed toward stabilization and expansion of markets for exports from developing countries.

The items on measures for increasing food production and consumption in developing countries will focus on five areas: developing natural resources, expanding supplies of agricultural inputs, bringing about structural and institutional improvements, research ways to cut post-harvest crop losses, and developing farming technology tailored for poorer nations.

The third item, strengthening world food security, is of special importance to the United States. Because our stocks of grain are quite low in relation to the past, we are no longer an assurance to the world that the reserves are there is needed. The notion of global food security means that a coordinated effort would be made to build stocks, in line with some measure of need. This would have the effect of reducing the probability of future acute food shortages and moderating price instability.

We favor grain and food reserves, as recently enunciated by Secretary Butz:<sup>1</sup>

(1) We need reserves for security against the threat of real hunger around the world. But the burden of holding such reserves should be shared by all countries, the importing as well as the exporting countries, and the developing as well as the more developed countries.

(2) There is also a need for commercial reserve stock to keep market prices within tolerable bounds. While this would require an international exchange of information on production, supplies, and trade, I prefer to see each country, including the United States, develop its own course of action to provide for and manage its own reserves in behalf of its national interests—rather than an internationally held and managed reserve stockpile.

(3) In this connection I prefer to see the commercial grain reserves in the United States held by commercial interests—grain producers, mills, processors, the trade—and farmers—rather than by the U.S. Government. Both domestic users and importers of grains should carry reserve stocks to protect their own business self-interests. The costs of storing and holding reserve stocks must be met in some way, either by taxpayers or by consumers in the prices paid for commodities.

(4) The best way to build up food reserves is to first get grain production up. Frankly, we must approach the question of food reserves from an entirely different perspective than we did when the United States and Canadian governments held huge surpluses as a by-product of price support programs. Presently we have no surplus stocks to put into a reserve. At the moment, the question of reserves is somewhat academic. Yet we need to discuss the critical issues and be prepared to follow the right course as soon as production is at a level which permits the accumulation of commercial reserves.

We stand ready with emergency food relief.

One type of food security is that which comes from knowing that the world has supplies available to meet genuine life-or-death crises. For example, the situations now faced by African countries, Bangladesh, and South Vietnam require supplies of food to avoid genuine hardship and even starvation. The United States has been meeting this type of need through its Public Law 480 programs. The United States contributed nearly \$900 million to meet food and commodity requirements of developing nations last fiscal year. We are fully committed by the very nature of our people, and the expression of their

<sup>1</sup>The four points are from a statement by Secretary of Agriculture, Earl L. Butz, before the Subcommittee on Agricultural Production, Marketing, and Stabilization of Prices, Committee on Agriculture and Forestry, U.S. Senate, Mar. 21, 1974.

will through government, to continue to come to the aid of needy people around the world.

Secretary Butz, in his March Senate statement noted that:

A commitment for international food security in case of need should be made at the beginning of the marketing year. International food security should not be a last claim on our food supplies—as it has generally been under Public Law 480.

Our technical assistance to willing developing nations will continue to be a vital part of our efforts to improve world food security.

In April, Secretary Kissinger told the United Nations General Assembly that science and technology are becoming our most precious resource.

He called for the nations to apply science to the problems which science has helped to create.

To meet the developing nations' two most fundamental problems—unemployment and hunger—there is an urgent need for farming technologies that are both productive and labor intensive. The United States is prepared to contribute to international programs to develop and apply this technology.

He also called for improvements in birth control technology and pledged a priority in our aid program to help developing nations substantially raise their agricultural production.

The scientific community of U.S. agricultural community—USDA, universities, and private firms—has made important contributions in the past to development efforts in the developing nations. The challenge is to do even more in the future.

The Department of Agriculture, for its part, will continue its vital worldwide cooperation with the Agency for International Development in programs of training and technical assistance.

The largest single message to come from my remarks today are that we face a growing interdependency of the agricultural economies of the world. There is no longer any doubt that we have been introduced to a new "one-worldism" concept in world agriculture. The "Spaceship Earth," as Barbara Ward termed it, needs, an excellent, cooperative, international crew.

Mr. DE LA GARZA. Thank you very much, Dr. Paarlberg. Since you quote from Secretary Butz, without objection we will secure and place in the record a copy of the statement made by Secretary Butz before the Senate Subcommittee on Agricultural Production, Marketing, and Stabilization—that is, his statement of March 21, 1974.

Do you have a time problem, that you need to get back?

Mr. PAARLBERG. No, sir.

Mr. DE LA GARZA. Some of the testimony that you made, and that of the next witness, Mr. Mair, will probably overlap in some areas, and I was wondering if you would bear with us while we hear Mr. Mair and then question both of you.

Mr. PAARLBERG. I would be very happy to, sir.

Mr. DE LA GARZA. Thank you.

[The statement referred to by Mr. de la Garza follows:]

STATEMENT BY SECRETARY OF AGRICULTURE EARL L. BUTZ

Mr. Chairman and members of the committee; Let any group of people get together in the United States these days and before long the talk turn to food.

This is a relatively new experience. For years people in the United States took their food for granted. There seldom was concern about food supplies or the cost of food in general. That has changed.

The subject of food reserves clearly merits the kind of thorough discussion which can place it in a rational, realistic perspective.

*We must get over the idea that there is something evil about reasonable rises and falls in food supplies and prices.*

Price and supply fluctuations are inevitable, as long as the forces of nature—weather and pests—prevail. Price changes are the only way necessary production adjustment, to meet demand and supply changes, will come in an incentive economy.

When you start talking intelligently about food production you have to start with farmers. National production statistics only result from actions by individual farmers. The food problem as faced by individual farmers for far too many years was one of too-low food prices and resulting inadequate farm income. This was fine for the city consumers who had a plentiful supply of cheap food.

Congress was cognizant of the plight of American farm families, and was successful in legislating a sizeable and powerful government mechanism designed to bolster the economic strength of farmers. That mechanism had as its key part price supports for wheat, feed grains, and cotton. These price supports inevitably led to excessive production. That in turn called for government action either to take the surplus off the farmer's hands or to pay for storing it. The government soon found itself in the grain storage business in a big way.

So the United States gradually, and largely by accident, backed into the role of holding reserves. Government-held grain stocks became the commercial reserves for the American food industry, for the grain and flour trade, and for the importing nations of the world.

When these huge stocks held by the Commodity Credit Corporation exceeded the commercial reserve needs, the Congress came forth with Public Law 480— or Food for Peace. We then also became the food relief agency for the world.

The longer we maintained both reserve roles, the less inclined other nations were to be concerned about their own commercial reserves or to be ready to extend themselves in times of need.

Those days are now over. The Department of Agriculture—in response to a surplus-weary Congress and a cost-sensitive public, and in line with its own philosophies—was determined to get out of the grain storage business. The Agricultural Act of 1970, and later the Agriculture and Consumer Protection Act of 1973, made possible a shift from excessive government domination to solid market orientation, while affording income protection to the producer if the market price should drop drastically.

Under the tight supply conditions of 1972 and 1973, government stockpiles of farm commodities were finally eliminated. Now that the United States Government does not hold grain stocks, and now that chronic Canadian wheat surpluses are no longer existent, the world has suddenly become conscious of the need to think about grain reserves.

There is widespread support around the world for maintaining sufficient commercial reserves to prevent food prices from rising to unacceptable levels when harvests fall short.

Some people propose an international system of stock accumulation, ownership, and control as the answer. A better way, the one which I favor, is through an international sharing of production, supply, and stock information—to assess surplus and deficit situations, and to furnish guidelines for nations to follow as they develop their own courses of action. The actual management of food reserves would be under the jurisdiction of each individual country. Even buying nations would retain the responsibility for maintaining much of their own reserves.

I do see an urgent need to develop an effective, multi-national food security system to respond to genuine hardship cases and prevent starvation in developing countries which are not in a position to meet food needs through commercial purchases. This may well take the form of firm financial pledges by the United States and other nations which will make possible the purchase of needed commodities.

The United States has been providing food security assistance, both for development and in times of disaster, through Public Law 480—nearly \$25 billion since 1954. We have met this need even in times of tight supplies—nearly \$900 million in this fiscal year, in fact.

A commitment for international food security in case of need should be made at the beginning of the marketing year. International food security should not be a last claim on our food supplies—as it has generally been under Public Law 480.

Yet, it is high time for the world community also to make arrangements to spread the responsibility and opportunity for food aid and relief more among nations. The prevention of hunger and starvation is a moral responsibility of the leaders of all nations, developed and underdeveloped.

But in this context, let us never forget that the only thing that reserves can do to mitigate hunger and starvation is to help us get through the years of shortfall. The fundamental, lasting world food problem must be met, in large part, through increased food production. In this connection I am proud of the role that the USDA has played, in cooperation with AID, in providing this kind of technical assistance to many of these chronic food deficit countries.

Our primary purpose today, however, is to look at the kind of food security which assures commercial reserves which will prevent food prices from rising to unacceptable levels when the harvest falls short. Here it is important to recognize that the real source of the American consumer's recent concern about food has been food prices—not food supplies.

While unquestionably the bad weather in parts of the world increased the demand for United States farm products, American farmers stepped up production enough to meet that increased world demand. This modified the food price rise.

Many of the causes for the recent rise in food prices are related to forces other than food supply. Food reserves could not have prevented the upward impact of these other forces on domestic food prices.

One *primary* factor was devaluation of the dollar which made American food a better buy everywhere—and the world bought.

A *second* key factor was worldwide inflation. The level of prices of all products the world over was rising. American food prices were not immune.

A *third* cause was increasing world demand for food. Growing world population had a substantial effect on food demand. Increasing incomes, here and abroad, were expressed in increased demand for more and higher quality food.

I want to re-emphasize that consumer prices for food, even without the short Soviet wheat crop or the dry weather in Africa, would have risen markedly because of devaluation, general inflation, and increasing food demand. The plain fact is that we have had no food shortage in this country, and no potential food shortage faces this country now.

Ours is an incentive economy—not a controlled economy like much of the rest of the world. The rise in food prices, due to the factors that I have just mentioned, is now stimulating the American farmer to step up his production. The USDA planting intention reports portend bumper crops of wheat, feed grains, and rice—our major storable food crops.

The corollary to this is that food reserves in an incentive system are held by individuals, by farmers, by the grain trade, and by food processors. That is part of good business procedure in some cases—and part of the economic function of some firms.

Grain producers themselves have always held much of our food reserve, and they will continue to do so—as long as the markets are allowed to function to enable farmers to earn some profit by storing reserve supplies. Even when government-held surpluses served our reserve function, much of that storage was actually on farms. The Federal government merely paid the storage.

Both livestock farmers and the grain trade have always held a sizeable reserve of working stocks in the pipelines, from the farm granary through the local elevator to the mills or the shipping port. Likewise the grain trade also is in the storage business and in the past the government payments for government-owned grain have brought it a tidy income. Now that income, too, is coming from the market.

Clearly, both farmers and the trade will have to hold much larger stocks in the absence of government-financed reserves. But the food industry can do

a more effective job of planning ahead to have available by contract or storage food products to meet its needs. I have enough faith in American businessmen to be convinced that they will do this if the government does not give them the easy way out by doing it for them.

In the United States, with our heavy livestock population on farms, we always have virtually a one-year food reserve on the hoof in our barnyards and feedlots. In case of a short feed grain crop, it does not require much of an adjustment in livestock numbers to keep the demand-supply ratio in balance.

Government-managed food reserves are far from an unmixed blessing. First, they require public financing in a period of rapidly rising government expenditures. They compete for tax funds with other government services which cannot so adequately be met by private action as can the food reserve function.

*From the standpoint of the farmer, food reserves held by government can never be perfectly insulated from the market.*

Buyers know they are there, and it is grossly unfair to expect farmers to produce in excess of projected annual requirements and then be penalized by the depressed prices which government-held stocks produce.

Farmers should not be fooled by promises that a system can be designed to protect farmers from a premature release of stocks. Any set of rules would certainly be subject to change—especially in light of public pressures. Farmers have seen the effect of releasing stocks before.

It is well to remember that the world has been through periods of food concern in the past. Our corn and wheat farmers have not forgotten that the world food concerns of 1965 and 1966 were followed by the surpluses and depressed prices of 1968. When I was appointed Secretary of Agriculture in 1971, corn was piled up on the streets of Iowa county seat towns, and corn growers could get only about 90 cents a bushel.

We turned that situation around—largely through developing expanding foreign markets for our grains. We learned last year how upsetting export controls on soybeans can be to the confidence of our foreign customers.

I would urge extreme caution before we write into food reserve legislation any export restrictions which would further damage this hard-earned confidence—because I am confident the day is not too far distant when we will welcome every export opportunity available. We can't afford to risk driving our customers to other sources of supply.

Finally, government-managed reserves are *not* consistent with an incentive economy. On the other hand, government-held and government-manipulated reserves *are* consistent with the government supply-management approach to agriculture—which is short-sighted, restrictive, and higher cost. Furthermore, they restrict farmers' freedom and would leave farmers permanently at the mercy of politicians oriented to cheap food.

There is real danger, too, that—regardless of cost—they would force Congress to move to reinstitute strict controls over farm production in order to avoid piling up of burdensome surpluses—the first step toward making agriculture a public utility.

The whole question of food security finally comes down to the farmer and whether he will produce, whether he and his family benefit by producing, and whether he has the physical and financial tools necessary. This historic factor in our survival has not been repealed. Those who really are concerned about the supply of food—now and tomorrow—will bear this in mind.

To summarize:

(1) I favor grain and food reserves. We need reserves for security against the threat of real hunger around the world. But the burden of holding such reserves should be shared by all countries, the importing as well as the exporting countries, and the developing as well as the more developed countries.

(2) There is also a need for commercial reserve stocks to keep market prices within tolerable bounds. While this would require an international exchange of information on production, supplies, and trade, I prefer to see each country, including the United States, develop its own course of action to provide for and manage its own reserves in behalf of its national interests—rather than an international held and managed reserve stockpile.

(3) In this connection I prefer to see the commercial grain reserves in the United States held by commercial interests—grain producers, mills, processors, the trade—and farmers—rather than by the U.S. Government. Both domestic

users and importers of grains should carry reserve stocks to protect their own business self-interests. The costs of storing and holding reserve stocks must be met in some way, either by taxpayers or by consumers in the prices paid for commodities.

(4) The best way to build up food reserves is to first get grain production up. Frankly, we must approach the question of food reserves from an entirely different perspective than we did when the United States and Canadian governments held huge surpluses as a by-product of price support programs. Presently we have no surplus stocks to put into a reserve. At the moment, the question of reserves is somewhat academic. Yet we need to discuss the critical issues and be prepared to follow the right course as soon as production is at a level which permits the accumulation of commercial reserves.

(5) We need to get over the idea that there is something evil about reasonable rises and falls in food supplies and prices. Some fluctuation in food production is inevitable. Changes in demand are bound to occur and thus trigger adjustment in production in response to those demand changes. Price increases and decreases are necessary to signal these changes.

(6) Finally, we need to get over the idea of cheap food when its cheapness is at the expense of decent incomes and standards of living of farm producers and their families. For all too long, farm commodity prices lagged behind the prices of the other commodities, and far behind nonfarm wage rates. Farm incomes lagged even farther behind United States per capita disposable income.

Mr. DE LA GARZA. Our next witness will be Mr. Andrew Mair, coordinator for the food for peace program, Agency for International Development.

We are very happy to have you here, Mr. Mair. The Chair has been at several meetings with Mr. Mair. I have seen him in action and seen how his friendly, persuasive manner rises above everyone else in the room, it seems, whenever he is advocating a proposal by our country, and we commend you for the good work that you have done, sir, and we would be happy to hear from you at this time.

**STATEMENT OF ANDREW J. MAIR, COORDINATOR, OFFICE OF FOOD FOR PEACE, AGENCY FOR INTERNATIONAL DEVELOPMENT; ACCOMPANIED BY DR. ERVEN LONG, ASSOCIATE ASSISTANT ADMINISTRATOR FOR TECHNICAL ASSISTANCE BUREAU, AND DONALD BROWN, DEPUTY ASSISTANT ADMINISTRATOR, BUREAU FOR AFRICA**

Mr. MAIR. Thank you, Mr. Chairman. I appreciate the opportunity to appear before the committee and present the statement for the Agency for International Development, and I especially appreciate your kind remarks.

You have heard from the Department of State and also from the Department of Agriculture about the food conference. Therefore, I would like to present my statement.

The members of this committee are fully aware of the present critical food situation. This season of the year each time we look at a weather map on TV, we realize the United States and many grain importing countries are looking to this year's crop to meet their import needs for grain. The problem is more critical because carry-over stocks are at the lowest level in 20 years.

The world has made great progress in improving its food production capabilities, but weather remains the major factor in determining production. At present, the impact of weather on food produc-

tion is most evident in the Sahel region of Africa and Ethiopia where continued drought conditions there caused serious food shortages.

In the Sahel lack of rain in the summer of 1972, and inadequate rainfall in 1973 has resulted in extremely poor harvests. FAO estimates indicate that food deficits in the six countries amounted to 550,000 metric tons in the Sahel crop year 1972-73 and 650,000 metric tons in crop year 1973-74. These estimates are based on minimal survival needs and do not include buffer stocks. It is too early to tell how extensive this year's rains may be, but even if they are heavier than normal, the Sahelian tragedy will continue with displaced persons seeking to reestablish their lives. Many are weakened by malnutrition and are more susceptible to disease. Grain production levels in 1974 will not meet production needs. It has been reported there has been rains in East Africa, but West Africa remains dryer than normal. Against the minimal crop year 1973-74 requirement of 650,000 metric tons donor nations have provided over a half million tons of food grains.

The United States has provided 250,000 metric tons or 45 percent of the donated food. Additional commitments from all donors are necessary to meet the balance of this year's needs and to provide a carryover into crop year 1974-75. In response to this need, the United States is planning to commit an additional 40,000 metric tons against this current crop year and to make an initial commitment of 60,000 metric tons to carry over into crop year 1974-75. The total U.S. commitment to the Sahel to date is 256,000 metric tons in crop year 1972-73, 290,000 metric tons in crop year 1973-74 and an initial commitment of 60,000 metric tons for crop year 1974-75.

We will give you a chart for the record so that you will have this for your record.

The value of this food assistance is over \$113 million. Additional U.S. commitments will be forthcoming after an assessment of the food deficit for crop year 1974-75 is made. This assessment will be made by an FAO multidonor mission in November 1974.

Delivering food grains to drought affected countries has been an extremely difficult task. Four out of six countries are landlocked countries, thus requiring rail or truck transport inland. Port capabilities have been strained due to limited evacuation routes to the landlocked countries. For example, the capacity of railroad evacuation from Dakar to Mali is 12,000 to 14,000 metric tons per month. This is a vast improvement over last year's maximum rate of 3,000 metric tons a month, but still creates serious logistical problems. Every effort is being made to resolve these problems. Donors are assisting in attempting to improve the management of railroads; organizing truck convoys and establishing coordinating committees in ports to assure the maximum movement of food as well as the protection and warehousing of food.

African governments are also taking measures to improve relief operations. These measures include better organization of distribution systems; prepositioning of grains in remote areas that are inaccessible by road during the rainy season; mobilization of military and private truckers for distribution; and improved administration

of relief camps. The United States and others have helped in this complex process of financing increased costs created by the energy crisis, truck purchases and rentals, key road and bridge repairs, deepening and repair of wells, additional storage facilities, vaccines and fortified foods, and management expertise in various sectors of the relief effort to strengthen the capacities of the governments to deal with their problems.

In addition to food aid under Public Law 480, title II, AID will provide \$75 million for recovery and rehabilitation programs in the Sahel. These R. & R. programs are addressed at meeting critical needs in the immediate future and are designed to assist the people of the Sahel to improve their capacity to deal with the pervasive problems posed by the drought. The R. & R. programs include actions to improve movement of foods into more remote areas, such as road maintenance, rental of trucks, and the like; improvement of grain storage in remote areas by new construction and rental of special facilities; actions to stimulate agricultural production in the short term, such as provision of seeds and hand tools; protection to existing livestock through provisions of vaccines and supplemental foods; and assistance in medical programs, particularly in refugee camps and remote areas, through provision of medicines, vaccines, and similar actions. The R. & R. program has been designed to have as much impact as possible prior to the harvest period of September-October 1974, and with full impact within 18 to 36 months.

The U.S. contribution to the Ethiopia drought totals 58,000 metric tons of grains and fortified foods valued at \$15.5 million. Of this amount, 18,800 metric tons has been contributed through the world food program.

Current estimates indicate there will be a food deficit in 1975, but weather conditions in Ethiopia appear to be good and shortfalls should be less than in 1974.

Food distribution problems also exist in Ethiopia but every effort is being made to improve inland distribution. There is currently 78,000 metric tons of grain available for distribution prior to the November harvest period.

The United Nations world food program is providing assistance to these countries and is helping FAO with its role of coordinating the activities of all U.N. members in that area.

Secretary Kissinger's speech to the United Nations on April 15, 1974 outlined the administration's position on the world food situation and our efforts to alleviate hunger and malnutrition throughout the world. He also called attention to the need for all developed and wealthy countries to contribute to the assistance of those developing countries most seriously affected by food shortages and the increase in the price of food.

In the immediate future highest priority must be given to increasing food production in food deficit countries, such as the Sahel zone, Bangladesh and India.

Events in recent months have caused many of us to be concerned with the fundamental and critical problem of the relationship between world food output and population growth. We must look at world food problems as a vast complex that requires urgent remedies and well planned programs.

In this regard: food needs are both qualitative and quantitative, that is, one must be concerned with amounts of food available and the nutritional quality thereof; food needs are a function of population; emergency food needs will continue until basic and mainly indigenous production meets needs.

Thus, our policies and programs must be designed to differentiate overtime and deal with a variety of problems. Our fiscal year 1975 development assistance program includes \$675 million—60 percent of the total—to help countries increase their own agricultural production. This compares with \$285 million in fiscal year 1974. These funds will be used to help developing countries attack key agricultural problems, in expanding their own research capacity, in building infrastructure, and in assuring availability of essential imports, and attention will be given to the plight of the small farmers and the rural poor. I believe it fair to characterize this chapter of our aid, together with aid under Public Law 480, as our primary form of assistance.

You have been advised that we are contemplating an effort to increase the quantity of food aid over the level we provided in fiscal year 1974. Based on the assessments of requirements by our missions, we are putting together a proposal for an expanded food aid program in fiscal year 1975. Consultations on this proposal within the executive branch are under way and we hope to complete the review in the near future. Whether this will lead to commodity levels of 1972 is not yet certain depending upon the crop availabilities in fiscal year 1975 and domestic food prices. However, I am hopeful that beyond fiscal year 1975 we can sustain a high level of U.S. agricultural production which will provide satisfactory U.S. farm incomes, reasonable domestic food prices and will permit the return to a broad multi-purpose U.S. Public Law 480 program.

As part of our food production aid, we expect to increase fertilizer procurement financing from 570,000 product tons in fiscal year 1974 to 700,000 tons in fiscal year 1975. Because of steep price changes our fertilizer procurement budget will increase from \$65 million in fiscal year 1974 to \$210 million in fiscal year 1975.

Malnutrition is a major cause of human misery in developing countries. In the lowest income countries, one out of every five children dies before reaching the age of 5. At least half of these deaths are related to malnutrition.

AID's nutrition program concentrates upon improved nutrition for pre-school age children and pregnant and nursing women as target groups; promotes integration of nutrition into national planning and assists with the development of low-cost nutritious foods.

There is much the developing countries can do to increase agricultural output and improve nutrition and AID stands ready to help.

In line with the American tradition of concern for the underfed and under privileged, Public Law 480 provides a means for U.S. non-profit voluntary agencies to participate with the U.S. Government in food aid and development programs on a people-to-people basis. These agencies are established by groups of private citizens for the purpose of giving assistance overseas and are supported by voluntary contributions. In some cases they are sponsored by religious

organizations in the United States; in other cases, they are non-denominational.

In food programs, these agencies act as cooperating sponsors between AID and the counterpart agencies that operate in the recipient countries. Among the more active voluntary agencies in the food programs have been CARE, Catholic Relief Services, Church World Service, Lutheran World Relief, American Jewish Joint Distribution Committee, the Seventh-Day Adventist Welfare Service and Hadassah.

In addition to the food assistance and development programs carried out with Public Law 480 commodities, the voluntary agencies also operate a wide range of supplementary assistance and development activities with their own resources. In a recent year, voluntary agencies spent over \$500 million in program costs and administrative expenses overseas. The amount spent by the more active voluntary agencies to support their overseas Public Law 480 operations has approximately matched the value of the commodities they receive.

Voluntary agency activities under Public Law 480 include the full range of food assistance efforts. With a priority target of pre-school children and pregnant and nursing mothers, the voluntary agency maternal-child health clinic is an important activity center. Here the mothers are given instructions in food preparation, nutrition education, home economics, and general nutrition education. When possible, information on family planning is discussed and disseminated.

The personnel of these agencies have also become experts in the development and management of food-for-work programs ranging from small scale projects to large work programs. The latter includes the construction of extensive irrigation systems, road building and land clearing, often complementing agricultural development plans.

Voluntary agencies are also particularly expert in administering prompt relief and humanitarian assistance in times of emergency. Their years of experience in relief programs and their ability to apply a flexible and ready managerial system to emergency requirement is excellent. Where possible, initial United States assistance in times of emergency or disaster is channeled through voluntary agencies. United States ability to respond promptly with food assistance in emergencies is often due to the existence of voluntary agency operations.

In the years ahead, the world's food producers, including those in the United States, are facing the critical test of producing enough food to feed the world's rapidly expanding population.

Mr. DE LA GARZA. Thank you.

Mr. MAIR. Thank you very much, Mr. Chairman.

I would also like to introduce Dr. Brown, who is the Deputy Assistant Administrator for AID in Africa, and he will participate in replying to the questions.

Mr. DE LA GARZA. Thank you very much, Mr. Mair. We appreciate your statement. We will invite Dr. Paarlberg and those that accompany him back to the witness table.

Mr. MAIR. I would also like to introduce Dr. Ervin Long from AID who is from our Technical Assistance Bureau, who will help us with the questions.

Mr. DE LA GARZA. For the record, I am going to provide a list of countries which was extracted from a "Time" magazine, May 13, 1974 issue, as to the famine countries, near famine, potential famine and chronic food shortage countries. They list the famine countries as Mauritania, Mali, Senegal, Gambia, Upper Volta, Niger, Chad, and Ethiopia.

Near famine: Bolivia, Nigeria, Syria, Tanzania, Kenya, and Northern Yemen.

Potential famine: India, Southern Yemen, and Cameroon.

Chronic food shortage: Indonesia, Philippines, Bangladesh, Saudi Arabia, Iraq, Iran, Angola, Zaire, Central African Republic, Algeria, El Salvador, Haiti, Ecuador and Uganda.

For the record I will insert the commitments by country and donors, crop year 1973 and 1974.

[The information referred to follows:]

TABLE 1.—U.S. GRAIN DONATIONS TO THE SAHEL

	Crop year 1973		Crop year 1974 <sup>1</sup>		Total
	Fiscal year 1973	Fiscal year 1974 <sup>1</sup>	Fiscal year 1974 <sup>2</sup>	Fiscal year 1974	
Senegal.....	30,000	15,250	-----	10,000	55,250
Mauritania.....	15,000	18,250	10,000	20,000	63,250
Mali.....	35,000	20,250	45,000	27,500	127,750
Niger.....	46,000	22,250	45,000	40,500	153,750
Upper Volta.....	25,000	16,000	15,000	5,000	61,000
Chad.....	5,000	3,000	20,000	2,500	30,500
Gambia.....	-----	3,000	-----	2,000	5,000
Guinea.....	-----	2,000	-----	-----	2,000
Regional <sup>1</sup> .....	-----	-----	-----	7,500	7,500
Subtotal.....	156,000	100,000	135,000	115,000	506,000
Crop year total.....	256,000	-----	250,000	-----	-----

<sup>1</sup> Does not include new U.S. commitment of 40,000 million ton per crop year 1974 and initial commitment of 60,000 million ton for crop year 1975.

<sup>2</sup> Expected to be divided 5,000 Guinea, 1,000 Cameroon, 1,500 Mauritania.

TABLE 2.—NET FOOD GRAIN NEEDS AND PROJECTED DONOR COMMITMENTS, CROP YEAR 1974 (OCTOBER 1973 TO SEPTEMBER 1974)

	Total <sup>1</sup>	Senegal <sup>2</sup>	Mali <sup>3</sup>	Mauritania <sup>4</sup>	Chad <sup>5</sup>	Niger <sup>6</sup>	Upper Volta <sup>7</sup>	Regional
FAO/AID need estimate.....	650,000	20,000	166,000	57,900	22,000	196,700	12,300-98,100	50,000
Total expected.....	551,800	35,900	135,000	66,500	49,100	127,000	56,300	85,000
United States.....	250,000	10,000	65,000	30,000	22,500	78,000	20,000	* 24,500
EEC.....	110,000	15,000	20,000	10,000	18,000	20,000	15,000	20,000
France.....	74,500	6,000	10,000	7,000	8,000	10,000	9,000	24,500
West Germany.....	36,700	-----	10,000	6,000	1,700	10,000	3,000	6,000
U.S.S.R.....	10,000	-----	10,000	-----	-----	-----	-----	-----
Canada.....	26,900	3,000	6,000	114,000	4,000	4,000	5,900	-----
PRC (China).....	8,000	-----	-----	118,000	-----	-----	-----	-----
World Food Program <sup>8</sup> .....	(32,670)	(5,060)	(8,500)	-----	(2,500)	(12,140)	(2,470)	* (2,000)
Belgium.....	14,700	1,900	3,000	1,500	-----	5,000	3,300	-----
United Kingdom.....	10,000	-----	10,000	-----	-----	-----	-----	-----
Other <sup>10</sup> .....	11,000	-----	1,000	-----	-----	-----	-----	10,000

<sup>1</sup> Original FAO deficit estimate was 505-611,000 million tons. This has been raised to working estimate of 650,000 due later poor harvest reports.

<sup>2</sup> Senegal estimates food requirements at 100,000 million tons.

<sup>3</sup> Includes 60,000 million ton imports under special conditions. Not yet secured.

<sup>4</sup> Mauritania estimates requirement at 100,000 million tons. WFP rep. says 53,000 million tons pledged with additional 23,500 possible.

<sup>5</sup> Actual Chad requirement estimated 50,000 million tons. Figure based on FAO estimate movement capacity. Based on shipping schedules (from October 1973). Total 56,139 grain pledged.

<sup>6</sup> Includes 84,000 million ton imports under special conditions. Not yet secured.

<sup>7</sup> Upper Volta has used high figure in making donor requests.

<sup>8</sup> Includes 2,000 allocated Gambia (through WFP).

<sup>9</sup> All from United States. Does not count against total.

<sup>10</sup> Other donors known to date: Sweden—10,000 million tons; Hungary—5,000 million tons; North Korea—1,000 million tons.

<sup>11</sup> Tentative.

TABLE 3.—DONOR FOOD AID COMMITMENTS TO THE SAHEL, CROP YEAR 1973 (OCTOBER 1972—SEPTEMBER 1973)

[Metric tons]

Donor	Senegal	Mali	Mauri- tania	Chad	Niger	Upper Volta	Other	Total
United States.....	45,000	55,250	33,250	8,000	68,250	41,250	15,000	256,000
EEC.....	17,000	35,000	5,000	6,000	14,500	15,000	6,500	92,500
World food program <sup>2</sup> .....								6,500
France.....	8,000	10,000	8,000	9,000	10,000	9,500		54,500
West Germany.....	7,000	5,210	9,000		7,420	3,000		31,630
Canada.....	4,000	5,000	5,000	2,000	5,500	4,500		26,000
U.S.S.R.....	2,000	13,000	3,000	2,000	2,500	2,500		25,000
Peoples Republic of China.....	10,000	10,000	8,000	4,000	10,000	5,000		47,000
Total.....	93,000	133,460	71,250	31,000	118,170	80,750	11,500	538,630
Other donor <sup>3</sup> .....								74,370
Grand total.....								613,500

<sup>1</sup> Gambia—3,000 metric tons Guinea—2,000 metric tons.

<sup>2</sup> The WFP contributed 57,500 to the Sahel in 1973, of which 49,000 was donated by the USG as follows: Senegal 5,000, Mali 10,000, Mauritania 15,000, Chad 5,000, Niger 10,000, and Upper Volta 4,000. The United States 49,000 is incorporated in the U.S. total. The remainder was donated by other countries to Gambia.

<sup>3</sup> Not broken down by recipient country. Major "other" donors in 1973 were Argentina—10,000, Sudan—10,000, Pakistan—10,000, Italy—9,000, Nigeria—6,000.

Note.—These figures are approximations and commitments only. They include about 100,000 metric tons of concessional imports. Protective foods are not shown. In 1973, the USG donated about 1,000 metric tons through UNICEF, EEC—14,000, and West Germany—3,250, France 8,000. Smaller amounts from other donors.

MR. DE LA GARZA. I recently had a colleague of ours from the Korean congress visit with me. He was on his way from Africa and had been in Niger, and he implored with me that we do what we could to help all of these countries, specifically Niger. Why he had been there I do not know. I told him, with not at much detail as both of you gentlemen have testified to as to our participation. But apparently from the government of Niger he got the impression that we had done nothing, we the U.S. Government.

Is there a possibility that our cooperation through the United Nations or through the other relief organizations, our intercession is getting lost and the people do not know that we are helping?

MR. MAIR. Mr. Chairman, I am sure that you are aware there has been a lot of speculation and information about the disaster situation in the Sahel zone and I do not know who in the government that your friend had been talking to. But I think that there has been a lot of improvement in the last 3 or 4 months of getting the story over, and I assure you that our representatives who are working in the area are doing everything to see to it that the story is being told, and we have put substantial quantities in the country of Niger.

If Mr. Brown has anything he would like to add to that—

MR. BROWN. Mr. Chairman, there is no question that the problem in Niger is one of the most serious in the Sahel. The requirements for food imports are the largest of the six Sahelian states. The difficulties of moving food in from African ports into Niger have been exceedingly difficult. As you may be aware, there recently has been a change of government in Niger.

In part, that change of government is related to a feeling by those that took over—the military—that the previous government had not taken adequate steps to assure that the distribution programs were in fact, reaching the population most in need. That earlier government did, seeing the enormous needs of the country, sometimes get

impatient with the donor community and feel that the donors were not moving as fast as they should.

The present government is in fact carrying on a much more efficient food distribution program and is thoroughly cognizant of the important role that the United States is playing, and is very well prepared to state in any public situation their full appreciation for the role that the United States has played.

The Assistant Administrator of Africa, Dr. Adams, was in Niger 10 days ago visiting with the president, and was given full assurances of the president's appreciation for what was being done.

Mr. DE LA GARZA. To what extent do we have any control over the distribution as to whether it goes on a camel or a truck or on a helicopter?

Mr. BROWN. The distribution system in each of these countries is essentially controlled by the governments themselves. They have the facilities, they have the personnel, and in general have control over the transportation facilities. We obviously play an important role in each of these situations in facilitating, where we can, the operations of their distribution systems.

The donor community as a whole has been very helpful in providing trucks and in providing technical advisory services and working in the distribution organizations to make them more efficient and more effective. We have generally good knowledge on where food is going. We monitor the movement of that food. When we see situations where there seems to be groups of people in need and where the distribution system is not working we consult with governments to assure that those needs are met. But the distribution systems as such are basically in the hands of the six governments.

Mr. DE LA GARZA. You say that we or the donor countries have provided trucks?

Mr. BROWN. Yes, sir. We have provided only a limited number ourselves. Our participation has been in other forms of transport and assistance, although we have financed approximately 50 trucks for use in two countries. But the donor community as a whole has provided for the six countries something in the neighborhood of 400 or 500 trucks over the last year and a half.

Mr. DE LA GARZA. Is it true that we provide trucks and no spare parts?

Mr. BROWN. No, that is not true. We have had in one delivery of certain trucks in Mali some delay by the supplier of the spare parts that came in after the trucks were in place and being used. But they were financed, and they are all there now.

Mr. DE LA GARZA. Do you or the other gentlemen who just came back, do you know as to what the average, I guess you would say, life expectancy of a truck would be in relation to the U.S. interstate system in one of the desert countries in Africa, mileage-wise?

Mr. BROWN. I could not give you a simple figure. I can just tell you it is very low.

Mr. DE LA GARZA. Would 100,000 miles ratio to 10,000 miles sound about right?

Mr. BROWN. I would not be surprised if it were a ratio of that sort, yes, sir. Trucks are being used in exceedingly rough conditions on

very, very hard roads; even though most of them are four-wheeled heavy-duty trucks, they take a very, very heavy beating.

Mr. DE LA GARZA. Dr. Paarlberg, you being an economist, this may be a very difficult question. But at what level do you have a breaking point as to the cost of getting food to a group of people as related to the cost of the food?

Mr. PAARLBERG. I believe Mr. Mair testified that in the voluntary food program the outlay of the agencies for distributing food was approximately equal to the value of the food.

Is that not right, Mr. Mair?

Mr. MAIR. I believe I was referring to the fact of how much money the voluntary agencies had collected. I think that more specific to the chairman's question here is whether the cost of freight of the grain of Sahel is equivalent or more than for some of those inland countries than the cost of the grain.

Mr. DE LA GARZA. The question is:

Will you spend \$2 million to get a \$500,000 worth of grain to a specific area?

Mr. MAIR. No. But we do pay the freight to the country and for those inland countries the freight, as I understand it, last year has run as high as \$80 a ton from the United States to the port.

Mr. PAARLBERG. That is probably the most costly and difficult form of food distribution that there is, in that deep interior areas. The food distribution in other parts of the world is not nearly so costly.

Mr. MAIR. Shipments to the Sahel are a small part of our total export program.

Mr. DE LA GARZA. I can understand that. Of course, always you have problems and sometimes you make mistakes. For example, I ran across—this was being handled by the United Nations. I do not know if we had any participation in the decisionmaking. But they hired a supertanker to bring grain to Bangladesh, but it could not go up the river. So then you had to barge it with little sampans, and it cost the same, and all we saved by hiring the supertanker was nullified. Nobody thought about getting it up the river.

So I am sure that we have that kind of problem inadvertent from time to time.

What are we doing, Mr. Mair, in the distribution?

Are we trying to, or is your agency trying to work with these governments in having a better distribution and educating them or providing a better understanding of marketing, even though it may be for free, but of the distribution of the commodities?

Mr. MAIR. I would like to comment on the Bangladesh situation. When the tanker *Manhattan* was chartered to assist in the Bangladesh relief effort, we well knew that it could not get into Chittagong or up the river. It was chartered as a "floating soli" because of the problems of inadequate port facilities. Lighters were used to ferry food from the *Manhattan* into port.

As for the Sahel, we are working on the distribution system and I must say we have made a lot of progress since the first grain went into those areas 2 years ago. Distribution has been a very serious problem because they have not distributed food before. They basically grow their own food in the area and so they do not have markets,

storage facilities and all of the regular distribution facilities that are so prominent in all of the developed countries.

But they are making progress, and I think that you will find that this year's grain is going in and is being handled by the governments in a much better fashion than it was when the first grain was distributed 2 years ago.

Mr. DE LA GARZA. Dr. Paarlberg, you mentioned technical advances in agriculture in your statement.

Do we have technical advances in agriculture and are we trying to pass on to other countries the advances?

Do you remember that statement?

Mr. PAARLBERG. I referred in my statement to our proposals for expanded technical assistance.

Mr. DE LA GARZA. You were quoting Secretary Kissinger, then?

Mr. PAARLBERG. Yes, sir.

Mr. DE LA GARZA. This concerns me very, very much, because within the confines of this room it is very easy for us to say, technical advances and innovation and miracle rice and miracle wheat.

But is this really available to the one family plot in India and Ethiopia?

Is this really available to them, those who will contribute for their own country?

Mr. PAARLBERG. Well, the high yielding wheat and the high yielding rices can be used on these small farms and are being used on many of the small farms.

Mr. DE LA GARZA. I did not mean that. I know that it can be used, but does it get to those individuals.

Is the fertilizer that is needed for the IR, for example, made available to them?

Let us take a little parcel in India, 2 acres. They have to use fertilizer, a farmer with a family of seven or eight with 2 acres.

Mr. PAARLBERG. We are trying to reach these small operators with our supplies of fertilizer and with our technical assistance. As you know from this country, some of the small operators are not being very innovative and are a little slow to pick up the new practices.

But in these countries there is a concerted effort to try to reach these small operators for political reasons, if for nothing else, because these people are so numerous and their difficulties are so great, they need to improve their food supply and their income in order to have political stability. For those reasons the countries are motivated to try to get help to these smaller units. They do not always succeed, but the effort is there.

Mr. DE LA GARZA. How do we monitor this, because I understand in a lot of these countries the rich farmers are getting richer and the poor farmers are getting poorer.

How do we monitor this?

Mr. PAARLBERG. We try to learn what we can from economic studies in these countries. I know that it is often charged that the new technology helps a larger farmer and is injurious to some of the smaller farmers. There is some truth to that. But it is not a truth that is applicable in every case. We know in our own country that many of the larger farms have been in a position to adopt new

technology more readily than the small farms, and it would be surprising if that were not true in other countries as well

But in this country we have the Farmers Home Administration, we have the Extension Service, we have the Rural Development program, all aimed at trying to meet the problems of these smaller units, and in other countries there are similar efforts. The results are spotty, sometimes good, sometimes poor.

Mr. MAIR. Mr. Chairman, I might add that it is a major provision of the aid program that they attempt to reach the small farmer and all the aid missions in every country are working on this program, as Dr. Paarlberg has said. The results vary from country to country, but it is a very important thing as far as increasing food production because it is that small farmer that must increase his production if we are going to have the impact that we would like to have.

You are very right in calling attention to it.

Mr. DE LA GARZA. My concern is that we interest ourselves more in this, because on the road from New Delhi to Akra I visited a farmer. He did not know how much acreage he had, but by looking at it you would say that it is no more than 3 acres. He had never heard of the United Nations, the United States, miracle wheat from Mexico. Nobody had seen it. Granted this is through a translator. I do not know if he was translating correctly or not.

But this is a major thoroughfare in India. You would think a fellow being by the side of the road, that some of that miracle wheat would have at least fallen off a truck and landed on his plot. But he knew nothing and heard nothing. No county agent, nobobdy had ever been to see him, and he was still plowing with his oxen and his wooden plow, and the wife was putting the seed in the ground. And this is my concern:

To what extent are we monitoring this?

Mr. MAIR. It is very true that what you say, that many of the producers of food have not heard about the new technology. But I think the same thing could apply to many farmers in the United States who have not been brought up to date on the latest techniques.

I think that all we can do really is to be sure that we are doing everything that we can to see that this technological information and all the latest data is made available to them to the maximum extent possible.

Mr. DE LA GARZA. That is my concern, because everybody who makes a statement about India says Mexico developed this wheat, and it is going to India and has made miracles. But I did not see it.

My concern is: Where was it?

Who has been monitoring to see that all these statements made by people throughout the world about the miracle wheat are true?

When I went to look at it, there was not any to be seen.

Mr. PAARLBERG. I would like to ask Mr. Willett to respond on the acreage of high yielding wheats in India, and the locations.

Mr. WILLETT. The problem, Mr. Chairman, with regard to the high yielding varieties of rice and wheat, is that they are only productive, or particularly productive, under certain conditions. They have been extremely important in India and in a number of other countries. But it is true that they are only limited to certain conditions and

certain areas, generally to well-irrigated areas. This farmer whom you met, unless he had irrigation, it is not really surprising to me that he was not using the high yielding varieties, because they would not be of much use to him.

MR. DE LA GARZA. You are correct. He was coming from a well with a bucket.

My concern is that we may be deluding ourselves into a situation. The miracle rice and the miracle wheat needs good land, good irrigation, good fertilizer. It needs some mechanized operation.

We cannot be telling ourselves that the developing countries are going to satisfy those demands and that this is going to take care of their meager production for food.

MR. WILLETT. I think the lesson, Mr. Chairman, is that agricultural technology and development are extremely complicated. A particular technological development, such as these grains, cannot solve all the problems of the poor farmers of the world. It is much more complicated than that. In that sense, I think that the Green Revolution has been oversold. It has been overpublicized, as somehow the solution to all the problems. But we have learned that they were extremely important; they are now extremely important. They continue, but much more needs to be done. Much more attention needs to be given to these problems. Much more research, and a lot of it has to be aimed at the problems of the very small farmers. There is no question about that.

MR. DE LA GARZA. It may not be in your province, but are we doing anything, for example, in providing small portable pumps for irrigation that the weekend farmer uses here, the hand-operated tractor or tiller?

Are we doing any of that in the developing countries?

MR. PAARLBERG. Yes, we are. We provide them with some of this equipment. Much of it, however, many of the tractors they get from the Japanese, who specialize in small tractors that are better suited to their circumstances. They have put down many, many of these tube wells.

I saw a figure somewhere that in the northern part of India they had some years ago 30,000 of these wells. I am sure the number is much larger now, and this has been a very great advantage to them. They discovered that this whole northern plain is underlaid with water that is being recharged annually by the outflow of the Himalayas. They have these tube wells now, and they get the supplemental water and assure themselves of a crop, and it has very greatly expanded their production of cereal grains.

We help with that with technical assistance, and in some cases with capital goods.

MR. MAIR. Mr. Chairman, I would like to have Dr. Long from our technical assistance bureau add something on this point.

MR. DE LA GARZA. Surely.

MR. LONG. Mr. Chairman, the problem has been identified as a complicated one, and your questions are pointed to the right issues, because AID is very heavily charged with the responsibility of worrying, not only about the smaller farmer and his special problems, but the farmers who live on lands of the type which are not

suiting to wheat and rice. It might be of interest, though, to point out that in India—where, by the way, I lived 5 years, and I have a great deal of sympathy, because I lived in the part of the country where they did not grow any wheat at all, and we had to work with their millets and were spectacularly successful in increasing the production of millet, which was their principal food, something about 300 percent.

About 52 percent of the wheat in India comes from the high yielding varieties. I would not know whether the farmer you met was growing one of these varieties or not. If he were irrigating, the likelihood would be very strong that he was. In this country some 20 years ago I made a study in my home State of Wisconsin, and found that relatively few of the farmers who were following new practices attributed them to the Government agencies of any kind. They said they learned it from their neighbors, which of course was right, and that is exactly what is happening in these countries.

In the case of rice in India, only about 25 percent is in the new varieties. In Nepal, 66 percent of the wheat is in the new varieties; Pakistan, 55 percent; and so forth. Interestingly enough, the new varieties which bring with them all kinds of technological improvements such as high fertilizers, are grown in the countries which tend to have the smallest farms. It is primarily an Asian phenomenon.

As Dr. Paarlberg says, these technologies are not unusable or unuseful to the small farmer. We do have a serious responsibility to use to it that the small farmer uses them.

I might add that we are in AID putting a good deal of attention on such crops as the sorghums and the millets now and upon the grain legumes—which are the “meats” of the poor people—that are grown in the poor, rock soil areas where irrigated wheat and irrigated rice provide no answer.

Mr. DE LA GARZA. Do you have any projected figure on that in the countries where you are introducing millet and legumes as to what effect it will have on their future need for food for the next 20 years?

Mr. LONG. Not in an aggregate sense, because much of this is in the fairly early research phase. But I believe it is correct that Kenya, for example—in this case it is corn—is now pretty much, minus the weather problem, self-sufficient in corn production, whereas for many, many years they imported. On a country by country basis this should be extrapolated. I should add one point.

That reference has been made to nutrition and the protein problem. The unavailability of protein is often considered as serious as the shortage of calories, and a great deal of the effort is going into making the standard food grains much more nutritionally balanced so that it satisfies the protein requirements of young children and pregnant mothers and so forth.

Mr. DE LA GARZA. How long has it been since you came from India?

Mr. LONG. About 14 years ago.

Mr. DE LA GARZA. You have not recently been there?

Mr. LONG. I have been back but not in the last few years.

Mr. DE LA GARZA. Either Mr. Mair or Dr. Paarlberg mentioned that they are in the midst of problems and will probably have more problems.

Would you verify that?

Mr. LONG. I am sorry. I did not understand.

Mr. DE LA GARZA. That they are in the midst of problems and will probably have more problems in India.

Would you think that is a correct statement?

Mr. LONG. I would think that that is right. It is a very large country with a very large population growth rate. Of course, we have not been very active in that country in a technical assistance way in several years.

Mr. DE LA GARZA. Would any of you gentlemen—let's take India.

What can we do besides sending them money or food, either through an organization or directly?

What should we do now to see that we do not have to provide funds every time they do not have a monsoon on time?

Mr. PAARLBERG. I will comment, Congressman.

You say, what can we do besides sending them money, I suppose, for technical assistance, and those are two very large things and very important to them. We have given much aid there in the past, both in the form of food and in the form of technical assistance by financial support and direct support. Another thing that we can do—and this is a very, very touchy item with this Committee, and I raise it with some trepidation—we could help them to get the fertilizer that they need to produce their crop.

Now, fertilizer is a very scarce item and very high priced, and there is an effort to try to keep the fertilizer in the United States so that our farmers may have the use of it, and I can certainly understand that. But if by that process we do not supply some fertilizer to the Indians and the Pakistanis who need it for their high yielding varieties, we then might have the unintended effect of critically shorting their food supply. And I would think that it would be wise for us as well as for them to permit them to acquire the fertilizer that they need to grow the food that they have to have.

Mr. DE LA GARZA. Everything being equal, have the high yielding varieties been that much of a miracle as to the quantity of food available?

Mr. PAARLBERG. Had it not been for the high yielding varieties, we would not now be discussing our problem of precariousness. We would have now an absolute disaster. It has only been the high yielding varieties that have made it possible for food production there to keep up with and as I say, half a step ahead of their growing population. When we find fault with the Green Revolution, which we are inclined to do, and when we fault the high yielding varieties because they have not answered all the problems, we should remember that it is only those advances that have kept the world from a wide-scale disaster in these last couple of years.

Mr. DE LA GARZA. We should ask of all the countries, but since we are speaking of India, if all of the land available for wheat were put in using the high yielding varieties and should the population growth not be curbed downward, would they be self-sufficient, let's say 10, 20, 30 years from now?

Mr. PAARLBERG. We cannot put all the land to one crop. They have to have a balance.

Mr. DE LA GARZA. All the land that would be planted to wheat, if it were of the high yielding variety.

Mr. PAARLBERG. Congressman, I will answer this way. If all the lands that were available for wheat would adopt the high yielding varieties and if the necessary cultural advantages that accompany them would be adopted, then for the next couple of decades they could stay ahead of their rate of population growth, even if that is not curbed.

Mr. LONG. I might, Mr. Chairman, give you a figure that might answer the question. If you take the high yielding rice varieties—our data are from last year, we are trying to bring them up to date of 12 countries—all of them in Asia where we had the data on how many of them used the high yielding rice varieties—and separate them in half, the six that used the most varieties, increased their production four times as fast as the six that had introduced the least. And in the case of wheat, the ratio between the top and bottom group is more like 12 to 1.

So there is no question as to the importance of high yielding varieties and everything that goes with it. Fertilizer is the key thing, water management, et cetera. Scientific, improved technology has tremendous power to increase production.

India, itself, for example, from 1966 to 1971, increased wheat production by 144 percent, more than doubled it, from 10 million to 25 million tons, and almost all of that was due to the use of new varieties. In the case of rice, India increased production by some 45 percent in the same 6-year period.

Mr. DE LA GARZA. Was that one the same amount of acres, or were more acres put into production?

Mr. WILLETT. I do have a figure on that.

Looking at the last decade, and looking at India and Pakistan, two- to three-fourths of their increased production of wheat and rice came from increased yields rather than from increased area. There was some increase in the area, but a very large part, two-thirds to three-fourths of their increase in grain production of those grains, did come from the higher yields, which were very much related to the high yielding variety.

Mr. DE LA GARZA. Very good.

We would like all of you gentlemen to understand that we are not trying to find fault with the high yielding varieties. We just do not want to leave any stone unturned, so that we do not have to look back and say we should have looked into that.

So, even though the tone may sound fault, the intent is not. Mr. Denholm?

Mr. DENHOLM. Thank you, Mr. Chairman.

I must confess that I am left in a state of confusion as to what the objectives are and what the effort of this Nation is as to the people of the world. There are three major ways of eliminating people. One is by epidemics, one by famine, and one is by war. I am not sure the last is very effective, but our problem is to equate a balance of nutritional food to populations.

Is that correct? Is that the objective?

Mr. PAARLBERG. The objective, as I understand it, is to see that there is enough food for the world's people, a population-food balance. I suppose that is right.

Mr. DENHOLM. In East Pakistan, which is now Bangladesh, we have doubled the life expectancy, substantially reduced the infant mortality and tripled our problem, have we not, some 1,600 people per square mile?

Mr. PAARLBERG. It is a difficult problem, and it is true. That is why both Mr. Mair and I and indeed Ambassador Martin emphasized the importance of curbing the rate of population growth.

Mr. DENHOLM. Epidemics decrease the population growth, do they not?

Mr. PARRLBERG. That is not a very attractive remedy.

Mr. DENHOLM. Does famine decrease the population growth?

Mr. PAARLBERG. Yes, but it is not a recommended method.

Mr. DENHOLM. I realize that, and I do not equate the procedures as being the same. Does abortion or family planning produce the same result?

Mr. PAARLBERG. It is very different.

Mr. DENHOLM. Is the result the same?

Mr. PAARLBERG. As to whether a birth is averted or whether a person is born and then dies of hunger, those are two different things. They are not identical.

Mr. DENHOLM. Is the result the same?

Mr. PAARLBERG. The result on the human emotions is not the same. The result on the social structure is not the same. And the result on the political issues in the country are different.

Mr. DENHOLM. If your objective is to be achieved, are you saying that it is better to abort and preclude life at the outset rather than to let nature run its course?

Mr. PAARLBERG. That a matter of judgment, and as I observe opinions around the world, the great majority of people prefer other ways of checking population growth besides starvation or epidemics.

Mr. DENHOLM. Why do so many governments practice starvation, then?

Mr. PAARLBERG. This occurs only when they are unable to provide the food that they need, and the efforts that we lay before you today is really at two-dimensional effort: one, to try to provide the food, and the other, to indicate the importance of developing checks on the population growth.

The problem is worked at from both ends. And hopefully, it would result in equating food and population without these drastic remedies that you speak of, epidemics, famine, and war.

Mr. DENHOLM. I am not making a judgment as one being better than the other. I am asking you if the result is the same—if all effort is to achieve a balance in the production of food equated to people, does it make a difference?

Mr. PAARLBERG. I suppose whether I get from here to New York by airplane or being dragged by force behind a wagon, you might say that the result is the same. I get to New York. But I assure you that the means of getting there is very different indeed.

Mr. DENHOLM. I am not here to argue with you. I am simply suggesting that we in a more sophisticated way are obviously trying to achieve the same result and other governments achieve the same result without a sophisticated plan of procedure.

Is that correct?

Mr. PAARLBERG. I really do not see, Congressman, much gain in pursuing this line of discussion.

Mr. DENHOLM. I tend to agree with you. I simply started by asking if the same result is sought and if all policies of all governments achieve the same result notwithstanding the means to that end.

Mr. PAARLBERG. I say the result is not the same because you have destroyed the fabric of the society in the process of getting where you say the thing would take you.

Mr. DENHOLM. I know something of the culture of the people of India. They do not subscribe to our theories and the same concepts of Christian heritage that we do. This is true of various cultures around the world.

So there is a conflicting sense of value judgments on the hard issues of attempting to equate population with food capacity or capacity to feed the people of the world. I am sure that the concepts of our Christian heritage are subject to challenge in these changing times. I think that you as an economist, Dr. Paarlberg, know why Public Law 480 was enacted 10 years ago.

Do you know what the interest and purpose of Public Law 480 was upon enactment thereof.

Mr. PAARLBERG. The intent and purpose was to find a way of putting our surpluses into use to build trading opportunities and to meet the needs of hungry people. Those were the combined purposes, and I think those are good times, and I think it has been a good piece legislation. I think it has done a lot of good in the world.

Mr. DENHOLM. Do you believe that it has served its purpose and should be continued or discontinued?

Mr. PAARLBERG. I think it should be continued.

Mr. DENHOLM. Because we have surpluses, or for other reasons?

Mr. PAARLBERG. The combination of reasons that led it to be enacted into law. The various reasons exist now in a different combination, but still together. They, in my judgment, counsel the continued use of Public Law 480.

Mr. DENHOLM. How do you propose that we execute it if we do not have surpluses?

Mr. PAARLBERG. We have supplies. We will be building up our stocks this year of our major grains, even with the projected use of Public Law 480 that we seek.

Mr. DENHOLM. If we build up supplies then we have reserves in excess of domestic demand. Is that correct?

Mr. PAARLBERG. We do have.

Mr. DENHOLM. What does that tend to do to price for the producers in this country?

Mr. PAARLBERG. If we find outlet overseas for Public Law 480 grains, that somewhat bouys up the price for American farmers as to compared with what would be the situation in the absence of Public Law 480.

Mr. DENHOLM. I seek to refer for a minute to Mr. Mair's testimony when he stated, "The Fiscal year 1975 development assistance program consists of \$675 million, 60 percent of the total to help countries increase their own agricultural production. This compares to \$285 million in fiscal year 1974."

Dr. Paarlberg, does that same percentage increase apply to any domestic agricultural programs in the United States?

Mr. PAARLBERG. You just passed an emergency livestock credit bill that goes from zero to \$2 billion. What that percentage increase is, I am not sure, but it is much greater than the one in Mr. Mair's testimony. It is infinite.

Mr. DENHOLM. How much money did that require of the U.S. Treasury?

Mr. PAARLBERG. It has not taken any of it. It has been written into law.

Mr. DENHOLM. How much money does this program require of the U.S. Treasury as compared to 1974?

Mr. PAARLBERG. I am confused now. I do not know which particular thing you are talking about?

Mr. DENHOLM. About this program, the testimony that Mr. Mair has on the record where in 1975 he proposed to spend \$675 million as compared to \$285 million last year.

Mr. PAARLBERG. The dollars that are indicated.

Mr. DENHOLM. It is more than double the amount of fiscal year 1974, is it not?

Mr. PAARLBERG. Yes.

Mr. DENHOLM. That money must be appropriated, does it not?

Mr. PAARLBERG. Yes, sir

Mr. DENHOLM. The comparison that you have suggested as a matter of record does not equate to that at all because the concept of the guaranteed livestock loan program did not take 10 cents out of the Treasury, did it?

Mr. PAARLBERG. Not out of this particular budget, Congressman.

Mr. DENHOLM. Mr. Mair talked about inflation.

What impact, if any, does foreign economic and military assistance tend to have on inflation and domestic prices?

Does spending more money for foreign economic aid tend to increase inflation or decrease inflation.

Mr. PAARLBERG. It would be pretty hard to compare the effect of foreign aid on inflation as contrasted with other kinds of expenditure. Much depends on whether the expenditures are offset by taxes. I think that foreign aid programs that cost us money do have an upward impact on price, other things equal. Other programs that involve the outlay of large public investment also have an inflationary impact. I am not sure it is possible to say which is the greater.

Mr. DENHOLM. Do you know of any program for agriculture in the United States that has had a percentage increase similar to the 1975 budget increase of this program?

Mr. PAARLBERG. We had a program to control the outbreak of exotic hewcastle disease for poultry in California that had an infinite percentage increase because it came from zero to \$20 million. I do not have in mind all the different programs, Congressman Denholm.

There are a number that have diminished. There are others that have increased by various percentages.

Mr. DENHOLM. The Congress is constantly criticized for over appropriating money and adding to the problem of inflation. The people in American have made a tremendous sacrifice to help the people around the world. I am not persuaded that we can do so forever.

I would like, if time permits, to inquire in some other areas, but I now yield to my colleagues. Thank you, gentlemen.

Mr. MAIR. May I comment, Mr. Chairman, on this matter? I think that we have put it into proper perspective—there has been a foreign aid program for a number of years. I mentioned only the part in the aid budget that has increased agricultural production and nutrition. And this particular item has been given more prominence and more importance this year because of the shortage of food, and there are other places that have been cut considerably in order to make it possible that increased food production and nutrition would be permitted this increase in the projected aid program for fiscal year 1975.

Thank you very much.

Mr. DE LA GARZA. Thank you.

Mr. Sebelius?

Mr. SEBELIUS. Thank you, Mr. Chairman.

I want to thank you gentlemen for coming down here today. It was an excellent presentation. I was sorry I was not here when Mr. Paarlberg gave his presentation.

I just have a couple of items here. On the beef price problem, we did work up the emergency livestock loan program. One thought went through my mind because people raised this subject about meat for the countries in Africa that are starving. I was told that it was faulty because there that no facility for refrigeration of fresh or frozen meat.

Was that considered at any time, the giving of meat to the African countries that are short?

Mr. BROWN. The problem is income levels and the need to obtain protein through lower cost foods than through beef, through animal production.

Mr. SEBELIUS. I am aware of that. But would it have been possible if they had the facilities to handle such a thing?

Mr. BROWN. There are limited facilities for handling beef in a proper manner in almost all of Africa.

Mr. SEBELIUS. They could have handled canned meats.

Do they use canned meats?

Mr. BROWN. They can their own meat to a certain extent. There are areas that produce adequate beef for their own consumption and substantial exports to the Ivory Coast and so on.

Mr. SEBELIUS. To what extent have we used CSM or wheat-soy blend—the prepared mixes that are nutritional packages. To what extent have we used them?

Mr. BROWN. We are increasingly using this product because our first concern was calorie level, the movement of sorghum, the traditional item in the area. More and more we have moved toward the mixed ones, in particular, the soy, fortified sorghum grits and a much larger percentage of the program is in that form now.

Mr. SEBELIUS. Are we finding that it gets to the ultimate consumer better if we use these sort of packaged items?

The three of us were all in Bangladesh. We noticed that bulk grains were disappearing in the interior either by boat or truck. We were advised that a lot of it wound up in India on the black market.

Is there a better way of doing it, by packages as it is identifiable and goes in the specific package to the individuals that need this nutrition as against bulk grains getting lost or not being given out or otherwise?

Mr. MAIR. I think it is preferable to use the bulk grains because the difference in the cost of freight and the distribution costs.

Mr. SEBELIUS. You get more to them?

Mr. MAIR. That is right. If you put them in the small packages, as we did in the old days where we had the small individual packages, the cost of packaging and distribution is just too much.

Mr. SEBELIUS. Can CROP and CARE still get reduced prices? I guess the CCC is out of stocks? Is there any way we can get reduced prices to CROP or CARE or other organizations like that as far as getting U.S. grains? Is it all gone now?

Mr. MAIR. CCC has not had any stocks available for this type for the last, I guess it is a year now. We have purchased in the market for this past year because this is a humanitarian program. I think it has the support of Congress, and I think it has the support of the American people. I believe that they are willing to share their food supply with the disadvantaged around the world.

Mr. SEBELIUS. One final item.

When we were in Ethiopia on that same trip, the people spoke well of what they call food for work. They got a supplement that was specifically so much grain or otherwise, they say it is very successful and really helped them to build the roads or do the other things that they wanted by giving them some food. That it was really working.

Do you have any comment, or would you care to comment on that?

Mr. MAIR. This is becoming an increasingly popular vehicle for distributing food because it gives the government an opportunity to do something toward increasing their agricultural production and their standard of living within the area. They work so many hours on an approved project and draw their pay in the form of food. This has worked particularly well in Bangladesh where they had a big restoration problem and the food-for-work program is something that I am quite proud of.

Mr. SEBELIUS. Thank you very much.

Thank you, Mr. Chairman.

Mr. DENHOLM. Will the gentleman yield?

Mr. SEBELIUS. Yes.

Mr. DENHOLM. I had the impression when we were in Bangladesh that the people themselves did not realize that they were receiving help from the United States. There was an administrator of the program from Australia and one from England. Now, we gave the commodities to the Government and the Government sold it on work coupons to the peasants and the peasants did not realize that anybody in the United States was helping them.

Do you have that same opinion?

Mr. MAIR. There is some evidence of that. I should point out that the Congress directed us, in the Bangladesh effort, to conduct our activities to the maximum extent practicable, under the auspices of and by international institutions and agencies and private U.S. relief agencies. It was in Bangladesh where many nations were contributing food in there. Many are involved in Africa in the Sahel. But I think that by and large the people understand that this food was made available by the various countries, be it the United States or Canada or the various contributors to these programs, and it may not have that exact identification to the individual recipient that some of us would like it to have, but it is making progress.

Mr. DENHOLM. The fact is that the people in Bangladesh either have to pay for it or work for it. They feel that they earned it and that they got nothing without labor or payment because the benefit was to their Government—directly and indirectly.

Mr. MAIR. It served the purpose of getting food to people—some work was accomplished by the country, and is that not really our major objective?

Mr. DENHOLM. I am not sure what our objective really is in this program around the world. If our objective was to equate the capacity of food production to demand in Bangladesh, we failed. If it is to cause people to live and increase the masses of humanity then I think we have accomplished something of humanitarian value.

Mr. MAIR. Bangladesh has their best rice crop in November 1973, they have had in their history, and I think that this is an accomplishment. I think India and Bangladesh have the potential for substantially increasing their food production, and I believe the programs that we have talked about here will help them to increase their food production. One-fourth of the world's population live in that area and we must help them expand their ability to feed themselves because they are not going to have the financial resources to come to us and buy in the cash market much of their food supply.

Mr. DENHOLM. That is an excellent answer, I think, in relationship to the objective of the program. May we pursue it to its ultimate end.

If you were successful, what comparative economic advantage is there for agricultural exports and the protection of marketing price levels for our producers in the United States?

Mr. MAIR. The potential demand for exports in the developing world in areas where there is a cash resource to buy are enough to take the production of most of the exports from the United States. I am talking about Europe, Japan, Korea, and the various other places. India and Bangladesh are not going to have the money to buy it anyway. So let's help them increase their food production.

Mr. DENHOLM. In this mythical world of ideology—and I say it is mythical because there is a factual situation that is very real—the European Common Market has placed an embargo on all imports as of now. There is an overproduction of beef in the world market and our producers cannot continue in business and produce for less than cost unless the resources of this country are shifted to the benefit of producers of food in such a way that they can continue to produce food for the people of the four corners of the world.

It is a basic law of economics that American producers cannot produce and sell below cost of production. They cannot produce for less than cost and continue in business. This is serious as far as our country is concerned if we are to achieve the objective that we seek in making others self-sufficient.

How are foreign governments to pay for American production unless we appropriate funds for them to buy that which we produce? Now, can we continue to do that and stop inflation that you say is devastating to your program?

This is the dilemma that I see in this mythical world of reason.

Mr. MAIR. Would the Congressman be willing to hold that question until Les Brown testifies before the committee?

Mr. DENHOLM. I thank you very much.

I thank you, Mr. Chairman.

Mr. DE LA GARZA. Mr. Mair or Dr. Paarlberg, can world food production be increased as we have spoken of and we have aspired to, to bring to these countries without adverse ecological consequences?

Mr. PAARLBERG. Yes; I believe that that can be done. It will take some care and thought to do it, but it can be done. We know enough technically to accomplish that, in my judgment. It can be done.

Mr. MAIR. If I could comment on that, Mr. Chairman, The Environmental Conference of the United Nations pointed out some of these problems and there will be some cost to the ecology of expanding food production. It has been discussed by various people, but it is a choice that we have to make. We are finding the same applies to this country, I think that we can hit a balance between the two, and not go overboard on damage to the ecology, and still substantially increase food production.

Mr. DE LA GARZA. We have concern, I understand, for example, in the Philippines and some of the areas where the high yield rice has been very successful. The inlets and bays around the area, that the fish have died, and therefore, you did one thing and undid another.

As long as we attempt to have a balance, we are concerned in going all out to provide high yield on the one hand. You might do damage to the ecology to such an extent that in the long run it would be more detrimental.

Mr. PAARLBERG. Congressman, people are a part of the ecology. We do not always realize that, but one—

Mr. DE LA GARZA. They are the worst offenders.

Mr. PAARLBERG. But if we are going to try to preserve the non-human ecology and sacrifice the lives of people in the process, that I think would be unsound, both from a humanitarian and from an ecological standpoint because people are a species similar to other species, and I am sometimes troubled by people who advocate ecology in such a state as to ignore the needs of people.

And I submit that that is not even good ecology, let alone good economics or good politics.

Mr. DE LA GARZA. I sympathize with you. I am not way out on ecology either, but we all, with very few exceptions, rely on the theory that people do not eat people, and if you do not have the other species, and if you do not have the production, then people are not going to survive. I think that we basically agree on that.

Mr. Mair, you mentioned in one of your R. & R. programs the improvement of grain storage in remote areas either by constructing or rental. Can we be realistic that some of the Sahel countries and some of the developing countries can do this without the long list of historical abuses?

Mr. MAIR. When we talk about expanding storage facilities in the Sahel, it is not like Topeka, Kans. The manner in which we do this is much smaller. We have found that the European countries and the United States made a great contribution to these countries by providing the smaller bins, and we hope that they will have adequate facilities to handle their own grain when their production comes back in. The expansion in limited storage facilities in those countries has been helpful, because up to the time that this happened, they really did not have anything but some mudhuts to store their grain in. They have had a big loss in grain as a result of this. Now they are beginning to understand what loss that they had and how it wastes their own production.

Mr. DE LA GARZA. You are not speaking of a grain storage elevator in Timbuctu for the distribution to the Sahara nomads?

Mr. MAIR. We are talking about a very limited amount of storage either a concrete building or even some metal storage, in the manner we did it here 50 years ago.

Mr. DE LA GARZA. Dr. Paarlberg, do you see any real incentive for commercial interests to have a grain reserve?

Mr. PAARLBERG. Some of the commercial interests have indicated that, in their judgment, a grain reserve is desirable. Cargill and Continental have said that that would be the case. Other groups, particularly farmers, have felt that a large stock of grain would be adverse to their interest, so there is some mixed feeling about this.

Mr. DE LA GARZA. Can the private trade be expected to be as reliable as government and holding reserves for a specific need, such as for AID purposes?

Mr. PAARLBERG. The private trade will hold reserves when they consider it to be profitable to do so. If the anticipated price down the line is sufficiently attractive, so as to more than compensate for the costs of storage, then they will hold grain. If that is not the case, they are not likely to do so. So for a private firm the criterion is whether the operation is profitable.

Now, a government operation might hold grain even though it were not profitable.

Mr. DE LA GARZA. Mr. Denholm.

Mr. DENHOLM. Why should the United States pursue international agreements to regulate supply or price on farm products when we have a comparative economic advantage in international trade and the balance of payments on this matter, at least at the present time?

Mr. PAARLBERG. It is not our view that we should enter into international agreements to control supplies and regulate the price and specify trades. We do not take that position, Congressman.

Mr. DENHOLM. Are you opposed to the concept of an international reserve?

Mr. PAARLBERG. I am opposed to the concept of an international reserve if it is in the form of a world food bank or some other huge

operation where the decisions on how to handle these stocks would be taken out of the hands of the particular countries and decided on an international basis. We are opposed to that.

The Secretary of Agriculture has indicated that he supports, in principle, the proposal of Director Boerma of the Food and Agricultural Organization. That is a proposal for a voluntary consulting arrangement in which the countries sit around a table and report what their policies are and what their stock positions are and do not surrender their own autonomy with regard to their own particular policy. That is the position of the Secretary of Agriculture has supported in principle.

Mr. DENHOLM. Does the Department of Agriculture now support a food reserve supply in this country?

Mr. PAARLBERG. Secretary Butz has not supported—in fact he has opposed—a proposal of governmentally held stocks in this country. He has said that this is a thing that the trade should bear, and not only the trade here but other countries that get food from us should give a thought to their own needs. They should acquire stocks and write long-term contracts and so insure the supply.

Mr. DENHOLM. It seems to follow from your response that Secretary Butz would be in opposition to Mr. Mair's position at the World Food Conference later this year, is that correct?

Mr. PAARLBERG. No; I do not see where there is a conflict, and I read Ambassador Martin's statement with a great deal of care and listened to his comments. I do not see that there is a conflict there.

Mr. DENHOLM. Are you saying that he is opposing to a food reserve?

Mr. PAARLBERG. I am saying that I see nothing in his statement and I heard nothing from him that indicated a basic difference between him and Secretary Butz. I do not see anything in the Ambassador's statement that is in opposition to the proposal of Dr. Boerma of FAO to which Mr. Butz has subscribed in principle.

Mr. DENHOLM. I may stand corrected. I thought he recommended an international food reserve.

Mr. MAIR. A national food reserve and national food security plan so each nation is looking after its own reserves.

Mr. DENHOLM. I understand that we are not interested in accumulating a reserve in this country. Therefore, we can not really participate in that kind of agreement at this World Food Conference, can we, Dr. Paarlberg?

Mr. PAARLBERG. As I understand Mr. Boerma's proposal, he does not specify that a reserve be held by the government. A reserve of some reasonable dimensions held by the private trade would, as I understand the proposal, be acceptable. The decision as to what share of the reserve would be held privately and what, if any, publicly, that would be a thing the individual country should determine.

Mr. DENHOLM. Thank you.

Mr. DE LA GARZA. Dr. Paarlberg, do you know what the position of Secretary Butz is in relation to the subject. As I understand it, he favors the private trade to have reserves.

What is his position to the government control of exporting to certain specific countries?

Mr. PAARLBERG. He does not want to exercise that kind of control.

Mr. DE LA GARZA. We would, if not in fact, in theory we would be back to the whole situation of the Russian grain deal, that if the private trade had the reserves and, the government controlled who exported to certain countries, I suppose the possibility of leakage of information, if nothing but jealousy, from one company to another. That would have great political implications, would you not agree?

Mr. PAARLBERG. The Secretary believes that the export of commercial products is a thing primarily for the commercial trade, for the market. He does not want the government parceling out our exports to particular countries and denying exports to certain countries, at least in anything like normal circumstances. Now, in an emergency, I suppose that it might be different. But his guiding principle is to rely on the market and on the trade for these decisions rather than to inject government into them.

Now, Mr. Mair reminds me of the reporting system which you gentlemen wisely enacted into law last year has been very useful in exercising some sort of a monitoring surveillance service of all our exports, so we know what the score is and which is scheduled to move and to whom. That has been very helpful, and I think that that will help avoid the difficulties that we got into last year.

Mr. DE LA GARZA. Coming from an area that exports a considerable amount of fruit and vegetables, I agree with the Secretary that the private trade and the supply and demand is the best solution to the problem.

Dr. Paarlberg and Mr. Mair, if you would just bear with us for a few minutes. Counsel Mr. Murray has some questions that we would like to develop.

Mr. MURRAY. Thank you, Mr. Chairman.

I guess I bring to this hearing the perspective of a neo-Malthusian. I cannot become a total and pure Malthusian because that prospect is too horrid. I cannot be a non-Malthusian because the geometry is too oppressive. But I would like to tap Dr. Paarlberg's considerable abilities, not only as a statistician, and as a economist, but as a geographer and as an optimistic problem solver in this whole picture in developing the Subcommittee's record as we go on to further witnesses who, I think, will reflect a little different perspective than what you gentlemen have brought to us today.

First off, I think it would be useful for the Committee to know a little bit about this fellow Thomas Malthus, who is your historical predecessor in the practice of economics.

Could you tell the committee a little bit about his basic theory and about his ideas?

Mr. PAARLBERG. Thomas Robert Malthus was a British clergyman and economist who lived about 200 years ago. He came up with the proposition that the food supply grows by arithmetic increments, 2, 4, 6, 8, 10, but the population grows by a geometric ratio, 2, 4, 8, 16, 32. And he came to the conclusion that inevitably, therefore, food supplies were going to be insufficient to provide for the population and that hunger and want and starvation were the natural lot of men. He did this writing about 200 years ago.

Shortly after he wrote, there came some striking developments, there came the advance of technology and the opening up of the New World, and in the Western world for quite a time, contrary to Malthus, for food supply ran ahead of the population growth. Meanwhile, in much of Asia, the Malthusian principle was operating.

Now in modern times with the success of medicine and the reduction of the death rate, there is a revival of concern about the ability of the world to feed its people. There are a lot of neo-Malthusians, so you are not lonely in that situation.

Mr. MURRAY. He talked about what the engineers call exponential growth. That is this factor of doubling geometrically. You probably are familiar with the Massachusetts Institute of Technology study on a lily pond, are you not?

Mr. PAARLBERG. Yes, I am.

Mr. MURRAY. Would you describe that briefly for the subcommittee as to what point the lily pond becomes full of lilies?

Mr. PAARLBERG. The idea is that you have a certain environment, and you begin to multiply a species in it, whether it is lilies or whatever. And if you just multiply that at a geometric rate, you soon reach a time when everything is all choked up and all clogged full.

The problem with that is in real life in most cases some sort of corrective factors begin to come into operation; other species develop. And the trouble with the Malthusian theory is that it leaves out many of the corrective things that people can do, the improvement in the state of the art of agriculture, the development of ways of restricting the rate of population growth so that these automatic projections that lead surely to catastrophe, when put into a computer are not really quite that way in real life.

Mr. MURRAY. Let us leave the projection and take the history book to see how we would approach the lily pond, because the Massachusetts Institute of Technology came up with the observation that the lily pond lilies, starting with one, went to two the second day, four the third day, and so on. When they got up to the 29th day, the pond was half full. On the 30th day it was full. In other words it doubles, the most recent time, and causes the most tremendous impact of numbers.

One of our background papers that we have in the subcommittee describes the principle set forth by an Italian physicist named Avogadro. The paper goes on to say that by the year 3000, at the current rate of population growth, the mass of human beings will weigh more than the mass of the earth, and then we get to Avogadro's number. Obviously, something is going to intervene before then.

Looking at history—correct me now—if these figures are not approximately correct, but from the dawn of civilization, which may be a million, million and half years ago, or at least from the dawn of agriculture as it was recorded by man 12,000 years ago, it took at least that long—a million and a half up to 12,000 years, to get a billion human beings in the world. That was 1930 at the time of the Industrial Revolution. Then 100 years later, one century later, in 1930, there were 2 billion people on the earth. Then it only took another 30 years, from 1930 to 1960, to get to the third billion. And the fourth billion is going to be here next year, according to demo-

graphic schedule, a little over 3.9 billion right now. In other words the fourth billion will be here in a 15-year period. The fifth billion can be expected in a 10-year period, with  $6\frac{1}{2}$  to 7 billion people on hand by the end of the century. And continuing that kind of lily pond arithmetic, we would end with 37 billion people by the end of the next century, and then this number of more folks than mass of the earth by 3000.

Of course, something is going to have to intervene and something is going to have to happen. And I think that is the thrust of what this committee is headed for is to see that something like that does not happen.

Mr. DENHOLM. If Counsel will yield, please? I was asking questions to ascertain the impact of these programs on the fact situation that you have described. It seems to me that we are contributing to the problem rather than the solution.

Mr. MURRAY. In terms of practical applications with 50 million people in Mexico now, they are adding more people to the face of the earth each year than the United States with its 210 million people. They add about 1.8 million folks a year and we add about 1.3 million. They are growing at a population rate of 3.3 percent; 48 percent of the population in Mexico is less than 15 years old. They are a young people, a young population, and at their current population growth rate in the next century, we will have 1,300 million neighbors across the border from Texas in Mexico.

Again, something is going to have to happen there that to advert. Either they stabilize their population or they are going to face a terrible, terrible problem in providing not only food but jobs and all the other wants and needs of human beings.

Mr. PAARLBERG. That is correct. What has been done with the agricultural advances of recent years, the Green Revolution and all its accompanying technologies, has really been to purchase some additional time to gain some control over population.

This time has been purchased at high cost. It should be used to the best possible advantage. The countries, as the Ambassador said, are now more willing to discuss population control and to put population control programs into operation.

We have such a program in AID. It started from nothing 10 or 12 years ago, and now I think it is in the neighborhood of \$100 million. There is more receptivity to this thing than there was earlier, and this is hopeful.

What you say is the essential dilemma, and that we have to work at both ends of the problem to try to get food production up to meet the needs of the people while at the same time we try to help them exercise some check in the rate of population growth. Otherwise, disaster is perfectly predictable.

Mr. MURRAY. Do you think it is possible to have a world population stabilized around 6 billion people?

Do you think it is possible to level out at that amount?

Mr. PAARLBERG. Most of the demographers thing that even if we drastically curtail birth rates, beginning now the number of young women of child-bearing age is such that you could not anticipate a leveling off of population at as low a number as 6 billion.

Les Brown talks about that as a possibility, 6 or 7 billion. But most demographers think that even under the most optimistic conditions of population control that the leveling off would be at a number above 6 billion.

Mr. MURRAY. That, then, being a realistic possibility, let us take a quick look. Put on your geographer's hat for a minute and let me ask you some questions about the land masses in the world, where they are located, and how the United States fits into that.

Is it not true that about 70 percent of the world is covered with water so that subsequently only 30 percent of it is land?

How much of that land would you say is arable, usable agricultural land?

Mr. PAARLBERG. The soil scientists have said that approximately twice as much land is potentially arable as is now used, that the arable land control be approximately doubled. The land that you would bring in would not be as fertile or as productive as the land now in use, but there is considerable additional land that is capable of being tilled.

Mr. MURRAY. Some of the world geographers claim that there are about  $3\frac{1}{2}$  billion acres of good farm land of the 9.7 billion total of other agricultural land that has some capacity for growing and producing food. But that would still leave quite a small part of the world as the source for the food supply for this additional population, would it not?

Mr. PAARLBERG. That is correct.

Mr. MURRAY. Of that amount, the United States holds about a tenth of that, or about 350 million acres of farm land, not counting our forestry reserves and our other types of land that have potentially good agricultural production. We have about a tenth of the world's supply of good land, do we not?

Mr. PAARLBERG. Something like that.

Mr. MURRAY. That leaves us then, as we see the population growing, with the imperative to act not only because it is nice, but because it is essential that we handle this resource more carefully and perhaps more diligently than ever before in terms of conservation and soil and water.

Mr. PAARLBERG. Particularly so, because some of the new lands brought into production are rather fragile and could very easily be injured by erosion.

Mr. MURRAY. Putting on your optimistic, problem-solving hat for a second, you see no real problem of countries getting into a fix in the next 10 years?

That conflicts with what the U.N. says, that by 1985, there is going to be a substantial grain shortage, or do you think that that kind of talk is enough to generate action that will avert it?

Mr. PAARLBERG. The FAO projections, and these agree with USDA projections, are that for the next decade or so, given normal weatehr and given no unforeseen catastrophe, the world will be able to feed its people, perhaps even a little better than they are now fed, that the rate of new technology will come along sufficiently rapidly to make that possible. And I think with the world food scarce that we have had and with the inducement of the prices, we

are going to see more resources committed in the way of research, education, and technology. I think that it is possible to be cautiously optimistic for the coming decade.

Mr. DE LA GARZA. Dr. Paarlberg, concerning what we have spoken about throughout the afternoon here of the availability of land, I wonder if the same problem would not be in other areas as it is in mine, that land is no longer accessible for food production at times due to the cost of the land.

Mr. PAARLBERG. If it is that costly, somebody is finding it useful for agricultural production. Or costly for what?

Mr. DE LA GARZA. Too costly for agriculture.

Mr. PAARLBERG. Of course, the cities will grow. We need more space for highways, airports, industrial sites and homes. That is true, and that does remove some land from cultivation. On the other hand, we are draining, irrigating, clearing, and bringing in new lands. Some land has to be transferred out of agriculture into non-agricultural uses. Some new land not now in use has to be transferred into agriculture.

Mr. MURRAY. On the longer range implications with the population growing to 6 or 7 billion by the end of this century and may or may not level off at that, what is your observation, about some of the things that happen in a country when there is not enough food?

Mr. PAARLBERG. When there is not enough food, then there is often an overthrow of governments; there is social friction; there are revolutions. There are military ventures. The leadership sometimes, in order to distract the attention of the people from the food problems, will undertake military ventures. It is a very, very disruptive thing to be short on food.

Mr. MURRAY. That is true. But what bothered me thinking about it last summer was that for the first time I think our country had a little bit of the realities of scarcity, having grown and expanded for 200 years into the politics of abundance, and we had a little bit of the politics of scarcity in food. We had a lot of bills introduced in Congress to limit and restrict exports. We did temporarily restrict our exports on soybeans and suspended parts of Public Law 480 for a while. We saw an attempt to roll back commodity prices. We saw a freeze put on one major commodity, put on by our Government, and then it kind of worked itself out, and as the abundance and blessings of America were sufficient to work us out of it again for a while.

But those kinds of things, are they what we can look forward to seeing more and more in the years ahead, not only in America but in countries not quite as blessed as America?

Mr. PAARLBERG. It is our hope, indeed, our anticipation, that the United States will rebuild its reserves of food, and the year 1973 will not be indicative of a new situation but will prove to have been an extraordinary year. In other countries, if we meet the challenge that is before us, I think that the prospect for the near term and in 10 years or so is also one that has in it a promise of improving food supplies and, therefore, at least the possibility for a more stable political and social situation.

Mr. MURRAY. I thank you.

And thank you, Mr. Chairman, for this opportunity.

Mr. DE LA GARZA. One final question. As related to AID, are you ahead of the game, or are you just keeping abreast?

Mr. MAIR. You are referring to food?

Mr. DE LA GARZA. Food and its need for the future.

Where are you now?

Mr. MAIR. We have considerable demand for food from a considerable number of countries around the world. We have tried for the last year to make deliveries to those that we thought were most severely hit. We have concentrated our assistance on the Sahel and Bangladesh and on those countries where the need was greatest.

We had hoped that, with expanded production this year, we could expand this a little more than we had last year. We were hopeful that fiscal year 1975 would expand over the amount that we had available in fiscal year 1974, and I still think that is true.

I think that we have enough of an increase in the crop, even with the bad weather in the corn and the vegetable oil growing areas which are the basic commodities for Public Law 480. We will not know until the crop is in and we see the effect of the prices and the other points that I raised in my speech.

Mr. DE LA GARZA. Then there is the possibility that you might not have any if the crop does not come?

Mr. MAIR. The first projection made to the congressional hearing was approximately \$1 billion, about the same as last year. That part of it has been approved and we are progressing for the first quarter on that basis. We have the next level of priorities that we would like to supply if supplies and funds are available.

Mr. DE LA GARZA. Economic-wise, Dr. Paarlberg, as related to the need as specified, for example, by AID, weaving into it our inflation, our budget deficit, and what do you foresee as far as those being available to provide the necessary resources to assist the other countries?

Mr. PAARLBERG. I am praying for good weather in Asia. That is the best way of summarizing it. Our own crop does not look so good as to give us the very large stock that would be needed, if there were a massive disaster in Asia or Africa, or somewhere else, apart from the budgetary and inflationary situation. So we have an awful lot riding on what the weather is like in the next couple of months.

Mr. DE LA GARZA. I have some information that we seem to be on a 20-year cycle in the United States. We are going to have a meteorologist tomorrow or the next day. Maybe he can clarify that for us.

Mr. PAARLBERG. We have talked to the meteorologists. Of course, there are different meteorologists. But the National Oceanographic and Atmospheric Agency says that it cannot confirm the existence of the 20-year cycle in the Great Plains. It may be, and it may not be.

This year, for example, the people who have said that there is a 20-year drought cycle there predicted drought, and in the northern Great Plains it was so wet they could not get the crop in.

Now, if they keep predicting drought, sometime they are going to be right. But this nice, neat 20-year cycle is not all that evident to the meteorologists, as I read them.

MR. DE LA GARZA. We appreciate very much your contribution, your being here. The committee is eternally grateful to you.

We will continue tomorrow at 10 o'clock. The subcommittee will stand in recess until that time.

[Whereupon, at 4:40 p.m., the subcommittee was recessed, to reconvene at 10 a.m., Wednesday, July 24, 1974.]

[The following additional material was submitted to the subcommittee:]

#### STATEMENT OF THE AMERICAN FARM BUREAU FEDERATION

We appreciate the opportunity to comment on the world food situation, the problem of supplying food aid to needy countries, and proposals to establish a new system of national or international reserve stocks of major farm commodities. These subjects are matters of vital concern to the farmers of the United States, who produce 25 percent of the agricultural commodities that move in international trade and whose productive efforts are basic to any solution of international food aid problems.

The world is now emerging from a temporary period of relatively tight food and fiber supplies, which was basically brought on by increasing affluence in many countries around the world, relatively short crops in 1972, and a shift in the Humboldt Current which reduced the production of fish meal. Present economic projections indicate that food supplies will return to more normal levels in the coming year—barring unforeseen developments such as unusually bad weather. A more serious problem is the long-range problem of producing and distributing enough food to meet the needs of a rapidly growing world population. In our opinion this is not likely to be a serious problem in the developed nations in the foreseeable future. It already is a serious problem in some overpopulated, less developed countries. Foreign aid can help to meet this problem on a temporary basis—especially in emergency situations—but a long-run solution will require effective measures to limit population growth in the poorer countries and substantially increase food production in these countries, or a combination of these approaches.

#### FOREIGN AID

Twenty years ago Farm Bureau developed the principles of the Agricultural Trade Development and Assistance Act of 1954 (P.L. 480). While the major thrust of P.L. 480 was trade development, international food aid was a basic part of the program. Congress passed this legislation at a time when the U.S. government owned huge surpluses of commodities. Since the government no longer owns large surpluses of farm commodities, the nature of P.L. 480 programs has undergone some changes. Currently, Title I of P.L. 480 authorizes the U.S. government to loan U.S. tax dollars to developing nations of low-interest, extended-repayment terms for the purchase of U.S. agricultural commodities. Title II, which is still operative, authorizes U.S. tax dollars for the purchase of U.S. agricultural commodities to be donated to needy nations with emphasis on emergency situations.

Current Farm Bureau policy on foreign aid is as follows:

"American foreign aid programs for less fortunate nations are worthwhile in promoting the peace and welfare of the entire world. Emergency food relief needs should have the highest priority in foreign aid programs.

"Development assistance programs can be of major importance in improving the economies of underdeveloped nations. Such programs should be based on well formulated, long range plans of recipient nations in order to insure proper utilization of aid funds.

"It is in the long term best interest of developing countries to assist them to produce agricultural commodities which are not in world surplus.

"Military aid is essential to the maintenance of world peace and is a vital part of total U.S. foreign policy. Aid should be given to encourage private en-

terprise economic systems and should not be offered where it may advance socialism or communism.

"Proposals to conduct American foreign aid programs through U.N. agencies should be rejected. We oppose granting special tariff concessions to developing countries.

"We support continuation of the Food for Peace program. Needed supplies should be purchased in the domestic market, and production of these supplies should develop in response to market prices to the maximum extent possible."

#### RESERVE STOCKS

Recent discussions of the reserve stocks issue have included three related ideas: (1) the maintenance of substantial government stocks of major farm commodities at all times, (2) higher government loan rates and target prices, and (3) the imposition of export controls whenever stocks are likely to fall below the specified levels. All three of these ideas are contrary to the objective of a market-oriented agriculture which Farm Bureau believes to be in the best interests of farmers, consumers, and taxpayers.

The applicable portions of Farm Bureau policies for 1974 are as follows:

##### *"Government Farm Programs*

"Our objective is to create a climate which will enable agriculture to operate under the market price system. Continuing use of direct commodity payments will not permit us to reach this objective. The target price concept of the 1973 Farm Act, which includes the compensatory payment approach in disguise, is unsound.

"New programs should be designed and administered to enhance market opportunities, to the end that farmers ultimately will not be dependent on government payments and will earn higher incomes in the marketplace."

##### *"CCC stocks and sales policy*

"Farmers must not be forced to compete with the Commodity Credit Corporation for markets."

##### *"Strategic reserves*

"The best food reserve for America and for the people of the world is the productive capacity of our land and the ability of the American farmer. We are safeguarding the interests of consumers through the tremendous productive capacity of American agriculture, the stocks carried by farmers and by the trade in the absence of a government reserve program, the fact that major crops are produced over wide geographic areas, and the flexibility that goes with a livestock economy.

"We oppose government-owned or controlled reserves of farm products. We vigorously oppose U.S. participation in any internationally controlled food reserves. Past experiences in international relations indicate that U.S. taxpayers would carry much of the financial burden of a system of government controlled international reserves."

##### *"International trade*

"The economic health of any nation depends on its ability to trade with its neighbors. Mutually advantageous trade also furthers understanding and respect among nations and serves as a pathway to peace. We recommend more effort toward increasing international trade on a strictly commercial basis.

"American agriculture has an important stake in a high level of mutually advantageous world trade.

"Exports represent a significant part of the total market for our agricultural production . . ."

"We encourage action at both domestic and international levels to ensure farmers the right to offer their product for sale on world markets. We oppose any proposal to limit or control exports of U.S. agricultural commodities."

Government-managed reserve stocks of farm commodities are both unnecessary and undesirable

The costs of a reserve managed by the U.S. government—either independently or as a part of an international program—almost certainly would exceed the benefits. The costs include adverse effects on farmers and higher taxes for

all taxpayers. Government-managed reserve stocks also can have adverse effects on consumers by delaying the increases in production which are needed from time to time. The historical record indicates that periods of short supplies are relatively rare in American agriculture. The costs of holding reserves for infrequent shortfalls in production are substantial. In the present period of relatively short supplies it is easy to forget the public resentment which developed against the government farm program a few years ago when carrying charges on Commodity Credit Corporation stocks amounted to over \$1 million per day.

A reserve inevitably becomes a part of the supply-demand equation, and buyers know that rules established to protect market prices are always subject to change. Thus reserves tend to depress average farm prices. Combining a reserve program with higher government support prices in an effort to offset the price-depressing effects of reserve stocks would be a step backward toward a government-managed agriculture in which the government would have to decide what is to be produced and who is to produce it.

A government-managed reserve program is not needed for the protection of our customers either here or abroad. Domestic consumers have a great deal of protection in the productivity, diversity, and flexibility of American agriculture. While we are opposed to government-managed reserve stocks, we believe needed reserves can, and should, be maintained by farmers, handlers, and processors. The existing government loan programs make an important contribution to the maintenance of farmer-owned reserve stocks whenever production exceeds current domestic consumption and exports. Farmers and the trade have demonstrated that they will maintain larger reserves if the U.S. government does not take over this function. Domestic processors and foreign buyers also can protect their needs through advance contracts. Importing countries are free to maintain their own reserves and should be encouraged to do so.

It is sometimes argued that U.S. reserves are needed to facilitate food aid to the less developed countries. Farm Bureau believes that foreign aid programs are worthwhile as a contribution to peace and the welfare of the entire world. We also believe that emergency food relief needs should have the highest priority in foreign aid programs. We do not, however, agree that such programs require the maintenance of government-managed reserve stocks. Food aid can be made available to less developed countries through purchases in the open market, either here or abroad, without adopting an approach that inevitably would lead to a government-managed agriculture. One possibility is the establishment of a fund of money to which all affluent nations could contribute and to which needy nations could petition for help. Once an application was approved the needy nation would receive a grant of money and could purchase those agricultural commodities which it desires from whoever makes the most attractive offer.

#### EXPORT CONTROLS

Export controls are contrary to the interests of farmers and the broader interests of all citizens in our balance of payments. Export markets are essential to a prosperous agriculture as our productive capacity far exceeds domestic requirements. Agricultural exports also are an important source of badly needed foreign exchange. In 1973 an agricultural trade surplus of \$9.3 billion wiped out a deficit of \$7.6 billion in nonagricultural trade and left the nation with an overall trade surplus for the first time since 1970. In order to maintain a strong position in world markets we need to convince other countries that we are a reliable source of supply. We cannot do this by turning the flow of exports on and off on the basis of fluctuations in domestic supplies or prices. The need to maintain a high level of agricultural exports is now greater than ever before due to the increased price of foreign oil. It is rather surprising to us that some people who condemn the Arabs for embargoing oil shipments to the United States see nothing wrong in proposals to deprive friendly countries of the right to bid for needed food supplies in the U.S. market. We need to recognize that we are a part of a world economy and to act accordingly. The American economy is a strong economy. Domestic handlers should be able to compete with foreign buyers on a fair basis, and domestic consumers have the purchasing power to buy food and fiber products at world prices.

## CONCLUDING COMMENTS

Farm Bureau believes in a market-oriented agriculture. Instead of trying to manage agriculture through such devices as higher support prices, larger government payments, government reserves, and various types of controls, we should recognize that the market system is working very well and that it is a more effective mechanism for the solution of economic problems than any system of government intervention. The really serious aspects of the world food situation involve overpopulation and inadequate incentives for economic development in problem countries. The United States can, and should help, the poorer nations of the world, but this should be done in ways that will not have adverse effects on our own producers. Food aid programs can perform a valuable function in emergency situations, but a long-term solution to the problem of chronic food shortages in poor countries will require effective measures to restrain population growth and to increase economic development in these countries.

[Telegram from National Corn Growers Association]

BOONE, IA, July 22, 1974.

ANITA BROWN

Secretary, House of Representatives Agriculture Committee,  
Longworth House Office Building,  
Washington, D.C.

Since it is impossible for us to have representation at your hearing on July 25th concerning the need for a national or international grain reserve, I as president of National Corn Growers Association desire to advise you of our supply of a U.S. grain reserve, basically along the line as provided in Senator Hubert Humphreys bill S. 2005, as amended by amendment number 1348. This bill protects grain producers from ruinously low price levels in years when crop amounts to more than demand and stores the excess in farmers and the Nation elevator hands in this country until prices reach approximately \$2.70 per bushel for corn. By releasing grain at this price level we protect livestock, dairy and poultry men against the wide prices swing and assure the urban consumer of adequate food supplies in of shortage. We realize that this year it will be impossible to accumulate any reserve due to advert weather conditions. But bad years are usually followed by bumper crop and we should be setting up the mechanisms within farm legislation to provide for the building of an actual reserve when crop again becomes large in terms of demand.

Food is a utility, even more so than electricity or water. If agriculture does not take the necessary steps itself to set up a grain reserve along line compatible to its thinking, we will one day find urban legislators doing it for us and we may not like what is brought into being.

We suggest that you give this important legislation your urgent attention.

Sincerely Yours,

JOHN CURRY,  
President, National Corn Growers Assn.

# WORLD POPULATION AND FOOD SUPPLY AND DEMAND SITUATION

WEDNESDAY, JULY 24, 1974

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON DEPARTMENT OPERATIONS  
OF THE COMMITTEE ON AGRICULTURE,  
*Washington, D.C.*

The subcommittee met, pursuant to notice, at 10:05 a.m., in room 1302, Longworth House Office Building, Hon. E de la Garza (chairman of the subcommittee) presiding.

Also present: Representatives Poage (chairman of the full committee) and Zwach. Hyde H. Murray, associate counsel; Steve Allen, staff consultant; L. T. Easley, press assistant; Perry Shaw, staff assistant; and Grady Smithy, congressional fellow.

Mr. DE LA GARZA. The subcommittee will be in order.

Today we continue our public hearing on the world population and food supply-and-demand situation and world food reserves. Our first witness scheduled for today is the Honorable Bill Alexander, a member of Congress from Arkansas, who has advised us that he will submit his statement for the record, and without objection we will receive it upon its submission.

[The prepared statement of the Hon. Bill Alexander follows:]

STATEMENT OF HON. BILL ALEXANDER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARKANSAS

I have been actively engaged for the past year searching for solutions to the problems facing the international economic sector of agriculture. The foremost problem is hunger. Every year, millions starve and hundreds of millions face a bleak future of undernourishment and sickness. Action to alleviate world hunger must begin immediately. But, this is not action which can be undertaken unilaterally by any country. It must be a cooperative effort of the world community.

However, the United States can become a leader in this fight on hunger. Our government's agricultural policies must be formulated to expand the production of foodstuff. The time has passed when our farmers benefit from controlling production. I urge the Congress to adopt agriculture policies which will allow the American farmer to supply food to meet this most urgent demand. This however is not alone the answer. Persistently bad growing weather coupled with the energy and fertilizer shortages limit the contribution our farmers can make.

The shortage of food is critical and the solution to the problem of actual physical shortages is unfortunately one of a long term nature. However, today many millions of starving and undernourished peoples of the world could be receiving food if only more efficient worldwide distribution processes were activated. Trade and tariff barriers must be reduced to allow a freer flow of food through international channels to the hungry. The United States must be a leader of this action. I urge the international community to re-evaluate its trade policies, and make the necessary reforms.

I also urge our Government to lend assistance to the countries where serious food shortage is present to develop internal storage and distribution measures to maximize the receipt of food by the hungry in these areas. This is a most critical problem of a short term nature, and being such, solutions can be implemented relatively quickly to relieve suffering.

But most important of all is the humanitarian aspect of hunger. We must, because of the moral fiber in this country, stamp out this most dreaded problem. World peace and stability depend as much, if not more, on the alleviation of starving people as the limitation of arms, the elimination of political dominance, and jealousy among nations. Revolution begins with empty bellies and economic chaos.

Gentlemen, I thank you for allowing me the time for this brief statement. I would like to insert additional material into the record to follow the completion of my statement. I pledge my efforts and cooperation with you and all concerned with the food crisis to be of any service necessary to eliminate hunger from the world.

[Mr. Alexander's insertions follow:]

[From the Congressional Record]

**"MORE POOR BUT LESS FOOD"**

Mr. ALEXANDER. Mr. Speaker, I would hope that Tom Wicker's article, "More Poor But Less Food," from the New York Times, June 23, 1974, would help influence my urban colleagues that we must unshackle the American rice farmer and let him produce more food for a hungry world. I commend the article for their consideration, in hopes that they will support H.R. 15263:

**MORE POOR BUT LESS FOOD**

(By Tom Wicker)

"Imagine a highway of grain, 55 feet wide and six feet deep, girdling the earth at the equator. Now imagine adding to it every year a 625-mile link (longer than Florida's Atlantic coast) in a second lane of the same width and depth. The highway is the amount of grain needed to feed the world now; the new links will be required to feed the 76 million mouths added annually to the world's population.

"That's the graphic illustration of Dr. Norman E. Borlaug, the agronomist and Nobel Laureate, who is not optimistic that the world will take necessary steps either to increase food production and availability or to hold down what he called "constrous" population growth. And as he observed in an interview at the United Nations last week, it's not a matter of doing one or the other; food production can never be sufficient if population continues to grow at 2 percent a year.

"In fact, the situation may be more bleak than Dr. Borlaug pictured it. If nothing or too little is done to increase the production and unavailability of food, and if nothing or too little is done to hold down population growth, world famine, poverty and ghastly human overcrowding seem inevitable. But if enough is done to prevent such catastrophes, it may be just as inevitable that the measures required will put an effective end to political, economic and social freedom.

What, after all, is being asked? That the rich peoples of the world voluntarily redistribute their abundance to the poor; and that the poor, primarily, restrain voluntarily the size of their families. The first demand runs against the invincible grain of human acquisitiveness. The second collides with an equally invincible human perversity, abetted by staggering ignorance.

On the first point, for instance, Kathleen Teltsch of The New York Times reported in a survey this week that it would take "radical cuts" in the per capital grain consumption of affluent nations to attain even 'bare minimum' supplies for the thirty to forty poorest countries. Are Americans likely to accept such 'radical cuts' without being forced to do so either by actual scarcity or by Government order? Will they even, as Senator Hubert Humphrey has suggested, contribute to foreign food production the three million tons of fertilizer they now spread annually on their lawns and golf courses?

"On the second point, Dr. Datta N. Pai, the director of family planning for Bombay, reported last week to a population convocation in New York that after years of intense effort in India, fifteen million couples had been sterilized and eight million were using some form of contraception—out of one hundred million couples in need of family planning. That's less than one-fourth—about the same proportion that Dr. Jae Mo Young said was using contraceptives in South Korea. Dr. Pai thought India had "not done too badly" at that rate, but his report shows what an immense problem remains.

"Whether one professes a hard or soft approach, there seems to be no acceptable or likely way to proceed. One biologist told a population convocation that foreign aid should be withheld from poor countries that had no effective population control program. Dr. Barry Commoner, the ecologist, called that 'inhumane' and proposed, instead, that the United States divert some of its abundant fertilizer as 'reparations' to developing countries, at whose expense he said the United States had developed itself. That may be the more humane course, but let Mr. Commoner tell that to the American farm industry, which made \$5 billion more in profit in 1973 than in 1972.

"Emma Rothschild pointed out in a recent article in the *New York Review of Books* that this country actually paid for its higher-priced oil imports in 1973 with increased agricultural exports, and extracted \$7 billion from developing countries through food sales to them. That does not suggest wholesale American charity to hungry nations, now or in the future—unless government imposes authoritarian economic and political policies for the unlikely purpose of being generous to the world's poor.

"Even in this rich country, inflation has caused food costs to rise faster than increases in food stamps and other assistance programs, with the net effect, as a Senate hearing on nutrition was told last week, that the American poor are hungrier and poorer than they were in 1970. Even if inflation were halted, these Americans would still need either vastly increased assistance or a broad program of income support, neither of which is the kind of program that has recently been electing politicians to office."

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DECLARATION ON FOOD AND POPULATION—A CALL TO GOVERNMENT AND PEOPLE  
FOR ACTION BY CONCERNED CITIZENS FROM MANY PARTS OF THE WORLD

No link unites the family of man more than his need for food. For food is an essential condition of life, common to all people; wherever they are, whatever they do they share alike in this need.

The stark truth is that man's ability to produce food is not keeping pace with his need. Despite efforts by governments and the international community to solve world food problems, more people are hungry today than ever before.

Hundreds of millions of the world's people are undernourished. Population growth is adding 75 to 80 million more people each year, 200,000 each day. Within the next 25 years or so our present numbers of nearly 4 billion will be nearly 7 billion. They must all be fed.

The world food situation took a sharp turn for the worse in 1972 and 1973:

1. Stocks of grain have hit an all-time low since the end of World War II. Surplus stocks formerly held in reserve have nearly been exhausted and no longer offer security against widespread hunger and starvation.

2. Food prices have reached new highs. Last year, despite a record world harvest, escalating demand nearly doubled grain prices. The increasing cost of food threatens to cause serious hardship for many people already spending most of what they have on food.

3. Less of the cheaper protein foods, which normally supplement diets, is available. The world's fish catch and per caput production of protein-rich legumes, the staple diet in many countries, have declined.

4. Food shortages have created serious social unrest in many parts of the world and are particularly severe in countries where hunger and the diseases that thrive on under-nourished bodies are prevalent. This scarcity has been aggravated by the consumption of more and more grain to produce meat, eggs, and milk.

5. Mounting fertilizer and energy shortages are reducing food production in certain areas and increasing food prices.

In this new and threatening situation, a bad monsoon in Asia (which could occur in any year), or a drought in North America (like those in the 1930's and 1950's), could mean severe malnutrition for hundreds of millions and death for many millions.

This dangerously unstable world food picture, when seen against an unprecedented population increase, has created an immediate sense of urgency. The dangers of food shortages could remain a threat for the rest of this century—even if, hopefully, bumper crops in some years create temporary surpluses and even if the trend toward reduced birth rates becomes general throughout the world.

World food production in the years ahead must rise at least 2 percent a year to keep pace with the present rate of population growth. But it must rise a good deal more if the world's people are to be provided with an adequate diet. This required annual increase in food production is considerably greater than that which occurred during recent decades—and seems to be increasingly harder to achieve each year. But unless there is this necessary and continuous increase in food production, there will be even more hunger and malnutrition and soaring food prices.

The need to seek solutions is pressing. The nature of the problem, the precarious state of world food production made critical by predicted expectations of continued population growth, calls for concerted action by the world community. There is only one cure for hunger and that is food. No palliatives or panaceas in the form of reports or resolutions can alleviate the pain of empty stomachs that must be filled. International resolutions, however high-minded, are a mockery if they do not have a tangible impact on the human condition.

The United Nations is now providing leadership on both these problems. In August the United Nations will convene the World Population Conference in Bureharest. In November it will convene the World Food Conference in Rome. These are the first occasions when governments have agreed to meet to consider these crucial questions and to consider taking action on them.

With these two conferences only a few months away, we urge governments, acting before, at and after these two global conferences, to consider realistic and purposeful measures such as the following:

1. Give high priority to programs in each country which will increase the production of grains, legumes and other staple food crops; ensure the availability of protein-rich foods, particularly to the more vulnerable population groups, expand the production of fertilizer; and improve the opportunities for small farmers to make a reasonable living. Develop a comprehensive and constructive World Food Plan for adoption at the World Food Conference.

2. Support sound population policies relevant to national needs which respect national sovereignty and the diversity of social (economic and cultural conditions); accept and assure the human right of each couple to decide for themselves that spacing and size of their families;<sup>1</sup> and recognize the corresponding responsibility of governments to provide their peoples the information and the means to exercise this right effectively.<sup>2</sup> Embody these policies in a World Population Plan of Action to be agreed upon by governments at the World Population Conference.

3. Recognize that the interdependence of the world community creates an obligation to assist in the necessary funding of food and population programs by both developing and developed countries. This calls for the elaboration and implementation of a global strategy by the United Nations and its family of agencies, including the Food and Agriculture Organization of the United Nations and the United Nations Fund for Population Activities.

4. Establish sufficient food reserves through national and international efforts to provide continuing vital insurance against food shortages.

5. Recognize that, in our finite world where resources are limited, the family of man must one day, and hopefully fairly soon, bring birth rates into reasonable balance with the lowered death rates that have been achieved. Many governments see the need to guide national policy toward this objective.

A solution to the present world food crisis must be found within the next few years. The social transformation which can lead to a reduction in the world

<sup>1</sup> United Nations Teheran Declaration of Human Rights, 1968 (para. 16)

<sup>2</sup> Resolution 1672 (LII) of the United Nations Economic and Social Council, 1969

rate of fertility, along with lowering the rate of mortality, will take decades to accomplish. But a start must be made now because the millions of people being born each year place a heavy burden on the resources available to many nations for education, health, employment and the maintenance of environmental quality. A reduction in population growth could help alleviate this burden. Effective measures toward resolving both the world food and population problems must come within a total strategy of development. Not only is social and economic development desirable in itself, but also it contributes to moderating population growth. All these measures are designed to improve the quality of life.

In this Declaration, we focus on food because it is the most critical of the pressures on the world today. It is the greatest manifestation of world poverty, which has many aspects. The absolute number of desperately poor are far greater today than ever before in history. The need to eradicate acute poverty is being recognized more than ever as a collective responsibility. It is a task which global partnership and the demands of social justice make imperative.

We repeat, food is crucial because literally tens of millions of lives are suspended in the delicate balance between world population and world food supplies. Growing populations, denied sufficient food needed for survival, resist all efforts to secure a peaceful world. With increased production and more equitable distribution of food, the future could provide a prospect of less misery and more hope for countless people now deprived of the basic necessities that are their right.

The World Food Conference represents a unique opportunity. This opportunity must not be missed. Comprehensive international agreements must be reached to assure at least minimal food supplies, with sufficient annual carry-over stocks. Disastrous breakdowns in the world food supply can thus be avoided. All nations may then rest secure in the knowledge that this, the most critical of their immediate problems, is being attacked with wisdom, vigor and unity of purpose.

In the name of humanity we call upon all governments and peoples everywhere, rich and poor, regardless of political and social systems, to act—to act together—and to act in time.

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STATEMENT BY UNITED NATIONS SECRETARY-GENERAL KURT WALDHEIM ON RECEIVING THE DECLARATION ON FOOD AND POPULATION

*Following is the text of the statement made by Secretary-General Kurt Waldheim on receiving the Declaration on Food and Population presented by a group of eminent intellectuals and scientist at a ceremony at United Nations Headquarters, April 25, 1974.*

I am grateful to be given this Declaration. It is marked by a profound concern for the improvement of the human condition. The Declaration is important of itself by virtue of the authority of the signers whose standing in all walks of life is reflected by the stature of those who have come to the United Nations today to bear witness to it.

I have recently described the times we are living in as being characterized by mass poverty, food shortages, an energy crisis, a continuing oppressive burden of military expenditure, inflation exacerbated by world monetary instability, and the prospect before us of a doubling of human numbers by the turn of the century.

The Declaration addresses itself primarily to the dramatic depletion of available food reserves and the shortfall in world food production. There is no more immediate task than that of rescuing the world from a situation which, for many, has always been precarious and is now even more hazardous. Short-term measures, while essential, must not be allowed to become palliatives, for the coming years will increase our vulnerability.

Virtually in no other areas is it more pressing than in the one to which your Declaration addresses itself: the need to assure that the men, women, and their religion, their political philosophy, their age, their social condition have children of Africa, Asia, Europe and the Americas, whatever their origin, the basic foods which are the one essential and undebatable pre-condition of a life of dignity and decency. Without an assured supply, all our other aspira-

tion for peace, for social justice, for growth and creativity, both as individuals and as nations, lose their meaning and take on a hollow ring.

I cannot but be sharply and painfully conscious of the dangers posed by the Declaration, having recently returned from the Sahel. There, the suffering provoked by a six-year drought is resulting in premature death, disease and a dreadful sense of helplessness. The tragic spectacle of dying cattle and their owners fleeing the encroaching desert induces a sense of desperation into what should be the objective analysis of the world's food situation and prospects.

It is no accident that this Declaration is presented at the United Nations. This body was established in the final phase of the most devastating war in history not merely to embody the highest aspiration of mankind, but to provide an operational vehicle for global action. The present crisis and those that we can see looming ahead can be overcome. They are indeed a serious challenge to use all our forces, our determination and ingenuity to provide a better life for future generations.

This is a year in which the international community, with some brutally abrupt reminders of what the future may hold, is facing up to the situation. At its present special session, the General Assembly is devoting its attention to finding the basis of a more equitable and workable economic system—a system which takes into account not only the needs of all nations, but also the imperative interrelationships of the several parts of the problem: poverty, the conservation and just apportionment of natural resources, the preservation of the environment, and the problems of trade and monetary system. Food and population, the two urgent issues to which your Declaration addresses itself, from an integral part of this whole.

In August, in Bucharest, for the first time Governments will hold a world population conference. Shortly afterwards, in Rome, the World Food Conference will offer Governments the opportunity to tackle the world food problem. Your call therefore for international co-operation to ensure supplies of food comes at an opportune moment. The World Food Conference will present the Member States of the United Nations with the unique opportunity to take immediate practical and urgently needed steps to redress a tragic situation which we can no longer afford to ignore.

The unprecedented growth of the world's population is compounding man's difficulties in feeding himself. The time at our disposal is very short. You point out that the world's food production has barely kept pace with population increases. Our goal is not mere survival but a life of dignity and peace with hope for each new generation to improve the conditions of life for the billions of men, women and children who will inhabit the earth in the coming decades.

Whether or not we can increase food production depends, as the Declaration states, not on a torrent of words and resolutions, but on adopting new and tangible objectives, hammering out the global strategies needed and revitalizing the machinery to achieve them. In spite of its ideological complexity and the political and other constraints that must exist in any global body, the United Nations can and will respond.

It is in this same spirit of commitment and determination that I receive this Declaration. I am confident that the international community can and will find humane solutions to the serious problems of food and population which confront mankind.

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MESSAGES TO THE SECRETARY-GENERAL IN SUPPORT OF THE DECLARATION ON FOOD AND POPULATION

*Message from His Imperial Majesty, the Shahanshah Aryamehr of Iran, to His Excellency Kurt Waldheim, the Secretary-General of the United Nations*

I have learned with pleasure of the Declaration on Food and Population signed by a group of distinguished people which will be submitted to the Secretary General of the United Nations Organization on the 25th of April, 1974.

It is my sincere hope that this Declaration will create a sense of urgency and contribute to a greater awareness among nations of the grave problems facing mankind in view of the rapid population growth on the one hand and the precarious state of the world food production on the other.

Priority must be given by governments to implementing sound population control and environmental protection policies, to devising methods of increasing food production especially that of grains, to encourage increased cooperation between developing and developed countries in order to provide aid for population control and food production programs and to making provisions for sufficient food reserves to guard against famine.

I earnestly hope that the World Population Conference and the World Food Conference organized by the United Nations and to be held in August and November, respectively, will help to promote a concerted effort on behalf of all the nations of the global to seek wise solutions to these crucial issues which will have a vital bearing on the future of mankind.

APRIL 25, 1974.

His Excellency Dr. KURT WALDHEIM,  
*Secretary-General of the United Nations, New York*

DEAR MR. SECRETARY-GENERAL: The Declaration on Food and Population presented to you today vividly portrays the connected global problems of food supply and rapid population growth.

It is a timely call by distinguished citizens of many countries for urgent attention to two central problems of human welfare. It recognizes that in this increasingly interdependent world there is no acceptable alternative to nations working together to solve global problems, of which food and population are among the most pressing. It reminds us that the individual nations and the United Nations must approach the World Population Conference and the World Food Conference with the determination to seek and agree on common approaches.

As I stated in my address to the Special Session of the General Assembly, the United States will do its part. We strongly support a global cooperative effort to increase food production and have removed all domestic restrictions on our output. We will endeavor to increase the quantity of our food aid to needy countries, give technological and material help to efforts of developing countries to expand their food output, assist in the production of more fertilizer and in its more effective use, and join other governments in a worldwide effort to rebuild food reserves.

We hope that other countries able to do so will make similar contributions and that all countries will take active measures to bring population growth and food production into better balance.

The food and population crises threaten the welfare and stability of peoples and nations. We must act together with the purpose, the mutual confidence and the determination to overcome them.

Best regards,

HENRY A. KISSINGER,  
*Secretary of State,  
United States of America.*

Mr. DE LA GARZA. Our next witness is Dr. Helmut E. Landsberg, professor and director of the graduate program of meteorology, University of Maryland, College Park, Md., and we will be very happy to have you at the witness table. Dr. Landsberg, before you begin, I would like to submit for the record a brief biography of Dr. Landsberg.

We will be very happy to hear from you at this time.  
[The biography follows:]

BIOGRAPHY OF DR. HELMUT E. LANDSBERG

Born in Frankfurt, Germany in 1906, Helmut E. Landsberg studied at the University of Frankfurt and received his Ph.D. in geophysics and meteorology there. He then joined the faculty of Pennsylvania State University where he initiated courses in meteorology and geophysics and conducted research in

the field of air pollution. He became Associate Professor at the University of Chicago in 1941. During World War II he served as meteorological consultant and operations analyst in the Air Force.

In 1954, Dr. Landsberg became Director of Climatology of the U.S. Weather Bureau, and when the Environmental Science Services Administration (now NOAA) was formed, he became the first Director of the Environmental Data Service.

In 1966, Dr. Landsberg resumed his academic role and is now Research Professor and Chairman of the Graduate Committee on Meteorology at the University of Maryland.

Dr. Landsberg is a member of the National Academy of Engineering, and a fellow of the American Academy of Arts and Sciences, the American Geophysical Union (of which he was President in 1968-1970), the American Meteorological Society, and the American Association for the Advancement of Science (Chairman, Section E, 1973). He is now serving as President of the American Institute of Medical Climatology. He has been president of the Commission for Special Applications of Meteorology and Climatology of the World Meteorological Organization since 1969.

**STATEMENT OF DR. HELMUT E. LANDSBERG, PROFESSOR AND  
DIRECTOR OF GRADUATE PROGRAM OF METEOROLOGY,  
UNIVERSITY OF MARYLAND**

DR. LANDSBERG. Thank you, Mr. Chairman.  
I have a brief statement.

I consider the problem of adequate food production in a world with still increasing population as the public issue overriding all others in the next few decades.

Food production is governed by farm technology, soils, and climate. My testimony will address itself to the component of climate. As far as farming is concerned the climatic problem resolves itself into two phases. The first deals with the suitability of general climatic conditions of a locality for a given crop, be it pasture, grain, vegetables, or fruit. The second aspect concerns weather conditions from one growing season to another. Such changes govern, even in a generally suitable climatic setting, the yield for a particular year.

It is very important to point out that the climate in a given area, or over the globe as a whole, is not a fixed entity. It fluctuates irregularly with time, and the year-to-year variations can cover a very wide range. Although these variations seem quite vagarious, they are amendable to procedures of statistical analysis.

These methods permit the assessments of the risks for successfully raising a specific crop in a particular climatic setting. It can also not be overemphasized that climate in every area occasionally includes a few calamitous events. Unfortunately, in some marginal regions such calamities occur with a frequency that causes much human suffering, and this had led to question the overall stability of the global climate.

Yet, atmospheric conditions as a whole, while wildly oscillating from year to year, have a fair amount of stability. They pendulate around averages that change only slowly. There are processes of interaction between the atmosphere and the oceans which damp out any perturbations, irrespective of the mechanisms that may produce a disturbance. There are, however, long-term trends or climatic variations, which are decades in length.

Sometimes century-long intervals are notably cooler or warmer, drier or wetter, than preceding or succeeding periods of time of

similar length. Such variations have taken place ever since the last ice age about 11,000 years ago. They can be expected to continue in the future, entirely without recourse to invoking catastrophes.

It must also be stated that any large-scale or global changes of climate, as have been experienced in historical times, are never uniform in all parts of the Earth. It may be well to insert here that there exists information on weather-related crop conditions in many parts of the world for centuries. Very reliable weather statistics are also on hand for over 100 years.

These show that deteriorations or improvements in climatic conditions have always wider swings in certain marginal areas than in other regions. Referring first to temperatures and length of growing season, these endangered locations lie in the subpolar latitudes. Because of the distribution of the continents, this becomes a main concern in the northern latitudes of Europe, Asia, and North America.

Remarkably, however, any given slow climatic trend can have radically different consequences in different countries. A temperature change of a degree or two downward in the latitudes above 40 degrees north in North America may not sound very impressive. In fact, changes of much magnitudes have taken place since instrumental weather records are available. These trends have lasted for intervals of one or more decades. But such a change completely eliminate wheat and corn production in growing districts of Canada during the deterioration. At the same time, in some areas of the United States the wheat and corn crop yields most likely would increase. The milk production in the United States would also rise.

As regards precipitation, the critical areas lie near the deserts and in the monsoonal regions of the world. These areas have very wide swings in their rainfall conditions, naturally. There, as well as in the marginal subarctic latitudes, population pressures and food demand have, over the past decades, led to great stress on land resources. Some marginal sectors have become developed and settled that had, in the past, only nomadic populations. The climatic resources of these regions simply will not support the agricultural system that has been forced on them.

The overuse can lead to local changes that are essentially man made and hard to reverse, even though climate with all its inherent deflections from season to season stays the same. Let me illustrate the unfortunate sequence of events: Pastures are heavily overgrazed; the plant roots are destroyed; the soil becomes bare; rainfall is scanty and the dry soil crumbles. Now the wind takes over; the soil erodes and, in desert-near areas, the sand becomes dominant. Even after the rains return in later years, the area stays barren, and only truly heroic measures and advanced conservation practices may restore its previous precarious plant cover.

Please note that drought is only one part of this vicious sequence. In fact, drought, even in the areas with usually adequate rainfall, is a recurrent event. The frequency of recurrence depends on the prevalent climatic regime, but no area is completely free of it.

Similarly, occasionally excessive rainfall is an irregularly recurrent part of the total climatic package. For farmers the question is how often such extremes occur. This too, turns out to be a calculable risk.

However, we are not yet in a position to predict with any reliability whether or not a particular crop season will be too dry or too wet. Such predictions are still a goal of weather research.

In this context, it is often asked if there are periodicities in rainfall. Unfortunately, this is not the case, but there are some irregular rhythms in the welter of changes from year to year. For example, in the central United States large-scale drought has occurred with intervals of about two decades. This is not a precise number that one could use for a reliable prediction, but rather a warning to expect such an event and be prepared for it.

Looking at various parts of the globe, drought is indeed rather common. Each year one or more major crop areas of the world are affected. Nor is drought, of course, the only weather hazard to crops. Late or early freezes are, in some areas, the farmer's bane of existence.

Similarly, it should not be overlooked that weather during the crop season can be detrimental to production. Excess moisture can be conducive to pest infestations and the wind will do its share in spreading these pests. Excessive heat may also reduce crop yields.

What is the inescapable conclusion from these facts?

The weather is producing areas of the world will stay highly variable and the only insurance is to have an adequate reserve on hand to compensate for the inevitable occasional crop losses.

At this point, it seems also desirable to relate the weather factor to the so-called green revolution. The new crop varieties that have been introduced in a number of countries for obtaining higher crop yields are considerably more weather sensitive than some of their predecessors. Many of these new varieties require more, and also more reliable, water supplies. This, unless irrigation water is available, may, as indicated before, not be the case in the monsoonal countries where these varieties have found most entrance.

In an ideal world, one would also hope for a system of most rational land utilization for crop production. That is to say, crops for a given area will be so selected that they are best adapted to the climatic environment of the area. This would avoid embarrassing and costly errors, such as the abortive attempt to introduce peanuts into parts of east Africa. Due regard to climate would also optimize total production. On the other hand, this would require changes in the system of world trade, storage, and transportation of agricultural products.

Let me finally aver that much climatic information, potentially useful to agriculture, is available in the meteorological archives for many parts of the world. Too little of that is being used for agricultural planning. Crop weather simulation schemes are also now available or could be readily constructed for assessment of agricultural risks with a great deal of confidence.

We cannot say the same for long-range weather forecasting or for the prediction of climatic trends. Such predictions would be highly useful for agricultural planning and for husbanding of resources, when needed, in a given crop year. Both of these problems should receive a very high priority in future research plans for agroclimatic purposes.

This, Mr. Chairman, ends my formal statement, and with your permission I would like to show you a few slides that might illustrate some of the points that I have made in the statement.

Mr. DE LA GARZA. Thank you very much.

If you would excuse me for one second, Doctor, I would like to inform you that the chairman of the full committee, Chairman Poage, is with us, and also that our committee is honored to have as a guest Dr. Lander, who is a member of the Parliament from Austria.

Dr. Lander, we are very happy to have you here. We welcome you.

You may proceed, Dr. Landsberg.

Dr. LANDSBERG. I have here a slide that shows you a rather complex system analysis of agriculture, and you have the blue on the lower part where weather plays a role—radiation, temperature, precipitation, evaporation, wind, the problem of water storage, and you have, further down, irrigation and frost and wind and radiation protection that can be provided by the farmer. In other words, there are some controls. We have the phylogeny of the plant, which is, to some extent, genetically controllable and is also influenced by the weather in each year.

Think of the cherry blossoms here in Washington as a good example of the unpredictability and the agonies of the Mayor to have it at the right time.

And then you have here the other items that deal with photosynthesis and transpiration. You see here a whole system of land use and agriculture that you have a weather factor, that is No. 1.

I am sorry; this particular projector is a little balky. So I have to change these slides by hand.

To show you the vagarioussness, a series of temperature records that go back to pre-Revolutionary days; 1731, I think, is the earliest one that we found in the Eastern parts of the United States. This represents the temperature change from year to year in the eastern seaboard, and you can see these black dots in there. They show every decade, every 10-year average, and you can see that the individual years are much more vagarious than these means. And I have a similar slide that shows that for the rainfall in the same area. Here you can see that the rainfall, too, is very, very vagarious.

These things, I believe, indicate to you that we cannot rely on weather. Here is something that, of course, leads to this question of drought. This is what the soil looks like in a drought area. This happens to be from the Sahel of which you have had so much publicity.

Just in comparison, a slide that was taken in Oklahoma from 30 or 40 years ago in the 1930's, when we had the drought there, and I want to tell you this can happen again.

And here, I want to show you quickly the arable lands of the world, the major production areas. You can see it is not very much in the total global areas, and a lot of the land is simply non-productive or only marginally productive.

Here, in comparison, is a slide that shows the weather we have had in the last 25 years or so, drought, at one time or another, in some areas two or three times in that interval.

So, again, this is not an unusual event. And, finally, just to fortify this in your mind, here is a slide that shows the variability of rain-

fall, the highest in the red areas and then the yellow areas, the brown areas, and only the green areas can count on a reasonably reliable rainfall. That does not preclude that maybe once in 20 or 30 years they get a drought, too.

Thank you, Mr. Chairman. That ends my statement. I am glad to answer any questions.

Mr. DE LA GARZA. Thank you, Doctor, for a very informative and interesting statement.

Before we ask any questions, I do have one question, because this is so important to the study of this committee and it may not be fair to ask it of you, sir. But the conclusions that you reached, are these readily acceptable in your profession, or is there a controversy?

Dr. LANDSBERG. Nothing is in science without a certain amount of controversy. Some people will question these statements. I believe what I have stated here is the consensus of the conservative, middle ground part of the community. We have some people who think—and I will not state it specifically—that we are in a major climatic change. There are some people who believe that we might be headed for another ice age. That is their privilege. Their evidence is not very convincing.

Besides, I think it would take several hundred years before such an ice age would come about, and I must say that I am too old to wait for it and I believe that we are worried about what happens in the next 5 or 10 years. In that interval of time, we have to realize that nothing will happen. That is drastically different from what we have experienced in the last 100 years or so.

Mr. DE LA GARZA. I appreciate that very much, and I wanted to have that because some of the questions that will be directed to you will be of great importance, hopefully, in some of the policy-making decisions of the Congress and of our Government.

Does the Chairman have any questions?

The CHAIRMAN. Mr. Chairman, I appreciate that, to give me the opportunity to participate. I have not been able to follow all the details in your hearing. I did not hear the statement. I was intrigued with the discussion of our climatic problems.

I am interested in what your feeling is, Doctor, about the present drought in Africa. Is that a climatic change or is it primarily the result of overgrazing, overuse of the lands in the sub-Sahara region? And what would you have to say about this overuse as it affects, at least, the apparent influence that it has on climate? I do not know if it has any, but it certainly does have an influence on the use of the lands. I think that it is a historic fact that the fertile crescent in the Middle East at one time supported a much greater vegetation than it does today and the lands having been overgrazed, the goats being one of the factors.

What is your view on the influence that man can have on the productivity of the lands that might appear to be climatic changes.

Dr. LANDSBERG. Mr. Chairman, I think that man's influence is quite great locally. It is not important on a global scale. I think that you have pointed out correctly what has happened. Overgrazing—I think that I stated that in my statement.

The CHAIRMAN. I did not hear all of your statement.

Dr. LANDSBERG. Also, once that you denude the soil and it blows away, it is very hard to restore. It has been done in some countries, as I say, with lots of money, heroic measures of conservation. We had to do it in the prairies after the great drought of the 1930's.

You people up here may know much more about how much that cost the country in really doing it and how much we had to invest in research and development to do that.

There are several places in the world where this has happened. There are similar things that happened with deforestation, where, after the forest has been cut, you cannot replant it. It simply will not grow any more without some extraordinary efforts. And man has done a great deal of damage to the soil. In fact, each year we find that by the farming methods that are being used in certain parts of the world, certain soil becomes unproductive for a long period of time.

The Sahel is a particularly interesting story. While we do not have the weather records that we have, fortunately, for the United States and for Europe, we have about 90 years of rainfall data in the area of Senegal, and an analysis of this data shows that there has been no one-sided trend and that there has been in the coastal areas of Senegal drought at fairly frequent intervals. The population pressure never was as high as it is now. In parts, the population there had a pattern. When it got too dry they migrated; they were nomads. Now the Government has settled them and they overused the soil.

During the good years, when they had plenty of rain in the 1950's they put much more cattle on these pastures than they should have. Of course these animals were there and when the drought started, they began to eat up anything that was in sight, and eventually, they could not be fed and died. There was no reserve on which they could be fed, and no transportation, as might have happened in this country.

I believe that it is strictly overuse, Mr. Chairman.

The CHAIRMAN. I was around during the period of the Great Depression and the great dust storms of the 1930's. I was a member of the Texas Legislature at that time. I remember in the capitol building in Texas we had to wear a mask over our face to keep out the dust, in order to breathe in the building. We know that we have a lot of soil in Oklahoma and Kansas. We think we have stabilized it to a large degree.

What is your judgment as to the influence of the Soil Conservation Service and its activities in stabilizing soil on the South plains? Have we made any appreciable contribution?

Dr. LANDSBERG. I think that the Soil Conservation Service has done a magnificent job. I think the Great Plains would not look like they do now if these measures had not been introduced, in many things. It not only goes to contour plowing, the types of crops that are being grown, and a large number of measures in order to stabilize that and improve them. I do not think it is all done yet, but certainly, it has been a great improvement over what was done in the 1930's.

The CHAIRMAN. I share that view as a laymen. Just looking at it I am convinced that we have done a great deal of good, too. I do not claim any scientific background for that, but the fact of the

matter is I have seen it just about as dry since 1930 as it was in 1930. In fact, right now much of that area has suffered some droughts which, in the 1930's, would have resulted in blowing. I do not know of any serious blowing that has taken place this year, but there are a great many people who are now criticizing the Soil Conservation Service, a great many people who are criticizing our conservation programs, which have resulted in putting sod on much of that land. A great many people are now saying that we are wasting money with our efforts to get farmers to keep a grass cover on much of that pastureland, that land with strips of wind-discouraging crops.

I just wonder if you join with that group who feels that we ought to abandon our present soil conservation activities in that area.

Dr. LANDSBERG. Mr. Chairman, I am not an agronomist so I cannot really give you a fully authoritative answer to that; but as a meteorologist, and knowing the vagaries of the weather, I would fully support the conservation measures. I think they are needed and I have seen too many things in other parts of the world which simply show that if these practices are not adopted, you will reduce a valuable resource.

The CHAIRMAN. One of the most serious attacks is being made now, is being made by well-meaning people, and they may be right.

They think that there is no purpose in us carrying on our upstream watershed efforts to maintain water as close to the point where it falls as possible. They feel that it might better run downstream and perpetuate marshes further downstream where they correctly point out it gives a kind of animal life that is quite different than that that is found on the plains or the semiplains or the Savannah areas of this or any other country, that it is more important to move that water down to those swamps than it is to keep the water closer to the plain where it falls.

Of course, our whole upstream watershed development program is based upon the assumption that it is desirable to keep water as close to the point where it falls as possible; put it in the ground if you can. If you cannot get it to go into the ground, stop it with the tension dams and keep your streams flowing the year around, if possible.

We do not achieve all of those objectives, but I think we have made great progress in it. I know that we have to make some choice between objectives; we cannot get everything that we want. It is a question of which are the more valuable alternatives.

I wonder if you are in any position to express any judgment on that?

Dr. LANDSBERG. Again, I am not an expert in conservation matters, and all I can say is that I would put it this way, perhaps, that you are worrying about food now. Ten years from now you or your successors will begin to worry about water because we are going to be in a serious water shortage in many parts of the world, including the United States in about the middle 1980's.

Here again, it is population pressure. You have to make your choices, whether you want more children or whether you want more alligators.

The CHAIRMAN. I want to emphasize the importance of some of the maps that were shown here, that show such a small portion of this

earth's surface as presently available for productive agriculture, and that there is such a large portion of the earth's surface that is under severe limitations because of a lack of water.

Most of us simply do not realize that a very small percentage of the surface of this earth receives enough water—dependable rainfall, I should say—to assure crops year after year.

By far the largest part, even of our aeratable lands, do not receive enough water to provide for their maximum productivity.

Thank you very much, Mr. Chairman, for the opportunity to visit with the subcommittee, and I want to express my appreciation of the work you are doing, because I think it is of tremendous importance to go into these matters.

Mr. DE LA GARZA. Thank you, Mr. Chairman.

Dr. Landsberg, I wonder if you would be kind enough to allow the other witnesses to testify, or do you have a time problem?

Dr. LANDSBERG. I do have an engagement in about an hour.

Mr. DE LA GARZA. Perhaps it might be well to allow you to finish and then we will have the other witnesses and have them at the end of all the testimony for questioning.

Do you have any questions of Dr. Landsberg?

Mr. SEBELIUS. Thank you, Mr. Chairman.

I just have a couple. I went through the Dust Bowls days in the plains of western Kansas and it would appear that elements of drought are coming out there again in a creeping manner. We felt it in west Texas, eastern New Mexico, Kansas.

Do you have anything to confirm that we may be in the same cycle that is working its way up the center again?

Dr. LANDSBERG. As I told you in my testimony, I was a little guarded that about every two decades, about every 20 years—it could be 18 or 22—we have had, as long as we have any historical records, we have had these droughts. This is shaping up exactly like some of the earlier ones. I am not predicting it. I am not saying that it will continue the way it is. But it is certainly an ominous sign.

Mr. SEBELIUS. Since the 1930's we have had a large increase in farm ponds and we do now have many more Federal reservoirs out there, and there is irrigation taking place by reason of wells, and the common comment out there is that these are having an effect on the weather; we get more rain than we did; is it by transpiration and so forth, or is that a worry we feel because we have been going through a good cycle?

Dr. LANDSBERG. There is no definite proof that there is any increase due to irrigation. It might be locally that there are some additional showers, but on the large scale, as far as we can tell, this had had no influence.

Obviously, any water that you can and make available, either at a later time or when it falls, is useful in agricultural programs.

Mr. SEBELIUS. Thank you, Doctor.

One final question. On the subject of weather management or modification, the Bureau of Reclamation, in connection with the State of Kansas and other States are conducting water modification studies out there at the present time.

I would like for you to comment on that.

Dr. LANDSBERG. Here again, this is not my area of competency. All I can say is what I read in the scientific literature.

There are apparently some types of clouds, when present—and I will say “when present”—that can be suitably modified. But when you have a drought, you have sunshine from daybreak to night and there is no cloud to modify it.

Mr. SEBELIUS. I know they are not there. We just had 6 weeks with a temperature of at 100° out in my section of the country, and without the clouds there is nothing you can modify.

Dr. LANDSBERG. That is correct.

Mr. DE LA GARZA. Mr. Mayne.

Mr. MAYNE. I have no questions, Mr. Chairman.

Mr. DE LA GARZA. Mr. Zwach.

Mr. ZWACH. I have no questions.

Mr. DE LA GARZA. I thank you very much, Dr. Landsberg. I wonder if I could impose on you.

I have a list of countries which we extracted from a Time magazine article on May 13, which describes the famine countries, the near-famine countries, the potential famine countries, and chronic food shortage countries.

Would it be an imposition if we allowed you to have this list and if you would at least for the famine and near-famine, give us for the record an indication from your charts as to what the prospects are for the next two decades?

Dr. LANDSBERG. As long as you do not ask me to make a forecast, Mr. Chairman, I would be glad to give you the rainfall probabilities for these countries. In other words, there are certain statistical measures that would indicate how reliable the rainfall in those countries is and how many years of drought it can expect out of 10 or 20 years.

I would be glad to do that, yes, sir.

Mr. DE LA GARZA. From your statistical data. Of course, we would not ask you to forecast because then we would get you in trouble.

Often, they say the wisdom of Solomon, after he solved the problem with the baby, and what is never mentioned is that he did not get reelected.

Thank you very much for being with us.

[The information requested follows:]

UNIVERSITY OF MARYLAND,  
GRADUATE PROGRAM IN METEOROLOGY,  
College Park, July 26, 1974.

Hon. E. DE LA GARZA,

*Chairman, Department Operations Subcommittee, Committee on Agriculture,  
U.S. House of Representatives, Longworth House Office Building, Wash-  
ington, D.C.*

DEAR MR. CHAIRMAN: In response to your request at the recent hearings World Food Outlook I am giving you in the attachment an assessment of drought risk in various countries of the so-called hunger belt of the world.

As you may note, some countries are so varied in their climatic conditions that they fall into several risk categories. For some others the data base is too scanty even for such a cursory qualitative assessment.

One can, of course, assign precise statistical risks for all rainfall stations in a given area that have sufficient length of record. This would, however, be a very time-consuming task that cannot be undertaken in a hurry.

I trust the information will be useful to you and your Committee.

Sincerely yours,

H. E. LANDSBERG,  
Professor and Director.

Enclosure :

*Very high risk of drought*

Mauretania, Saudi Arabia, Niger (most parts).

*High risk of drought*

Iraq, Algiers, Mali (most parts), Iran.

*Moderate risk of drought*

Senegal, Bolivia, Ethiopia, Cameroon, Nigeria.

*Relatively low risk of drought*

Bangladesh, Zaire, C. African Republic, Indonesia, Philippines.

The following countries have a very heterogenous risk of drought in various sections :

India from high to low risk, Angola from very high to low risk, Kenya-Tanzania from moderate to low risk.

Mr. DE LA GARZA. Our next witness is Dr. Carl Taylor, chairman of the Department of International Health, Johns Hopkins University.

We would be very happy to hear from you at this time, Doctor.

**STATEMENT OF DR. CARL TAYLOR, CHAIRMAN, DEPARTMENT OF INTERNATIONAL HEALTH, JOHNS HOPKINS UNIVERSITY**

Dr. TAYLOR. Thank you, Mr. Chairman.

I would like to comment in starting that I am also chairman of an organization that is called the National Council for International Health. It is a relatively new organization that is trying to bring together U.S. professional expertise in international health. This Council is sponsored by the ten major professional associations including the AMA, NMA, AAMC, AHA, APHA, Nurses, dentist, et cetera. We also have representation from major U.S. Government agencies, foundations, industries, and the several hundred voluntary groups working overseas in health related activities. By way of personal background, I might also mention that in addition to having spent much of my professional career in faculty appointments at Harvard and Johns Hopkins, I have spent approximately half of my life overseas including two terms as a medical missionary in North India.

The points that I would like to make in my comments here are as follows:

First, that considerable progress has been made in understanding the interrelationships of health, nutrition, and population. Overseas experience requires major changes in traditional approaches and assumptions.

Secondly, the world can expect more rather than less disasters with associated malnutrition. The world food crisis will not disappear spontaneously or soon.

The third point is recent field projects provide a basis for hope but solutions will most likely come from the hard, slow process of developing service at village levels and not from simple mass distribution of food.

Finally, we can look forward to the prospect of ethical crisis as a result of international and intranational callousness to human need.

The first area that I would like to cover is in relationship to the whole business of health and nutrition and the relationships between them.

Many years of laboratory and clinical research have provided broad understanding of the basic principles of nutrition. We know a great deal about specific nutrients and body requirements. The concern is affluent countries has shifted to overnutrition. We have let ourselves be lulled into a feeling that the world's problems of undernutrition will disappear spontaneously. The fact is that millions of children and their mothers around the world who still suffer from malnutrition continue to be for many years a great challenge to medical science and to the human conscience.

My research has centered around nutrition and infections. Perhaps the greatest cause of death, disability and retarded development around the world today is a synergism between malnutrition and common infections. It is well known that high mortality is most concentrated in children. Many countries still have the sad prospect that about a third and sometimes a half of all children die before they reach 5 years of age. A large proportion of these die because the nutritional needs of the child are greatest at the time they are first exposed to numerous infections that occur in an unsanitary environment.

The typical sequence is a descending spiral. Poor weaning practices reduce nutritional reserves at 4 to 6 months of age. A sudden bout of diarrhea, a skin infection or measles causes sharp deterioration in nutritional status. This, in turn, lowers resistance to subsequent infections. Frank malnutrition develops and each new infection becomes progressively more serious. Malnutrition reduces resistance to infection by producing dramatic deterioration of the very important cell mediated immunity in addition to the traditional antibody effects. Similarly, much evidence now shows that infections precipitate malnutrition through: reduced food intake, increased excretion of food, specific breakdown of proteins, and dangerous cultural taboos which lead mothers to stop feeding children when they have a fever or diarrhea.

The whole additional area of information that has developed a great deal in the last few years is relating to the relationship between nutritional status and growth and development. The potential retardation of growth and development because of malnutrition has even more serious implications for national development than high mortality or morbidity. It is obvious that poorly nourished individuals have low productivity because they are not strong enough to work hard. This, of course, is very clearly evident in a number of studies that have been done now on plantations where they have been able to show the effects of increasing the food available to the workers and the increased productivity that occurs. More significant from the overall development in long-term development point of view are the recent findings on the way that malnutrition affects the physical and mental development over the total lifetime of the individual. Prenatally and during infancy, the child seems susceptible

to retardation due to malnutrition. It is not clear as yet how much of the brain damage that has been demonstrated and it is clearly shown in intelligence and other tests. It is not clear how much of this is due to biological facts which are related to findings such as the decrease in the number of brain cells in animal studies, and on the other hand, how much of this is due to the lack of stimulation that an apathetic baby receives during important stages in growth.

A third area that is of considerable interest in which there has been a certain amount of advance in our knowledge is the area of nutrition and population growth. For the World Population Congress in Bucharest this month, some of my colleagues and I have prepared a UN/WHO background paper dealing with interactions between health, population and nutrition. There is abundant evidence to support a two-way interaction. Family planning is one of our most important measures for improving health and nutrition. In fact, around the world high parity and short birth intervals are associated with high mortality and morbidity and population growth interferes with health or nutrition programs.

The reverse interaction also seems important. Better health and nutrition can, in the long run, be important in reducing the rate of population growth. Birth rates and death rates both have to decline and the objective is to have a minimal lag between them. We have been conducting intensive field research on the child survival hypothesis in North India and other countries and we are beginning to put together some solid evidence on the common sense assumption that parents will not stop having children until they have assurance that those they already have are going to survive. The basic conclusion is that while maintaining a high level of international support for population programs, we should also increase our support for health and nutrition.

And I would like to comment here that these areas in the A.I.D. programs have not been supported extensively in the past ten years or so.

Now, let me turn to the next heading here, which is "what are the prospects?"

First, the harsh reality is that the world must recognize that malnutrition will not disappear easily or quickly. Nutritional disasters will increase as the world food crisis becomes more evident. An underlying problem is that population growth is responsible for many millions of people living in places and circumstances that are not optimum for human habitation. We have several research projects in Bangladesh at the present time, in the Bangladesh delta, where we are working in an integrated program for health population and nutrition. It is very evident to see this process, the newly deposited silt constantly creates islands. Normally, no one would live on these islands that they call the "chore" because they are under water much of the year, and in the center of the cyclone belt. Population pressure has caused massive settlement on these islands even though they know they will have to move out regularly and are subject to floods and cyclones. Similarly, the deforestation of many mountain ranges around the world, especially the Himalayas, produces massive floods, as evidenced by Pakistan last year.

The nutritional supply and demand balance is extremely complex. Demand is influenced both by population growth and by increasing affluence, both in the United States and increasing affluence in those countries that are least developed in terms of the pattern of eating of those people who do have money. As with most things people want, it will be very difficult to reduce demand. But it will also be increasingly difficult to increase supply in the limited time we have. Added to the evident problems of lack of space and water in the world, we now have the energy shortage. In India, during the past year there was a short fall of perhaps a million tons of food due to the lack of fuel for irrigation pumps. Next year the lack of fertilizer may cause a 10 million ton deficit. We hear suggestions such as that Americans, whether they should continue to use fertilizer for their lawns as lavishly as they do. But the basic problem, obviously, is that we have to get some way of increasing the fertilizer and the availability of productive elements of the food to be grown near to where the people are that need the food.

My next point deals with the whole area of field studies. Available food supplies from exporting nations are likely to go to countries who can pay. Because of the likelihood of increasing nutritional disasters, short-term food distribution programs will continue to be necessary.

I think that this will probably consume all of the food that we are going to be able to mobilize from any resources that we have in this country, just to meet these disaster situations that will be occurring increasingly because of authorization pressure. We will need to be more judicious in the previous pattern of mass shipments of food to chronically deficient areas. To develop the ability of the poor to feed themselves requires local effort and attention to mechanisms for appropriate distribution.

Just as serious as the problem of getting enough food is the use that is made of whatever food is available. A tremendous loss occurs because of infections. Along with this I did not mention the very great importance of the parasites in the intestines and what that does to the food intake.

Also serious is improper food use, especially as related to weaning practices. Our field studies have concentrated on improving mother care and the potentials of auxiliary based service programs reaching into village homes. At Narangwal Rural Health Research Centre in Ludhiana District of Punjab, India, we have conducted field research for 14 years. This very productive work was closed down 2 months ago because of continuing political ramifications of disagreements between United States and India. Two of our field studies were on "The Interactions of Malnutrition and Infections in Weaning Age Children" and on "The interactions of Health and Family Planning."

In the former study we measured, over a period of years, the improvements in child health in villages which had nutrition programs and infection control in comparison with control villages. The greatest improvements were in synergistic programs where both infection control and nutrition were provided together. We showed that the average weight of all children in the study villages was increased by 1 kgm.; that the average mortality was reduced by half; and that significant benefits were achieved in morbidity and other

parameters. As far as we know, this is the first time that measured changes of this magnitude have been achieved in controlled studies of whole village populations. The important lesson is that neither an intensive nutrition program by itself nor infection control by itself is as good as a comprehensive program working directly with village mothers.

In our population project similarly we studied groups of villages receiving auxiliary based services of family planning only as compared with various combinations of maternal and child health services. With any of the intensive programs immediate acceptance of family planning by almost 30 percent of eligible couples was achieved within a period of a couple of years. However, in integrated programs we were able to get continuing family planning utilization by half of the village women with birth rates dropping in four years to 28 per thousand population.

This work resulted in a new pattern for India of rural health services using auxiliaries to provide village level care. This pattern has now been built into the fifth 5-year plan of the Indian Government. The cost is well within the economic potential of less developed countries but foreign assistance can greatly accelerate the process. An integrated service package combining nutrition, maternal and child health care and family planning, can be an entering wedge in the whole process of socio-economic development.

I would like to close with a brief consideration of the ethical issues that are involved in thinking about some of the problems that

Over the past year, I have experienced growing concern about we are facing in the present situation.

the apparent growth of callousness to human need around the world. Just as a callous develops on the palm from repeated irritation, both decision makers and the general public seem to be responding to the constant irritation of new about world crises by developing a protective shell of rejection. There are so many demands for assistance, and they will undoubtedly increase, that we must guard against the human tendency to close off our willingness to help. The same phenomenon is occurring within the developing countries that are experiencing the most acute problems. The difficulty of stimulating attention to the seriousness of the Sahel families has been publicized. Ethiopia's present political crisis is partly due to evidences of callousness. A senior official of a Central African country dismissed the whole problem as being exaggerated by foreigners and said that the victims were only a few nomads who had irrationally expanded their numbers and cattle. Having lived through the Bihar famines in India during the mid 1960's, I have been struck with the massively different response to last year's famines and droughts in West India. Most people did not even know that they were occurring, and they were very close in their security to the Bihar situation.

This was largely due to the population within India. They developed a deliberate policy in not encouraging international publicity because of the feeling that they must begin to accept the consequences of trying to become self-sufficient in their own food production.

One of our most difficult tasks will be to learn how to maintain sensitivity to human needs while still being realistic about priorities:

for food distribution. These issues are fundamentally ethical and our response must be moral.

Mr. DE LA GARZA. Thank you very much, Doctor. Would you be good enough to let the other witnesses testify and then be available for questions?

Dr. TAYLOR. Yes, sir.

Mr. DE LA GARZA. Our next witness will be Sister Margaret Hohman, representing NETWORK.

We would be very happy to hear from you at this time, Sister.

**STATEMENT OF SISTER MARGARET HOHMAN, NETWORK,  
WASHINGTON, D.C.**

Sister HOHMAN. My name is Sister Margaret Hohman. I am a member of the staff of NETWORK, a religious lobby for social justice.

I want to thank you, Mr. Chairman, for affording me the opportunity to testify before the Department Operations Subcommittee of the Committee on Agriculture, on the topic of the global food crisis.

I would like to begin with a quotation used by the Panel on Nutrition and Special Groups at the June 1974 hearings before the Senate Select Committee on Nutrition and Human Needs:

And so there is no news to report from the poverty front. There is only the compulsion to write something about it, a compulsion that grows out of a restless feeling that to have visited this terrain and then turned away without having said or written anything would be a most grievous act of discourtesy to those who linger there. (With apologies to A. N. Rosenthal.)

It is a sense that many of us share: that on hunger it has all been said, and said better before, but while Americans remain hungry, we cannot remain silent.<sup>1</sup>

I, too, am concerned that Americans remain hungry, but I would like to direct my remarks today to the global hunger crisis.

Is there a global food crisis?: There have been varied reactions to the claims that such a crisis exists. While some U.S. Agriculture and State Department officials have described this as a temporary and manageable event, Lester Brown of the Overseas Development Council has emphasized, I think correctly, the urgency with which we should address ourselves to the current situation and the imperative need to plan with a long-range view:

A poor crop in any major producing region of the world next—Asia, the Soviet Union, North America—could result in a degree of economic instability in world food prices and a degree of political competition for control of available supplies unlike any that we've ever experienced. A doubling of the world wheat and rice prices is not a disaster for myself. But for the better part of a billion people in the world whose incomes average less than \$100 per year and who are already spending 80 percent of their income for food, it is impossible to offset a doubling in the price of wheat or rice with increased food expenditures. They must tighten their belts. But for many there are no notches left. Any further tightening pushes a subsistence level of food consumption below subsistence. The result is increasing malnutrition and, for many, death.<sup>2</sup>

<sup>1</sup> National Nutrition Policy Study, Report and Recommendation—VIII. Prepared by Panel on Nutrition and Special Groups for the Senate Select Committee on Nutrition and Human Needs, June 1974, p. 1.

<sup>2</sup> *Foreign Policy*, No. 14 (spring, 1974), p. 33.

Sister Loreta Jordan, S.N.D., a sister-missionary, recently returned from 5 years in northeast Brazil, described for me conditions in a 20-village area with a population of over 7 million:

I saw, unchanging day after day, whole families "surviving" on a single meal—a carbohydrate meal—designed only to fill the stomach. Infrequently, eggs and vegetables supplemented this rice and farina. This subsistence diet is singularly lacking in protein. As a result of this malnutrition, I saw babies chronically ill with fever or cold, and children often fainting in school. I saw widespread mental retardation and adults looking 10 to 20 years older than their real age, struggling to produce this meager crop of rice and farina. I saw year after year, sickness and hunger as a way of life.<sup>3</sup>

There are signs that the food situation is receiving higher priority in some official circles. We hope Mr. Kissinger, for example, is serious in his promise of support of the World Food Conference to be held in Rome in November and we are encouraged by the attention congressional committees like the Senate Select Committee on Nutrition and Human Needs and this committee are giving to this problem.

We are also encouraged by the concern expressed by churches and by many religious organizations throughout the country. Their participation in educating Americans about the situation and their courage in calling us to appropriate responses to this crisis, like changes in our eating habits, should prove challenging.

#### CRITERIA FOR DECISIONMAKING

Many factors, understandably, must be considered in reaching public-policy decisions, and it is no doubt difficult to keep a balanced perspective in complex issues. However, purely political or economic considerations often seem to receive much greater weight than they deserve. The recent allocation of Public Law 480, Food for Peace, funds is a case in point. Last fiscal year, \$268.9 million went to South Vietnam with a population of 19 million, of which an estimated 2,300,000 were in need of food; \$182.6 million went to 8 million Cambodians; \$55 million to 25 million in the Sahel; and \$3.4 million to the 26 million Ethiopians, where famine conditions raged.<sup>4</sup> Administration officials have admitted that most of the local currency obtained by sale of the food in South Vietnam and Cambodia went to purchase weapons and supplies to continue the war. There is no way to avoid the conclusion that U.S. political considerations, and not actual hunger, brought about that kind of unbalanced distribution.

Another such example is cited by Stephen Rosenfeld of the Washington Post editorial staff, who reported that:

Three days before President Allende of Chile was overthrown and killed last fall, his government said that the United States had refused to sell it, for cash, vitally needed supplies of wheat, because of a "political decision of the White House," less than a month after the coup, the U.S. approved a credit sale of wheat to the new Chilean Government in the amount eight times the total commodity credit offered to Chile in the Allende years.<sup>5</sup>

<sup>3</sup> Personal letter, July 21, 1974.

<sup>4</sup> Figures supplied by Mr. Delaplaine, U.S. Department of Agriculture, Public Law 480 section of the Foreign Agriculture Service.

<sup>5</sup> *Foreign Policy*, *op. cit.*, p. 22.

U.S. economic interests clearly dictated last June's abrupt unilateral imposition of export restrictions on soybeans and feedstuffs. This attempt to fight food price inflation here in the United States was to be accomplished at the cost of denying food to other nations, all of which have less food than we do.

The same kind of shortsighted, self-interested economic considerations seem to prompt Secretary of Agriculture Butz to argue against the creation of a desperately needed world food reserve because he fears this might depress prices farmers will be paid for their crops. Consideration should of course be given to small farmers in the U.S., as elsewhere, and undoubtedly some programs should be devised to bolster their struggle to maintain an adequate income, but there is much less evidence to recommend such concern for the big companies and conglomerates.

#### SOCIAL JUSTICE PERSPECTIVE PRIMARY IN DECISIONMAKING

To make social justice primary in decisionmaking, rather than economic or political considerations, is not only, I believe, the correct approach, but in the long run will bring about many objectives that are in the self-interest of the United States.

We are moving into an era when struggles between nations will be economic rather than military. It is important to head off such economic warfare by working for the greatest global security and stability possible as regards availability of food. Moreover, we need many of the raw materials and strategic minerals available from Third World countries. We would like to market our products there. It is, therefore, in the best interests of the United States to have a more open world trading system. But this will not be possible unless we help to build an atmosphere of international cooperation rather than conflict and competition by a generous, just policy with regard to food production.

Senator Humphrey, in a speech before the Rensselaer meeting on the world food and energy crisis at the United Nations this May, declared:

And today, as before, the American response to these global problems must draw upon what is best in our people. We must recognize the interdependence of our security with the well-being of all mankind. And the progress of Americans can flow from the progress of others as it has with the impressive postwar improvements in Europe.

On the other hand, if the opportunity for economic progress is denied one-fourth of the human race, no institutional structure, no concept of world order, no 'structure of peace,' can long survive.<sup>6</sup>

#### THE SHAPE OF A JUST FOOD POLICY

Social planning by governments, while essential, must also be sensitively accomplished. Government intervention in the world economy should be done to prop up the weak and rein in the strong. U.S. leadership in working for a fairer distribution of the world's resources is needed and such policies should be given a high priority in our efforts at cooperation with the other developed nations.

<sup>6</sup> Congressional Record, vol. 120, May 9, 1974, pp. S7681-3.

The following suggestions are not exhaustive or novel. I choose them to illustrate what I believe is the exercise of a social-justice perspective in the global food crisis.

First, Senator Humphrey has suggested four points of a world food action program which involves important initiatives for the United States on four broad fronts: expanded food aid, a program of food reserves, an improved system of fertilizer distribution and production, and an increased emphasis on agricultural development.<sup>8</sup> These suggestions should take in long-range as well as short-range objectives.

Great care should be taken to provide agricultural aid which fits the situation in the developing countries. For example, technology which is capital intensive rather than labor intensive is unsuited for countries rich in people and poor in capital. Aid should be geared to the small farmer. Lester Brown has pointed out that:

There is growing evidence that in many developing countries small farmers—provided they have been given effective access to needed agricultural inputs, fertilizer, water supply, pesticides, as well as health and educational services—engage in more intensive cultivation and generally average considerably higher yields per acre than do large farmers. By improving the access of the poorest majority to both income and services, this approach to rural development also greatly increases the motivation for limiting family size.<sup>9</sup>

Concentrating efforts on expanding food production in the poor countries could reduce upward pressure on world food prices, create additional employment in countries where continuously rising unemployment poses a serious threat to political stability, and raise income and improve nutrition for the poorest portion of humanity—the people living in the rural area of developing countries.<sup>10</sup>

Senator Humphrey, in emphasizing the need to increase production of fertilizer—\$1 spent on fertilizer now is worth \$5 worth of food next winter—suggestion location of such plants in the Mideast oil-producing countries which are blessed with natural gas, a very necessary item in the production of fertilizer. A considerable portion of the natural gas, now burnt off wastefully, could be harnessed to produce an essential factor in increasing crop yields.

Second, there is need for much more research, for example, on high-yielding varieties of grains, high-lysine sorghum, and development of strains which survive well in the drought-stricken regions like the Sahel. The United States can well afford to support these and other research efforts and share the results with the Third World countries. The present level of U.S. economic aid in all categories is disgracefully low, approximately one-third of 1 percent of our GNP, much lower than the percentage of GNP expended during the Marshall plan years. We would do well to bring our aid level back to at least 1 percent of GNP. Even this is below what just distribution of the earth's resources demands.

Third, the Panel on Nutrition and the International Situation in June 1974 hearings on World Hunger and Nutrition conducted by the Senate Select Committee on Nutrition and Human Needs have given some excellent suggestions for the improvement of nutrition of the peoples in the developing countries. They are similar to the

<sup>8</sup> *Ibid.*

<sup>9</sup> *Foreign Policy*, No. 13 (Winter, 1973-74), p. 31.

<sup>10</sup> *Ibid.*, p. 32.

ones already mentioned above, but several, I think, deserve special mention.

A significant increase in the amount of credit, through direct government loans, private but guaranteed loans, and increased contributions to the regional development banks, to assist in the creation of a capacity to produce modern farm inputs and to improve marketing and transportation systems is needed. We should make a major effort in the current round of trade negotiations to achieve a substantial reduction in the trade barriers that limit the exports from developing countries to the industrial countries. In general, the industrial countries have significant barriers against the first processing of agricultural and other primary products, labor intensive manufactured products, such as textiles, and against directly competitive farm products, such as sugar and many fruits and vegetables. \* \* \* <sup>11</sup>

We urge our cooperation with FAO in establishing a food information system that would provide accurate and timely information on food supply and demand conditions.

There is a need to greatly improve and extend our ability to monitor the development of crops throughout the world. It is our understanding that if the resources are made available, there is a high probability that by the end of this decade that satellites could be used to provide much more accurate indications of crop conditions and probable harvests than are now available.<sup>12</sup>

Fourth, one of the causes of the world food shortage is world population growth. However, the efforts to limit births in the developing countries through emphasis on contraception apart from socioeconomic environmental conditions have not been notably successful. Many are coming to realize that much more emphasis needs to be put as well on the poverty and malnutrition pervasive in Third World countries.

The interrelationship—between food scarcity and population growth—is complicated by factors of poverty, nutrition, land usage and migration. High birth rates are often correlated with poverty and malnutrition that so often accompanies it. High infant death rates—while not always the result of insufficient food—can be caused by the increased susceptibility to disease that accompanies starvation. The response of many people in a poverty-stricken situation is an attempt to have large families in order to establish some potential source of economic and/or old-age security. Also, in many areas of the world, six children are considered necessary in order for three to survive. Thus, a vicious circle is established, whereby poverty creates or is created by high birth rates, which, in turn, create or are created by poverty. The under-nutrition from lack of food, and the malnutrition from poor quality food, add further degrees of complexity to a population/food supply equation. It is an equation which will not be solved by simply reducing birth rates.<sup>13</sup>

Lester Brown comments in a similar fashion:

In the poor countries, however, it will be much more difficult to achieve halting population growth; the historical record indicated that birth rates do not usually decline unless certain basic social needs are satisfied—an assured food supply, a reduced infant mortality rate, literacy, and the availability of at least rudimentary health services of the kind now provided by the barefoot doctors of Mainland China. It may well be in the self-interest of affluent societies such as the United States to launch an effort to meet the basic social needs of people throughout the world in an effort to create a climate conducive to lowering birth rates.<sup>14</sup>

Finally, affluent societies should be looking for means of simplifying their own life style. It is certainly not just, for example, for

<sup>11</sup> National Nutrition Policy Study, Report and Recommendation—VI, p. 16.

<sup>12</sup> *Ibid.*, p. 22.

<sup>13</sup> Staff Population Memo #9, "Some Preliminary Notes on Population and Food Policy Interrelationships," Center of Concern, July 24, 1974.

<sup>14</sup> *Foreign Policy*, No. 13, p. 26.

the peoples of the U.S. and Canada, which make up approximately 6 percent of the world population, to consume about 40 percent of the earth's resources. Grains are grown on 70 percent of the world's cropland and make up 52 percent of the food supply for the world's population. In the poor countries the 400 pounds of grain available per person per year is largely consumed directly; of the 2,000 pounds of grain per person per year available in rich countries, only 150 pounds is consumed directly in the form of bread, pastries, and breakfast cereals. The rest is consumed indirectly in the form of beef and other protein-rich foods. This is an inefficient way to get protein, requiring five times as many agricultural resources to support the average American as it does to support the average Indian, Nigerian, or Colombian.

It was encouraging to me to see in the July 21, 1974, Washington Post an article on the global food shortage that began with the headline, "Food Expert Tightens Belt." Lester Brown has given up bacon and eggs for breakfast and is cutting his personal meat consumption by one-third by using substitutes. Americans would do well, I think, to follow his example. The churches are also concerned and are beginning to raise the issue of overconsumption and change of eating habits with their communities. I personally would appreciate locating a good cook book which features recipes using meat substitutes and assures a balanced diet.

Many agencies, both governmental and private, are now involved, or should be, in the attempt to solve this complicated problem. There is obviously a need to coordinate efforts and give this at least as high a priority as the energy crisis has received. Hopefully, such a task force, commission or agency would have a wide representation of interests—farmers, consumers, research scientists, State, Agriculture and AID officials, persons sensitive to Third World concerns and population problems, nutritionists, economists, et cetera.

I would like to acknowledge the benefit of consultation with the Center of Concern in preparation of this article, and end with this final comment.

An editorial in the May 11, 1974, Washington Post evaluated Senator Humphrey's suggestion for a world food action program, and ended with this comment:

It is Senator Humphrey's conviction that the American people are prepared to respond generously to the World Food Crisis, if the facts about it and the political and moral choices posed by it are properly laid out before them. We are sure he is right.

So am I.

Thank you, Mr. Chairman, for giving me the opportunity to testify before your Committee today.

Mr. DE LA GARZA. Thank you very much, Sister. We very much appreciate your participation this morning. If you would be good enough to remain for the next witness, then we will have questions for all of you.

Our next witness is Dr. Peter J. Henriot, staff associate of the Center of Concern.

**STATEMENT OF DR. PETER A. HENRIOT, STAFF ASSOCIATE, CENTER  
FOR CONCERN, WASHINGTON, D.C.**

Dr. HENRIOT. Mr. Chairman and friends, my name is Dr. Peter J. Henriot, and I am a staff associate of the Center of Concern here in Washington. My background is in policy analysis and social ethics. The Center of Concern is an independent, nonprofit educational institution incorporated in the District of Columbia, which operates as a public interest group engaged in analysis and advocacy relating to issues of global social justice. We are recognized by the United Nations as an official nongovernmental organization (NGO) with consultative status, and as such will be participating in the World Population Conference which opens August 19 in Bucharest.

I sincerely appreciate the invitation of the Department Operations Subcommittee of the House Committee on Agriculture to offer testimony on the topic of the United States response to the global food situation. I ask the Subcommittee's permission to read a brief statement for inclusion into the record of these hearings and also to submit a longer memorandum for the record. That memorandum explores some of the interrelationships between population policy and food policy and suggests some elements of a wider social perspective within which the United States policy response should be made.

The one major point I wish to make in my remarks here this morning is to emphasize the need for an integrated social policy approach in the formulation, debate, and implementation of the policy position to be taken by the United States Government for the World Food Conference to be held in Rome this coming November.

By an "integrated social policy approach" I mean an approach which sees the issue of food in terms of its relationship to the other elements of socio-economic-political development in a highly interdependent world. Such a policy rejects an ad hoc approach which isolates problems and attempts to solve them piecemeal.

I want to discuss with you briefly two reasons for emphasizing the need for such an integrated social policy approach. The first reason relates to the experience which the Center of Concern has had recently in a project focusing on global population policy; the second stems from our analysis of the value aspects of global food policy.

**DISCUSSION OF THE BROADER ISSUES**

For the past 18 months, the Center of Concern has been pursuing a population policy project designed to promote (1) an awareness of the dimensions of the world population problem, and (2) an approach which situates population policy within the context of a wider social policy. Through a series of seminars, publications, and consultations, we have worked with the United Nations, the United States Department of State, and various nongovernmental and citizen groups which are concerned with development, family planning, ethics, public policy, and the relationships between the United States and the developing nations. Our efforts have been to bring public attention to and participation in the policymaking process which has been leading up to the United Nations World Population Conference.

Four of us from the Center will be attending that Conference in Bucharest.

In our view, one of the critical focal points of the World Population Conference will be the extent to which it allows a comprehensive approach to the issue of population to be debated and acted upon. If it is to be effective, the World Population Plan of Action—the hoped-for end product of the Conference, a statement of global population policy—must include a much wider program of action than merely demographic goals, family planning clinics, contraceptive research, and so forth. These elements are critically necessary, but the plan must also relate to the broader socioeconomic environment which motivates—or does not motivate—families to have fewer children.

The most recent research in the area of family planning has shown the close relationships between the level of integral development and the level of fertility, and the notable decline in fertility when the benefits of development are more equitably distributed in society. (I refer specifically to the research prepared by the United Nations for its pre-Bucharest Symposium on Population and Development, and to the monographs by William Rich of the Overseas Development Council and James Koher of the Population Council.) Income distribution, health-care systems, literacy programs, land reform in the agricultural sector, employment policies in the industrial sector, encouragement of savings among the poor, improvement in the status and roles of women, and the possibility of political participation: these are some of the elements of the integral development which gives people a stake in society and thus motivates them to do something for the sake of society, and for themselves—namely, to have smaller families.

What this means is that population policy must of necessity be part of a larger social policy, a policy for integral development. This necessitates consideration of many “nondemographic” variables during discussion of population—variables such as aid, trade, investment patterns, consumption of resources, and so forth. For these items are the very elements of the social, economic, and political framework within which development occurs. They therefore have a direct bearing upon the rate of population growth.

Now the point I am making here is that it has been our experience that discussion of issues such as aid, trade, investment patterns, consumption of resources, and so forth, are repeatedly ruled out of order in discussions of population policy. What we have seen occur again and again is a three-step process:

1. We all agree that population must be considered in a broad perspective relating to the issues of population and development.
2. But then it is emphasized that “this is a population discussion” which cannot focus on “everything that needs to be done.”
3. And so the approach is narrowed to a piecemeal consideration of strictly demographic facts and demographic responses.

But such a piecemeal approach will not work in the discussion of population policy, or in the discussion of other major international social policies. Yet it is attempted again and again at many international meetings. When the United Nations gathered in Santiago de

Chile for the UNCTAD meeting in the spring of 1972 for a discussion of trade and development issues, discussion of monetary reform was relegated to another forum. Then when the Conference on the Human Environment met in Stockholm during the summer of 1972, preferential aid arrangements to assist developing countries to meet the additional expense of ecological safeguards were pressured out of the picture by the United States and other industrialized nations. With the World Population Conference coming up in Bucharest, "out of order" will be discussion of items such as the impact of consumption patterns of the developed countries or the impact on unemployment in developing countries of the capital and technology-intensive investments of multinational corporations.

What about the World Food Conference? Will it only focus on ad hoc humanitarian responses—certainly necessary but hardly sufficient? Or will it also take up issues such as world prices, trade, preferential tariffs, international monetary structures, etc? Or will these issues—despite their direct bearing on the global food situation—be ruled out of order because "this is a food conference"?

The problem with the piecemeal approach is that it never allows for all the pieces to be put together. And hence it never reflects reality. That is not a very good formula for bringing effective change to global situations of great urgency, whether we are speaking about population, environment, or food.

Therefore, Mr. Chairperson, the Center of Concern strongly urges that from the outset the United States policy approach to the World Food Conference be committed to an integral development approach in order to allow discussion of such issues as trade between the rich nations and the poor nations and consumption patterns in the rich nations.

#### NEED FOR A VALUE APPROACH

My second point is that only an integrated social policy approach can assure that the global food situation is handled not just as a technical issue but as profoundly a matter of values. Social policy is the outcome of an interplay of empirical pressures, political forces, and articulated values. Social policy for a global community such as we live in today is thus influenced by the pressures of crisis situations, the power of dominant actors in the international system, and the value perspectives of both the formulators and the objects of the policy.

If the global food problem—the dimensions of which have been dramatically outlined in other testimony before this subcommittee—is not dealt with in terms of wider social policy, then the values of integral development, the values of a global community, are side-stepped. The "technical approach" sees the food problem in narrow market terms of supply and demand, and can only respond within such a framework.

Let me give you a clear and startling example of a "technical approach" to this problem. The United States faces the very difficult question of how it should allocate its limited food aid. World food reserves, emergency assistance programs, and other systems are proposed. One hardheaded approach was offered several years ago

by two agricultural experts, William and Paul Paddock, in their book *Famine—1975!* (1967). They suggested the “triage theory” be applied to allocation of food to hungry peoples around the world. The “triage theory” is borrowed from the practice of medicine in military circumstances. When heavy casualties crowd a small hospital and it is impossible to take care of all the wounded because of limited medical staff and supplies, some quick decisions have to be made on who will be treated. The wounded are divided into three categories: (1) those who will live even if immediate care is not given to them, (2) those who will live only if given prompt treatment, and (3) those who will die no matter how much care is given to them. When medical aid is limited, it is concentrated only on the second group, and the others are left unattended—some to live, and some to die.

According to the Paddocks, the United States should similarly frame its food assistance policies in the light of the serious food problem of today. Some needy nations and peoples will survive even if we do not give them assistance, so we should not help them at this time. Other nations and peoples will survive only if we do provide immediate help, so we should give them priority in our humanitarian responses. But there are some nations and peoples which, no matter how much assistance is provided, will simply lose out in the race between population growth and scarce food supply. They can never be self-sufficient. We must be willing to recognize this hard fact, and stop all humanitarian aid. It is simply wasted.

What nations fall into this tragic category? Countries such as India, Pakistan, Bangladesh—now containing over 700 million people?

Mr. Chairman, I would suggest that proposals such as that of the “triage theory” offered by the Paddocks do not come from cruel, heartless persons. They come from persons who want to be rational and efficient in their approach to meeting real human problems. Now I do not have anything against rationality and efficiency. But when these virtues are translated into a technical solution which leads to such a conclusion as I have explained here, then they are inadequate at best and unconscionable at worst.

The “triage theory” is a technical approach which leaves out any wider, integrated global social policy approach. First, it leaves totally unchallenged the privileged position of the rich nations and their affluent patterns of consumption; second, it neglects any consideration of the structural relationships between rich and poor nations such as trade and monetary arrangements; and third, it ignores the impact of socioeconomic development on population growth within the nations affected. By concentrating only on food allocation, by making the food problem primarily a matter of agricultural economics, a theory is proposed which would be “hardheaded” enough to write off 700 million people.

Mr. Chairman, the Center of Concern strongly urges that from the outset the United States policy approach to the World Food Conference be committed to an integral social policy approach in order to allow the question of values for a global society to be thoroughly discussed.

## CONCLUSION

In conclusion, I want to commend the Operations Subcommittee for holding these hearings and for bringing to public attention early the important aspects to be considered when the United States policy response to the global food situation is being formulated. The Center of Concern believes that only an integrated social policy approach such as I have outlined here this morning and is more fully developed in my attached memorandum is worthy of the support of the American people.

Thank you.

[The memorandum referred to follows:]

JULY 24, 1974.

## POPULATION MEMORANDUM No. 9

From: Michael M. Henry, Peter J. Henriot, and William F. Ryan.

Re: Preliminary Notes on Population and Food Policy Interrelationships.

## PREFACE

In August, 1974, the United Nations World Population Conference will take place in Bucharest, as the culmination of discussions on population issues which have been occurring throughout the international community. In November, 1974, the United Nations World Food Conference will take place in Rome, designed to draw international attention to what is seen to be a critical global problem area. Similarly, recent and upcoming world conferences on trade and development (1972), environmental issues (1972), resources (1974), ocean policy (1974), women's status (1975), and human settlements (1976) focus on specific areas in which international cooperation is necessary for problem solution.

The CENTER OF CONCERN has been involved in a population policy project aimed at broadening the debate leading into the World Population Conference, and will be similarly involved with the World Food Conference. The present memorandum, part of the CENTER's on-going series which focuses on aspects of population policy, is designed to: 1) briefly discuss some of the more obvious global interrelationships between food and population variables, 2) pinpoint some of the emerging trends in the US policy debates associated with those interrelationships, and 3) suggest some policy perspectives which might be brought to those debates.

## GLOBAL INTERRELATIONSHIPS

The outlook for world food supplies is precarious at best. In 1972, for the first time in 20 years, total world food production declined. Between 1972 and 1973, grain export prices doubled and world food reserves fell to the lowest level in over 20 years. Despite good harvests in 1973, total grain availability outside the USSR and China is less than in 1972, and prices have climbed substantially again. In 1974 the world is depending on current harvests for its grain supplies. This means that a crop failure in any major producing region would magnify disasters already predicted for some regions of Asia and Africa.

Five factors have combined to make the food supply situation an urgent matter for global policy.

1. Droughts and other climatic variations have reduced world-wide production.
2. Rocketing oil prices have made the purchase of agricultural fuel more difficult.
3. Shortages of fertilizers and pesticides have made high yields more difficult.
4. Population growth has increased the number of people to be fed.
5. Affluence has increased consumption demands on the food available.

The countries hit hardest are the poor countries where agriculture is more precarious, price increases are more damaging, and population growth rates

are higher. Between 1954 and 1974, food production in the rich countries increased by 1.5% per capita, but only increased by 0.4% per capita in the poor countries. In Africa, per capita food production has declined since 1961. And high food, oil and fertilizer prices are devastating the balance of payments for these countries; it is estimated that their deficits will increase by 150% in 1974.

With the projected supply of food inadequate for the projected demand, attention has turned to the modification of demand as well as to the promotion of greater food supply. It would be tempting to conclude, for example, that curbing population growth rates in the poor countries would enable a greater food supply to be available per person. Much of the literature addressing questions of food and population does in fact suggest such a conclusion. However, population growth is but one of the contributing factors and its limitation, by itself, may do little to substantially alleviate food shortages.

The affluent life style of people in the rich countries is at least an equally important factor to consider when focusing on food demand. Grains occupy more than 70% of the world's crop area and grain consumed directly provides 52% of humanity's food-energy supply. In the poor countries the 400 pounds of grain available per person per year is almost all consumed directly. In the rich countries the 2240 pounds of grain available per person per year is mostly consumed in the indirect form of protein-rich foods. It takes five times as many agricultural resources to support the average North American as it does to support the average Indian. With respect to world food supply, then, it may be reasonable to suggest that the low population growth rates of the rich countries are at least as great a threat as the high population growth rates of the poor countries.

The interrelationship is complicated by factors of poverty, nutrition, land usage and migration. High birth rates are often correlated with poverty and the malnutrition that so often accompanies it. High infant death rates—while not always directly the result of starvation—can be caused by the increased susceptibility to disease that accompanies starvation. The response of many people in a poverty-stricken situation is an attempt to have large families in order to establish some potential source of economic and/or old age security. Also, in many areas of the world six children are considered necessary in order for three to survive. Thus a vicious circle is established whereby poverty creates or is created by high birth rates, which in turn create or are created by poverty. The undernutrition from lack of food, and the malnutrition from poor quality food, add further degrees of complexity to a population growth/food supply equation. It is an equation which will not be solved by simply reducing birth rates.

The other major factor involved is the insecurity of the small rural farmer throughout the world. In most cases the small farmer has little economic security, no security of tenure, no guaranteed outlets and supplies, and relies on an unpredictable climate. World-wide urbanization trends are in part a result of this insecurity, as people move from the farms to the city hoping for better opportunities. This is particularly true in the poor countries in which the population is 70% rural. Patterns of agricultural land usage can markedly influence migratory patterns, as has been demonstrated throughout history.

#### TRENDS IN U.S. POLICY RESPONSE

What will be the policy response of the United States to the global food situation? While there has still been no official declaration by the government—and conflicting views at high levels are evident—it is possible to begin to piece together a picture of what that policy might be by looking at trends that are evident in governmental and non-governmental statements. The elements discussed here relate particularly to the connections between population policy and food policy.

In April, 1974, a Declaration on Food and Population was presented to the United Nations Secretary General after having been signed by some 500 prominent leaders in governments and private groups from around the world. The statement called for five measures to bring population and food variables into balance:

1. Increased production of food and fertilizer.
2. Universal availability of family planning.
3. Development of a global strategy for integrated food and population programs.

4. Establishment of food reserves.
5. Recognition of the need for lower birthrates.

This declaration was compiled by the Population Crisis Committee, and it elicited an "opposition" statement from the Environmental Fund, which proposed four measures:

1. Stabilization of the US population.
2. Recognition that voluntary family planning availability will not accomplish stabilization of population.
3. Creation of a US Office of Population whose primary function would be to motivate couples to have no more than two children.
4. Recognition by the US State Department that it must decide which countries will receive food aid and which will not.

While neither of the statements can be construed to reflect official government policy in any respect, between them they probably reflect much of the present thinking in the United States on these issues.

The official United States delegation to the World Population Conference is expected to take a policy position comprising four essential components:

1. Universal availability of family planning.
2. Research and education into biological reproduction and socio-economic determinants of fertility.
3. Recognition of the importance of population variables and the need for policies to influence them.
4. Availability of population aid to those governments seeking it.

There is no indication at this time that this delegation will attempt to integrate food policy with aspects of population policy, other than to list limited food availability as one of the many factors making population policies urgently necessary.

The official United States delegation to the World Food Conference is to be headed by Ambassador Edwin M. Martin. He and others have expressed the elements of what they see to be a policy which this country should advocate. It includes:

1. Increased food aid and the establishment of a world food reserve.
2. Expanded production of fertilizers in the rich countries and food in the poor countries.
3. Supplementary food programs for the more vulnerable groups in society.
4. Increased market access for the poor countries in food trading.

Expression of support for this far-reaching policy may be overly sanguine, given past history and present controversy over farm production and prices in the United States. But it is notable that there appears to be no indication that the US policy will attempt to integrate population-connected policy aspects into its position, other than to include population variables as part of the data used to project food needs.

These four positions sketched here have a common aspect of *humanitarianism* in their response to food and population issues. It is this aspect which might be expected to characterize the trend of US response to these issues. North America, the "breadbasket" of the world, has a tradition of providing aid to needy countries. With agricultural surpluses recently diminished, the US cut back on food aid. Now with the promise of an improved harvest, there is talk in the Congress and in non-governmental circles of greater food aid. Similarly, the official US response to the population problems of other countries has been to offer a variety of forms of aid. But there is still no actual linkage established between these two forms of aid. There will be debates as to which countries should receive how much of what kind of aid. But basically it can be expected that aid itself will be the major part of the US response.

Three aspects of such a US response are worth noting. *First*, a truly integrated approach to population/food interrelationships cannot be achieved through humanitarian aid to ease ad hoc pressures and problems. Population policy aspects will thus be linked to food policy aspects only coincidentally. *Second*, this type of response asks no real sacrifice on the part of people in the United States with respect to their own consumption patterns. One of the major causes of population/food imbalance will thereby be ignored. *Third*, humanitarian aid will not greatly help to break the vicious poverty-high fertility circle which is the long-term cause of most hunger. It will only provide a

band-aid for emergencies, but will not prevent them happening again. Only a more integrated approach to global development—emphasizing the rights and responsibilities of rich nations and poor nations alike—can begin to accomplish that.

#### RECOMMENDED POLICY PERSPECTIVES

In order to ensure adequate food for our world, it will be necessary to both increase supply and decrease demand. Increased supply will require more efficient production on the one hand, and better distribution on the other. This involves a complex set of questions on the supply side. It is clear, for example, that small family farms are more productive per acre than giant conglomerate farms, but are also less efficient per dollar invested. Should policies be designed to enhance small farmer security or promote big business farming? Similarly, emergency food aid may save lives but the same resources invested in agricultural improvement may enable self-reliance in food supply for future generations. With respect to distribution, it is clearly desirable that wastage be eliminated in both storage and transportation, and yet food can only be distributed when it is available. To what extent can rich people be asked to modify their diets (usually filled with meat, an inefficient source of protein) in order that scarce grain may be more equitably distributed in the world?

The policy questions are similarly complex on the side of modification of demand. Reduction of population growth is necessary, but does it come before, after, or with eradication of poverty? To what extent today is there a right to overeat if one can afford it? Is there a rich country responsibility to promote policies which are for the "good" of the poor countries, even if those poor countries disagree?

The point to be emphasized here is not that agreement must be reached on such policy questions at the two World Conferences, since they clearly are areas of considerable difference of opinion. Rather it is to stress that answers proposed to policy questions come out of value systems and are determined by the perspective one brings to policy discussions. There are a variety of policy perspectives which can be brought to bear on population/food issues. *The perspective which should pervade the policy discussion is one of global social justice.*

What would such a policy perspective involve? *First*, it would attempt to bring socio-political criteria to bear on choices between policy alternatives, as distinct from exclusively economic criteria. The security of the small farmer then becomes more important than the economic gains of the conglomerate. Technical assistance and aid become oriented to the needs of the recipient, as defined by the recipient. Fertilizer production is increased and oil prices are reduced because the needs of people require it, regardless of the economic profits lost to a small minority. Stockpiling for world food reserves is advanced to serve needs and not used simply to regulate prices in the rich countries. Food would not be destroyed and fertile lands plowed under because distribution was not profitable. In other words, market forces of supply and demand would no longer be the mechanism by which the people of the world are fed.

*Second*, a social justice perspective would attempt to bring a sense of global altruism to the policy debates, as distinct from narrow national self-interest. Rich country consumption would be cut back so that food supplies could be more evenly distributed. Rich country aid would be massively increased so that poor countries could avoid economic chaos. Population growth in all countries would be reduced so that projected demand is lessened. Agricultural trade policies would be adjusted to enable greater market access and more favorable prices and preferential tariffs for the countries in need.

*Third*, such a perspective would attempt to orient policies toward a long-term, integrated goal, as distinct from policies which respond to short-term, ad hoc pressures and problems. The goal of food/population policies would be accepted as that of providing appropriate food for the people of the world, without undermining any of the values, freedoms and rights which we accept as fundamental. Food and population policies would complement policies aimed at combating sexual and racial discrimination, and promoting improvements in housing, education, health, political participation, employment, etc. Such policies would move to break the poverty/high fertility circle. Causes of injustice and powerlessness would be tackled, rather than side-stepped by only treating their symptoms when they assume "crisis" proportions.

The Center of Concern will increasingly attempt to bring such social justice perspectives to bear on food and population policy-making. Comments and suggestions from readers of this memorandum are welcomed.

MR. DE LA GARZA. Thank you very much, Doctor. If you would remain there, we would invite Dr. Taylor and Sister Hohman back to the witness table.

Does the Chairman have any questions?

THE CHAIRMAN. If I might, Mr. Chairman, impose on your time. I do not believe that we can really appraise either the last two statements, at least, or the last three, without a definition of what the proponents of these statements mean by social justice; not that I am finding fault with anybody. Just what do you mean? The phrase was used often—Dr. Henriot used it, Sister Margaret used it. Just what do you mean by social justice? Do you mean social equality?

DR. HENRIOT. Social justice, Mr. Congressman, is a catchall word that combines a variety of things. It provides an emphasis upon some basic equality, the basic recognition that every man and woman in the world is equally comprised of human dignity and should be recognized with that basic kind of dignity. It turns, then, upon appreciation, of flowing from the dignity to the ability to make decisions about the kind of future that I wish to move into, and not have those decisions just made for me. It has political implications, too. It certainly has economic implications; not that everybody in the world is equal, but there should be equal opportunities, and the kind of great gap between the very rich and the very poor somehow or other does not speak very well for the community of the world's family. It speaks of, not just humanitarian assistance, not just aid, not just charity at a particular moment, but also to the economic and social structures that make up relationships between the members of our human family.

So, when I speak about social justice, I am speaking of the total policy approach that weighs very heavily use in a world that needs to be more humane than it presently is. When I use that catch phrase, then I translate it into very specific things—talking about population policy, food policy, or environmental policy, or medical policy, or whatever. I think that most of us have a feeling, when we hear that phrase, that yes, it is talking about something that needs to belong to the human family, and that there is dignity that should be appraised, and it should be appraised not just in terms of aid, but in terms of the kind of structures that allow all of us to grow and be part of the human family.

THE CHAIRMAN. Certainly, I would not take any exception to your examples here. I would still like to know just what you mean. Do you mean that everybody in Bangladesh, for example, should be assured of as adequate a diet as everybody in Australia?

DR. HENRIOT. I would say this; that the adequateness, the base of subsistence, the primary below which one fails in basic survival capacity, should be guaranteed to everyone in the world. That is right; that is what it means to belong to the human family. In terms of the levels of affluence of people in Australia, a very heavy meat eating country, no. I do not think the world could survive if everybody lived at that level of affluence, simply in ecological terms.

The CHAIRMAN. I do not, either. That is why I think we have to have a definition of what you are talking about. Just how far are you going? The people of Australia eat about 200 pounds of meat per capita per year, or something on that order. The people of Bangladesh, I suppose, eat 7, 8, or 10. Now, are you fixing some arbitrary figure in saying that 60 pounds of meat per capita is social justice?

Dr. HENRIOT. I might turn to Dr. Taylor or Sister Margaret for some assistance in this. What my basic point would be, that there are levels below which no one should be required to drop, and I think that the kind of a level of malnutrition which affects children so that there is brain damage in years to come, should in no sense be allowed in a world community today.

Sister HOHMAN. We have been discussing it a good deal with Professor Rawls, who is approaching the whole question of justice. He does not, in his discussion—I am not an expert on it. I am just beginning to look into its ideas—one of the things that he mentions in his discussion is this: that there is not going to be, probably, in the history of the world, a time where everyone will have precisely the same amounts of things, the same amounts of talents, the same amounts of this world's resources. But when a person has more of this world's resources than another, he should have it on two conditions: one, that it is open to anybody, anybody could have that extra amount. It is not a matter of one group of people, or one area of the earth, that has more so others are cut back without any chance to right the situation. And the second thing is that when a person has more than another, talents or opportunities, he should have those to use them for the common good; so that, when one has more, then he has a greater responsibility to use extra resources that he has to bring about a greater distribution and a greater equality, and a greater uplifting of those who have less.

The CHAIRMAN. Sister Margaret, I think you repudiated that philosophy in your statement. You said in your statement that we should take care—and I must say that 95 percent of the people who come before us say the same thing that you did—that we must take care of the small farmer, and in effect get rid of the large farmer. You suggested that there is evidence that the small farmers produce more than large farmers, and therefore are more helpful to the world, and I oftentimes suggested that I think, in the United States, that we will never see our farms passing into corporate ownership generally, because of this very inefficiency that you point out, in the hands of the extremely large operator. So I think I am not trying to say that there is no merit to what you are suggesting. I do not think that there is any clear evidence at what level is an efficient small farmer, and I think it varies greatly from place to place. I think there are some areas where the small farmer is clearly far more efficient, and in other areas I think there is a great deal of question about that. And probably in some areas of the United States, only the very large operators can operate successfully.

Sister HOHMAN. I did not, in my statement, mean to imply by any means that we shut the big farmer out of business. I did mean to

imply, however, that when government policy is made, that frequently what happens is, because the big farmer—particularly, I am talking about the conglomerates, the large corporations—are much more able to lobby for their point of view than the small farmer is. So public policy very frequently—not just in agriculture, but in other situations as well—public policy does tend to favor the large corporation, the multinational corporation, for instance. So, I think we have to be cautious in making public policy, that we take into account the small—you know, shopowner; the small businessman, the small farmer.

It is the role of government to protect the weak, to protect the person who does not have a voice here on the Hill. So I think we just have to be conscious of that. It may be necessary sometimes to curb the buying of our competition. That happens sometimes. You bring in the big person, and you protect the common good this way. I in no sense say that we should go out and do away with the large farmers. I do not think that should be done.

The CHAIRMAN. I have the same fear of the large farmer that you have. I know that the large farmer would like to get out of it as fast as he can, so to get it in the hands of people who can handle it more efficiently. This is the situation of a lot of large conglomerates. I do not think they can operate as efficiently. I do think there is much to be said for substantial size to get maximum production in the United States. The man with 40 acres and a mule simply is not going to produce as much as the man with several hundred acres, a tractor, operating on a more efficient basis; and if we are going to feed a substantial part of the world, we are going to have to use our most efficient methods, it seems to me. And I think it would be a tragic mistake if we eliminate people just because they have reached that point.

I am not suggesting that it was your purpose to say that we should eliminate the efficient farmer. I think it is just a difference between what level you reach that maximum efficiency. I do not think any of us know exactly where it is. We do know it is different in different places in different commodities.

Sister HOHMAN. Mr. Chairman, I think that we would also have to distinguish between what is true, say, in developed countries like the United States and what is true in a developing country. The situation where you have a great many people who have employment, you would want to use the small farmer; you would want to use methods that require a great deal of labor; you would want to keep an employee—that type of approach. So, you would not want to use the big tractors.

The CHAIRMAN. I understand your analysis. I fully agree that I certainly would not try to sell a tractor to a farmer in Japan. I think it would be rather foolish. Yet Japan is one of the most productive areas in the world per acre.

I do not want to take more time, Mr. Chairman, but I think that if we could have a little clearer understanding of what is meant by social justice, the term social justice, we would have a better understanding and would be better able to appraise the whole of, not only

your statement, but the rest of the statements. We all say we are in favor of social justice, we do. I think every member of this committee says he is in favor of social justice. But what do we mean by social justice? That is really important. If you mean Communism, I do not agree with you. If you mean something else, I probably do agree with you.

Dr. TAYLOR. Mr. Chairman, I think that justice is largely a legal matter, and Congressmen tend to be lawyers. So anybody who tries to tell a Congressman of what social justice is is either being courageous or foolhardy.

The CHAIRMAN. If you use it as the basis of your argument, and say that this must be our goal, and then we cannot understand what your goal is—

Dr. TAYLOR. I did not use that term, Mr. Chairman. But if I were to be pushed to a definition, from the health care point of view, my definition would revolve around the issue of access to care, access to nutritional improvement, access to all benefits. And if we can keep it within that range, it gets us out of some of these impossible dilemmas of trying to define levels, which, I will concur, is the point at which we reach an impossible sort of a point of semantics; because what we can talk about is that within the socioeconomic context of other countries, do people have access to try to improve their own situation, especially if we try to build a development process which is incremental, and is built on the concept that people are going to be given opportunities. Then I think we are beginning to get at it.

The CHAIRMAN. I think you are leaving out one extremely important item; the whole system of private property and capitalistic philosophy is based on the assumption that it will produce more of the things that the world needs than any other system will. If you will assume that Communism will produce as much as capitalism, then I think we all would be Communists. I do not think that there are any of us that would contend that if we find something where everybody could enjoy just as much as Mr. Rockefeller can enjoy, I think we would all say that it is greatly to the good. But unless a social system does produce the goods, there is no way in the world to divide them up, to have everybody get more, if the system results in producing less. If the sum total is less, then individuals are going to have less. I think that is the difference in the acceptance of Communism or capitalism. You may not believe that capitalism produces more. I happen to think it does. I think that the whole history of the world has proven that capitalism does produce more than Communism, and therefore you have more to divide.

There is not going to be much comfort for Ethiopia or the sub-Sahara in their drought situation, if the more affluent nations of the world do not have anything to divide. We have got to produce before there can be any assistance to these people. So I think it is my viewpoint that the term social justice must include a consideration of production, as well as distribution.

Mr. Chairman, I have taken too much of your time. I appreciate the opportunity of being able to discuss this with these people, who have some serious views, and I think they have done an excellent job in presenting them.

MR. DE LA GARZA. Dr. Taylor, Dr. Henriot mentioned the recommendation of using the triage theory. Would that fit in with your statement, "We will need to be more judicious in the previous pattern of mass shipments of food to chronically deficient areas."

DR. TAYLOR. I would not identify my point of view as being the same as the Paddock point of view. My belief is very much in accord with what the chairman has just been saying about the process of developing, the process of production being the important driving force that we need to generate; that we are not at a point in the world where we in the United States have the right to write off anybody in the world as being a hopeless case. Having spent a great of my life on the Indian subcontinent, most of them working and living in village situations, I am particularly impressed with the tremendous potential of the villager; the fact that the villager on the Indian subcontinent, in any of the three countries mentioned, whether they have arrived at their present level of population through the sort of stupidity which is almost implicit in a lot of the thinking that goes into the Paddock type of statement, where they are written off as being hopeless, I think is a judgment which is really contrary to any of the fundamental beliefs that I find in myself. What you find when you get to the village level, those people are behaving rationally within their own frame of reference, and our responses to them in trying to help them with their own development process to generate the level of productivity that we are concerned with, has to be geared in to that level of development.

MR. DE LA GARZA. What you mean is that, rather than just a mere shipment of food to a particular area, that we go in there and give them the necessary tools and technology to provide for themselves?

DR. TAYLOR. Yes, and I would like to stress that point particularly, because one of our greatest problems in AID-type activities has been that we have been looking for simple answers. We have been looking for the key that we can turn and this business of just mass shipments of food has been one of the sort of simplistic approaches that we have used all too much. What we need is to get down to the long, hard job of helping them develop at the local level, at the village level, and this is something that we are beginning to learn how to do. I think we have made a tremendous amount of progress. I think myself that we can make more progress in the countries such as India and Bangladesh right now, because we are beginning to learn how to do it, than in some of the other areas that are going to be moving ahead on their own.

MR. DE LA GARZA. I think we agree with you, but what do you do in light of the testimony of Dr. Landsberg that there will be areas that will not be productive, regardless of the technology or effort brought in. The subsoil is gone. You will never again have grass in the northern parts of Chad or the inland part of Mauritania.

What do we do there?

DR. TAYLOR. This is the reason why we have to be very careful on how we do use the limited resources that we have available. What we can do is to begin at the local level to provide them with the know how, with the understanding of agriculture, of health, of family

planning, and I would like to stress the very great importance to me of the family planning component of that. I hope that nothing that has been said here indicates that there is less than a great deal of need and pressure for doing something about family planning. But within the process of those particular elements that are part of the development process, that we can do a great deal.

Having said that, I find myself at the point where I think we have got to accept the fact that there is going to be a great deal of starvation in the world. I think there is no way around it.

I think that we are going to be in a situation where these issues will be decided by local authorities. As I mentioned in India, they have really arrived at the official position that they are going to have to have famine in the country.

MR. DE LA GARZA. I am going to go from one to the other because the questions are so interrelated, but Dr. Henriot, in your definition of dignity I sort of gathered the assumption that you attach to the basic human dignity a right to a governmental decisionmaking or what I would think to be a democratic form of government such as we have.

Was that your statement that attached to the human dignity part, that everybody under God has, that he has the power in his own decisionmaking? That would only mean a republican, democratic system of government such as we have.

DR. HENRIOT. We are not going into the explicit form of government that it might entail. I am sincerely committed to the fact that flowing from human dignity is an individual's right to take part in the decisionmaking processes that affect an individual's future within the society, so that always the common good elements weigh very heavily, as well as the individual rights elements, because the individual exists only within that society.

What particular form of government that may take, I think we have seen many different kinds of forms. Your emphasis in terms of a democratic form of government, I think that the ability to make decisions in terms of the future that I have is basic to my right and dignity as a human person.

MR. DE LA GARZA. Basically we agree. The problem is that we have some societies that are incapable or unwilling of allowing that decisionmaking to flow down to the village level.

What do we do there?

DR. HENRIOT. That becomes a large political question. I think in terms of this, it is the kind of question that is being examined here in the United States today. We may say on paper that every individual has a right to participate fully and have an impact on the way public policy is made in the United States, and that has been the whole thrust of recent efforts of political reform. We have not been able to achieve that right in concrete.

I think that any kind of a constitution or an element that may spell it out on paper, there may be some gap in what it is in practice, in our own country and many other types of countries.

MR. DE LA GARZA. Let me ask all three of our witnesses, would you favor going back to the system of protectorates such as we had at the

turn of the century? Would you favor going back to a U.N. protectorate for a specific area rather than to make every little group that becomes independent an independent nation, either unwilling or unable to take care of its own?

Sister HOHMAN. Mr. Chairman, I do not really think that it matters what we think on that subject. I think that would be really impossible to achieve. The whole feeling throughout the world that has developed, the whole resistance to the whole colonial structure, and the rising expectations of peoples to be able to rule themselves is something that I think is irreversible, and I think it is a good thing.

I think that we have to be very cautious, and I meant that in my statement, that we have to be very sensitive to any intervention in another government, extremely sensitive in what we do, the political decisions that we make.

Mr. DE LA GARZA. If I might interrupt, Sister, what about the human dignity? What about our moral issue?

You have stressed our moral obligation and if you allow the person to make his own decision, but that form of government is not allowing it, to what extent do we fulfill our moral obligation? To what extent do we intervene?

Sister HOHMAN. For instance, I would hesitate very much, for instance, to be supplying arms to Ethiopia at this point. I am not happy with the measure in which we have supported dictatorships around the world. I am happy to see that Greece is back again, or hopefully moving in the direction of democratic rule.

I would support as much as possible any effort by the U.S. Government that would move away from an imposition of our political philosophy on the philosophy of a particular group. I think we have to be very cautious and sensitive on this. It is impossible to say I will go this far and will not go any further. I would prefer to see the kind of aid that we give to people, to countries, funneled as much as possible to the kind of aid that we have been talking about here, aid that will help the local people to develop themselves with their own ability in food production, and try to convince governments to accept that kind of aid.

Mr. DE LA GARZA. We have been confronted with governments who have told us, go to hell with your aid, when their people are dying of hunger. Where then does our moral obligation end?

Sister HOHMAN. You do not want to send troops in and force your aid on them. You do not want to go that far. You can continue to try to convince them to take aid, humanitarian aid. I think we also have to be very sensitive of the fact that many governments are not happy with bilateral aid. They would much prefer multilateral aid. I do not know if there has been that much hesitation to accept aid from the U.N. or through U.N. agencies. Maybe that would be the best way for our aid to go. Many people, of course, think that.

Mr. DE LA GARZA. My experience has been that most governments would like through multinational or U.N. organizations, so that it loses the description as from whence it came, and then the local government doles it out to the populace. That has been my personal experience. And their interest, then, is a political interest as to what

effect it is going to have on the political lives of the people, as to who hands it out. And that is why the United Nations, it is always very acceptable because by and large the United Nations participation loses itself in the administrative function and it is the local government who hands out the bucket of wheat to the lady in line.

Sister, let me ask you a question related to the population increase or birth control. Leaving aside any religious views that you have, solely the concern, to what extent would you combine nutrition assistance and population control?

Sister HOHMAN. I think there has to be a combination of those, Mr. Chairman. I think there has to be the whole complex of socio-economic situations taken into account. The effort that the United States should make, it seems to me, is to increase the amount of aid that it gives in a number of categories, in health care, in the whole production of food, as well as in family planning. They would all have to go together.

MR. DE LA GARZA. You would not fault the actions of this committee in insisting, the voluntary participation, but insisting that as we provide assistance of all varieties, that part of that assistance be information related to birth control.

Sister HOHMAN. Surely, I would be in favor of that. I have no objection to that.

MR. DE LA GARZA. Dr. Henriot, I concur very strongly with your wishes to what the World Food Conference would delve into. I am afraid that you and I might be in the minority as far as to world prices, trade, and practices, but certainly you cannot discuss feeding people without all of the consequences, including the interests of the chairman.

You see, Sister, because if you do not eat meat, that means that our ranchers will not produce as much meat because the demand is not there, which means that our grain people will not produce as much grain now. You assume that they will continue producing the same amount of grain, or maybe more, to distribute to other areas of the world. They will not, because the price will not be there. The incentive for survival of the average farmer—and mind you, Sister, the greatest percentage of our crops are produced by the family farmer and not by the large conglomerate that everybody is so down on at this point in time.

So, you have to correlate the whole circle. Otherwise, if you cut one of the wheelspokes, then you fail. This is why all of this is so important, and you are very humble when you say what you think would be of great importance because it is of great importance. Hopefully, we will have a document from these hearings to present to the responsible people, to the people at large, and also I have a very strong feeling that, Sister—and I am not picking on you—that the little people have no representation, or no voice, that those who have the hired lobbyists, or those who get heard in the Congress—and I, personally, find it to be the reverse, that the little people, the welfare programs, the education programs, the poverty programs have had a lot more input from the little people than from the big conglomerates, and if you can see the legislation, some from this committee, that is

being either reduced or not accepted on the floor by some people who are wrong, as honest as they might be, it the other people who are being hurt, and not the conglomerate farmer or the large farmer.

Dr. Henriot, did you wish to add something?

Dr. HENRIOT. Mr. Chairman, I would just like to emphasize that I think that the importance of a hearing like this, several months before the World Food Conference, should not be downplayed. We have a small role to play in it, and I think it is very important that the hearings have been held.

I think the World Population Conference, which will open next month, the official U.S. delegation to that Conference has not yet been named by the White House. The chairman of the delegation, Mr. Weinberger, and some of the Members of the Congress who will be attending have been named. The rest of the delegation has not been named. There are no public hearings on the U.S. policy stance at Bucharest.

I think that the kind of thing that you have begun here by asking what will be the policy stance of the U.S. Government, of the official delegation, is very important several months before that Conference comes along. Hopefully, the delegates to the Food Conference will be named more rapidly than the delegates to the Population Conference opening next month. I think that the importance is in your report, and your emphasis about what should be in the Food Conference, what kinds of U.S. policy response in conjunction with what Sister Margaret mentioned, in conjunction with the very strong tie to maternal and child health care of the family planning clinic that Dr. Taylor has mentioned in his evidence.

I think that any recommendation that this committee would make to tie the issue of population to the issue of food must be in tying it to the total socioeconomic development picture. There is a great danger, and there would be a great reaction from a good many of the developing countries if it were ever thought that food was held out with the condition that family planning was to be accepted. I think that what the United States does have a responsibility and a right to demand is that countries attend to total development programs, which includes an increased amount in family planning availability, as Dr. Taylor has mentioned, but on the terms of those countries and not as a price for food.

People in poorer countries consider their poverty as the prime problem, and not too many people. I think we have to realize too many people is a symptom of that poverty, and we have to attack the cause. The poverty is it.

Mr. DE LA GARZA. Thank you very much.

I am going to ask my colleague, Mr. Denholm, to take the Chair. We have a vote on the floor, and allow him to have questions while I go and record myself, and, hopefully, I will be back in time to allow him to do so.

Mr. DENHOLM [presiding]. I appreciate the testimony that all of you have given this morning.

I am the fifth child in a family of nine. I was reared in rather humble circumstances in the mid-1930's. Is the presumption in fact,

or can it reasonably be determined in theory, that there can be no happiness in poverty? Is that a valid presumption?

Dr. TAYLOR. As far as I am concerned, it is not a valid presumption. I know that there can be great happiness in most deprived conditions. You find it in villages around the world where they are living in the most stark poverty, where there is constant hunger; the situations that we have described, the tremendous adaptability of people makes any such statement ridiculous.

On the other hand, having said that, I think that it is very important to go on and say that the people who are in that situation are the ones who are most eager to do better, and to find a way out of their poverty. Maybe they are not any happier when they are less poor, but at least they want to be less poor.

Mr. DENHOLM. I have survived hunger and poverty. I am not certain but what those were among the fondest of memory in my childhood days.

Dr. TAYLOR. I think this is the sort of issue that we get into when we try to equate happiness with the lack of poverty. It just does not work.

On the other hand, it is the people who have the least who are eager to get out of that situation, and I think we just have to look at it in the context of what it is that people want and how we can help them to get what they want.

Dr. DENHOLM. Is the presumption sound that there is no content, that there is no happiness in death, whatever the cause?

Dr. TAYLOR. No happiness in what?

Mr. DENHOLM. Death, whatever the cause.

Dr. TAYLOR. This is something that medical ethics struggles with and we get into these issues, particularly when we try to relate them to some of the medical-economic issues of what are the differences when you shift the mortality rate, from say children to productive age groups, then on into the various geriatric age levels.

Dr. DENHOLM. Whatever you do, you must measure the sensitivity and values of others against an assumed standard of your own.

Dr. TAYLOR. I think that at that point we come to the medical ethics of the situation of the individual and the family that has to make some of the decisions that are related to the intensity of medical care, for instance, where it comes up very acutely just in terms of what we consider death.

At that point, we are still struggling with it, obviously.

Mr. DENHOLM. Yesterday we dismissed neo-Malthusian theory. My question of Dr. Paarlberg was, if abortion and epidemics and famine and war all produce the same result, that is, less people, which should be pursued as a matter of public policy?

Dr. TAYLOR. Do we have a choice?

Mr. DENHOLM. I think we have a choice and others may not.

Dr. TAYLOR. You think we have the choice? In that case, the decisions that would be made would certainly not be made by doctors. It would be made by politicians much more than the professional fields, because doctors find themselves in the ethical framework where we have patterns of behavior that are set out for us. On the other hand,

in my response to the neo-Malthusian thinking is that the real choice that we have is to practice family planning.

Mr. DENHOLM. I am sorry. I must leave now to vote.

Thank you very much.

Mr. DE LA GARZA [presiding]. Thank you very much for bearing with us.

If you do not mind, we will just have a couple more questions.

Dr. Taylor, even if all the countries have the will to be able to control their population, would it not take many years to reach a zero population growth rate? I do not mean zero, no growth, but a rational growth rate?

Dr. TAYLOR. Yes, sir, you are completely right. The demographic lag period that is built into the age distribution of the population would mean that an any country that had a very sharp fall in fertility, that it would still take 70 years or so to get down to the balance between birth rates and death rates.

I think that it is this sort of issue that makes it particularly important to do something about it now because if we just let the thing drag on, the lag period is still there ahead of us, and therefore even though in some situations people are not at this stage enthusiastic about accepting family planning programs, my feeling is that there is a tremendous need for international education about population, and therefore there is a tremendous need to use something such as the World Population Conference as a means of promoting the whole idea of the need for national family planning programs as an urgent matter now, precisely because of the issue which you raised.

Mr. DE LA GARZA. You stressed great importance on the local participation, or that this is where we should begin our effort now.

How would you correlate with the cost to the host country, either in man, material, or money?

Dr. TAYLOR. The reason that I stress the local aspect of it is that that is the field in which I have been working, and that is where my competence is. I recognize the importance from the other more macro approaches, the whole matter of price policy, and so on. In terms of the cost to the host country, the one thing that has come out most clearly as we have been working with the national planners in India on trying to take what we have learned out of the projects and extrapolate them to the national development plan, has been that the idea that attracts the most about the approach that we have been developing of using the auxiliary, very simply trained individuals in the basic core package of services that involves maternal and child care, nutrition, and family planning. The thing that they find attractive about this package is that it is a means of doing something to provide jobs for educated young people. When you talk about cost, we are talking in the service programs mainly about labor costs, personnel, and since one of their greatest problems is unemployment among the educated youth of the country, they find this sort of a program particularly attractive because there is a large demand if you get such a program going, for providing jobs for these young people who are, as young people around the world are, idealistic but frustrated, and are a source of great political discontent because of their frustration.

And I think that the immediate prospect of using these service channels toward providing labor outputs is tremendously important, in addition to the good that they do.

MR. DE LA GARZA. I agree with you. The chairman of our committee is often criticized very respectfully by some people in positions such as you are because he advocates the theory, by the sweat of thy brow shall thou eat. That is basically what you are saying, that allow the people the cloak of government to afford the human dignity, then let them work for themselves and provide for themselves to the best extent possible.

You may have some argument as to what the best extent possible would be, but that is basically what you are saying. Otherwise, we have too few dedicated people in the world. Those that need to be committed are those in the local communities like you.

I stress, for example, I was riding on a plane back from Texas. I sat next to a very prominent cardiovascular surgeon from Texas who says that those in his field would make a minimum of \$200,000 to \$250,000 a year. Yet, our Government and this Congress has created the Heart and Lung Institute. They would like to have the top men that they can and pay him \$36,000 a year. You can imagine what kind of a person that they would get in that field when out of specializing in that field you could make \$200,000 a year on the outside. So it would have to be a very, very dedicated person.

Dr. Henriot, Dr. Taylor mentioned the time gap. I think he said 70 years.

Does that coincide with your perusal of the situation?

Dr. HENRIOT. I think that it certainly does coincide, and it highlights the urgency of the issue. The world's population will be doubling in the next 35 years unless there is great, widespread famine and war. The 3½ billion people now on the Earth, there will be some 7 billion people by the year 2010.

Given the present rates—if there is no decline in the present rates—the world's population may continue doubling in another 35 years after that. Even if we begin right now with adequate family planning provisions, and the socioeconomic development that is going on that motivates the people to use those family planning provisions, and even if we were full scale now, it would be some 70 years before the kind of stabilization does occur, and I think that highlights the urgency of it right now.

Given the world population problem, we need to face it in two ways. One way is providing the means to stabilize population growth, those means being development in family planning services. But second, we need to provide the means to take care of the some doubled number of population that we will have with us in that 35 years, and population has to be approached in both those ways.

That is why I stressed, in my testimony, that the food issue has to take account of the total picture, not just sort of an ad hoc piecemeal humanitarian approach. It has to be in that wider sort of a sense or it is inefficient, or we waste food, unless we do it in that wider kind of approach.

And, I think, given the fact of the urgency of the problem, and the great need in our scarcity, we cannot afford to waste food, and that is why we cannot afford that it be a piecemeal approach.

Mr. DE LA GARZA. Our counsel, Mr. Murray, is an unwilling, reluctant believer of the Malthusian theory. I guess he calls him a neo-Malthusian.

Mr. MURRAY. I do not know if you were here yesterday when we were discussing the difference between Malthusian and neo-Malthusian, and non-Malthusian. We settled on neo because the Malthusian theory was just too hard to accept, and being a complete non-Malthusian would defy the geometry that you just described.

What I would like to explore with our distinguished panel just a little bit are the ethical parameters that the American people may well be faced with in the years ahead, and we all hope and pray that the public enlightenment will avert this Malthusian calamity, but in the event that it does not—and you mentioned India, maybe fairly soon—but in the event that we are faced with famine someplace in the world and we do not have the food supplies to bring them immediate relief on a shortrange basis, what is the ethical parameter of the combat surgeon in triage as vis-a-vis the U.S. Government, and vis-a-vis the American people, when the Indians face, as of now, 4 years of a basic mass famine?

What do we do with the people and what do we do as a government to be ethically correct?

Dr. TAYLOR. This is the sort of thing that I stay awake nights worrying about as I sleep in an Indian village. I think that the way that it will come will not be mass famine for all of India. You will continue to have the pattern that they have had in the last 3 years, let's say, where there are pockets of famine. We have been working in the Punjab and we have been fortunate, because that is the heart of the Green Revolution, the development there, that regardless of what happens, the Punjab is going to do okay. There is no prospect of famine there, unless there is something really different happening than what is going on now.

But there are states in India that are marginal. They have expanded to the point where they are beyond the level of resources, water, land, and so on. So the prospects of their making the sort of takeoff that the Punjab has made are not good at this time. I think that they can eventually come to it. So that the prospect, as I see it, is that in the country itself there will be these tremendous forces developing, the ethical dilemmas that they have faced this last year.

And I was particularly moved personally to hear the stories coming out of Maraska last year where they did have a very severe famine and a drought, and the fact that there was a lack of publicity being given to it by official policy because the decisionmakers were saying that they could not get themselves into the situation of just accepting food as charity. They knew that the United States would not give it to them anyhow, but they did not want to get into the situation for general developmental reasons because they decided this is not the way they are going to solve their longrange problems for food production.

It is okay to accept food perhaps as an emergency, but not for a chronic deficiency situation.

Because of that, their own leaders have had to make these very difficult decisions, that they would bring in only enough food, which they brought on the world market, to meet the crisis starvation problem, recognizing the fact that the death rates from other conditions such as infections, were going up fantastically, particularly among children, and that this was related mostly to the malnutrition that was occurring. It was not an acute starvation, it was sort of a chronic thing.

MR. MURRAY. Is that not talking about what the Paddock brothers were saying in their book about the surgeon who was deciding that some would make it and others die? Is not what Mr. Denholm was searching for in that question about a conscious political decision that resulted in famine?

DR. TAYLOR. It comes down to whether you are making a conscious decision of doing something, contrasted with recognizing the fact that you cannot do something. It is an important ethical decision that is involved here because if someone makes the decision you are going to let somebody starve, and do it in a hard-headed way, it implies a whole moral stance.

MR. MURRAY. What the Nazis did in Eastern Europe and Russia in World War II, was that they made a command decision in the army to let the eastern people starve for political purposes.

DR. TAYLOR. Right, for political purposes. The reality here is that you face a situation that you are doing all you can, but you recognize that you cannot do everything, and that is not only a safer moral position, but it is one that I think is realistic in terms of the way development happens, because this has always been true, that there have been people who have not been able to enjoy the best of whatever has been available. And therefore, what I see happening in a country such as India is that there is going to be sort of a phased development and a time-phased development which is not—this is a positive Malthusianism, if I may add a third or fourth sort of semantic category, because what you are doing is to recognize that there are all these constraints, that you are holding things back, but our responsibility in development is to begin to pull on those points that can be pulled up and to encourage them through a long-term development process which is not bound up with the negative ideas of holding things back for political reasons.

It is very complicated.

MR. MURRAY. Thank you.

DR. HENRIOT. If I may add for emphasis, the key phrase Dr. Taylor has used, as long as we have done as much as we can and then are faced with a situation that might be inevitable, that is a different kind of a decision that we make the positive decision on. The operative phrase, the key phrase, as long as we have done all we can do, and as I mentioned in my testimony, I think that the Paddock brothers do not sufficiently explore these three elements that we still could do more on that is to question the whole issue of consumptive patterns in the United States as well as in the other industrial nations,

because that affects the price of wheat which in emergency situations a nation like India can buy, second, to question and examine more thoroughly the whole economic structures and relationships, monetary relationships, tariff relationships, investment patterns, et cetera, between the rich nations and the poor nations; and third, to focus much more on the kinds of findings of the research that Dr. Taylor and others have brought forward about that integral relationship between lowering fertility rates when there is better development going on, when there is better child and maternal health care, when there are better opportunities for women in society, et cetera, that we have not done all that we can do unless we have focused on those three things. Then we may be faced with it.

But the ethics of the matter is, make sure that you have done all you can do before giving up.

Mr. MURRAY. In the terms of a concrete example, it could well be that in the future sometime, Americans might have to choose whether to forego the high conception of livestock products in their diets, change the livestock in order that there be sufficient grain quantities to help somebody that is starving in a foreign country.

Dr. HENRIOR. I think that is possible. Push Dr. Brown on that, on the kind of dimensions that he has brought up, on the links between—the links on the world grain market and the links between the sufficient protein sources such as meat, how far down the line that is, I think raises the question about how well prepared we will be to be further down that line.

Mr. MURRAY. I think that is what the subcommittee is searching for, in looking to the future, to perhaps help condition the Congress and the public to be prepared for both contingencies, a solution to the basic problem, then perhaps a partial solution to some of the other problems that are existing.

You certainly have contributed to our thinking on that.

Sister HOHMAN. I would say teaching lifestyles is a difficult thing. I think American people are very generous. Senator Humphrey mentioned that if Americans cut back one hamburger a week—I have forgotten the exact timing he used, working in the amount of grain, that that would automatically make available, I think it was like 10 million tons or something like this.

The point is that you do not change lifestyles quickly. You do not change it easily. But we should be asking the American people to look at this.

I think that the Congress has a special role of leadership here to at least challenge us to look at our generosity, challenge us to look at our lifestyle, and encourage our generosity in this regard. I think that kind of leadership would be very, very valuable, any kind of educational effort that would help Americans see the contrast between our life and the life of the poor in many of the developing countries is extremely useful.

Many Americans—there was a study made by the Overseas Development Council. They did not make the study, but they asked for it to be done. They asked Americans if they are willing to support foreign aid. The results of that study, made in 1972, were astonishing to me because I heard so much to the contrary. Americans did

support foreign aid. There was something like a 68 or 69 percent of the Americans who would support it. There were provisos there. They wanted to have a good life themselves, they did not want to do this at the cost of completely disrupting their own economy, but there was a generosity on the part of Americans if there own economy was at least rolling along pretty well, they were willing to support foreign aid. And also, they much preferred aid that was humanitarian aid or aid that would go for food production, things of this sort, rather than military aid.

So I think that we have to look to that, that Americans are much more generous than we give them credit for, and I think we ought to ask them and challenge them, help them to see, because I think if we saw the situation we would respond.

MR. DE LA GARZA. You are very right. I had some research done, and in talking to young people, the American student at the university level, below 21 years of age, donates more of his own money and of his own hours in charitable causes in institutions than all the rest put together. I think this is also very true with our population as a whole. Some are abused and wronged by some of the fundraising that we see in this country, but in a purely clinical question, I agree with you that the American populace says yes and is very generous. My mail does not reflect that, and I do not get that mail from a conservative, right member of the populace in my district, but rather from the working people and the poor that you speak about having little or no influence. Those are the ones who tell me no foreign aid, no giving any other country.

So, in the purely clinical sense, you might give one answer, but in a factual situation, it gets to be another. But certainly I agree with you, that we should exhort the leadership to see that we share our bounty.

Sister HOHMAN. I do not think we have to put the test between giving the aid to the people in the United States, particularly to the Chicano American, in your area of Texas and California, do not make the test between shall we give aid to them or shall we give aid to the poor in India or Bangladesh, but you ask yourself, should we put a great deal of our money into military equipment that sits in the stockpile or that pits our tanks in Turkey against our tanks in Greece, this kind of thing.

MR. DE LA GARZA. We do not want to get into that, Sister. I know basically we will disagree, because sometimes in order to give them the human dignity and choice that Dr. Henriot advocates, you have to use tanks and bombs, unfortunately, but since Cain killed Abel, we have been killing each other, and hopefully we will learn.

Sister HOHMAN. Our military budget is so much greater than our budget for human needs.

MR. DE LA GARZA. Let me ask all three of you, none of you mentioned immigration or migration, either induced or voluntary.

Is there a place for immigration in the problems of the world hunger and malnutrition, unemployment and human dignity?

Dr. HENRIOT. The question of the migration of peoples is a critical question and will be one of the items on the agenda at the Bucharest conference.

I think what a good many people are concluding is that you have to make a distinction between internal migration, migration within a country, and external migration, migration from one country to another country. Internal migration needs to be very definitely effected. The high rates of urbanization that are going on in the developed countries are causing a considerable amount of the problems that we sometimes call population problem, and have a direct bearing, of course, upon the rural, nonurban areas that are underpopulated or depopulated, upon the agricultural policy. Internal migration certainly needs to be effected, and certainly will have impacts upon agricultural and food policies.

External migration, the possibilities of solving some of the population density by allowing migration from one country or from one large section of the world to another section of the world, I do not know anyone who seriously sees that as other than just sort of an immediate stopgap, possible lessening of some tensions. But in terms of the ability to solve some of the large scale population problems and food problems by large scale migrations of people, given the present economic political, cultural condition of the world, I do not know of anyone who seriously holds that out as an approach that would solve the world population and food problem.

Mr. DE LA GARZA. Do you agree, Dr. Taylor?

Dr. TAYLOR. Yes. I think fundamentally I agree. I think one of the further subdivisions of the whole problem that has become of considerable importance is the so-called brain drain problem, where there is a very selected migration of the people who are most competent and most educated, and here I think we are in a position where we need to look at this in moral terms again of the fact that we have been deliberately encouraging that kind of migration to the United States, and by doing that, are holding back the development process in some of these countries that we are worried about, because the people who can solve the problems are leaving, the ones who can provide the leadership.

This obviously is wrong if we are really trying to help them.

Mr. DE LA GARZA. Sister?

Sister HOHMAN. Yes, I agree with that.

Mr. DE LA GARZA. That was very forcibly brought to my attention not too long ago by a member of the Russian Parliament, that on a visit here, and I had occasion to visit with him, the matter of allowing the Jewish people to leave Russia, and the one who spoke to me, his answer was, you will take away all of our scientists, that one of the reasons they do not allow some of them to leave are because either because of their contribution or their technical knowledge, in very sophisticated and diverse in Russia.

Basically we adhere to the human principle that each one should be allowed to go where he so desires.

Sister, let me ask you, some of the organizations—I do not know if yours does—but similar organizations advocate strict immigration laws to our country. For example, the so-called Rodino bill, are you acquainted with it?

Sister HOHMAN. I am not familiar with that.

Mr. DE LA GARZA. I was wanting to ask you, but since you are not acquainted with that legislation, because we have a fault in some of

the recommendations made, of assisting the poor and feeding the hungry, and allowing people to come to our country, that then some of the organizations in trying to correct some of the problems within our country would say yes, but do not allow the farmworker from Mexico to come, which does not relate to their insistence of trying to help those that are hungry.

Sister HOHMAN. One of the problems—I am not that familiar, with it, but I have had some small discussion of it, it depends on what you bring the farm worker from Mexico to this country to do. If you deliberately bring people here to break a strike that is going on in the country against agricultural growers, and you do this to pick up people in Mexico that are not familiar with that kind of situation, and do it for strike-breaking, obviously I would not be in favor of that.

But, however once people, for one reason or another, have come to this country, whether illegally, whether they are wetbacks or they have been brought in this way, I think they have to be taken care of. I think that we have to be very careful about trying to break strikes by bringing people into this country. I know that situation is one that is under discussion in the west.

MR. DE LA GARZA. This is a question to what we have been speaking of, human dignity, the right of the individual to a decent living, and I guess we had best not delve into that any further because many people insist in the Congress that you do a thing, but with the large big “but”, but not in this instance, but not in this instance, and they go around and back and behind their original statement of let’s feed the hungry, let’s allow a man or a woman the dignity of a human being, and then they use that as a subterfuge, sometimes, to advocate personal issues not consistent with the general statement, none of which I bring up because of the witnesses here, but rather, you would be amazed at the insight that a Member of Congress has on the morals, the ethics and the wishes and the desires of his community from the correspondence that a Member receives.

We have received an education above and beyond that any university can bestow on us. That is why sometimes some of us are branded as cynical or branded as insensitive to the needs of the people. It may seem so. We are not, but the correspondence and the looking into the minds of the people when in the middle of the night they stay awake and write a nasty letter to their Congressman, we find out what the true intent of the people is, and I bring that up only because I sit up in the middle of the night thinking about this problem myself.

All three of you have been very, very good witnesses. You have been very cooperative. You certainly have brought us tremendous insight into this terrible problem that we are faced with and hopefully our contribution, as small as it might be, will be enhanced by your contribution here today.

We thank you very much. We will stand in recess until 10 o’clock in the morning.

[Whereupon, at 12:55 p.m., the subcommittee recessed, to reconvene at 10 a.m., Thursday, July 25, 1974.]



# WORLD POPULATION AND FOOD SUPPLY AND DEMAND SITUATION

THURSDAY, JULY 25, 1974

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON DEPARTMENT OPERATIONS  
OF THE COMMITTEE ON AGRICULTURE,  
*Washington, D.C.*

The subcommittee met, pursuant to notice, at 10:08 a.m., in room 1301, Longworth House Office Building, Hon. E de la Garza, (chairman of the subcommittee) presiding.

Present: Representatives de la Garza, Matsunaga, Price, and Sebelius.

Also present: Hyde Murray, associate counsel; Steve Allen, staff consultant; Perry Shaw, staff assistant, L. T. Easley, press assistant and Grady Smithy, congressional fellow.

MR. DE LA GARZA. The subcommittee will be in order.

We continue our hearings today on world population and food supply and demand situation and world food reserves. Our first witness today will be our former colleague, Hon. Joseph Tydings, honorary chairman of the Population Crisis Committee.

We appreciate very much that you take the time to be here, Senator, and we are always happy to have you come back and visit your old colleagues and we will be happy to hear from you at this time.

## STATEMENT OF JOSEPH D. TYDINGS, CHAIRMAN, POPULATION CRISIS COMMITTEE

MR. TYDINGS. In Fulton, Mo., during the late 1960's, the eminent Western statesman and philosopher from the British Isles, C. G. Snow, stated that he had little reason to believe that the developing world—the so-called “third world”—would be able to head off a collision between soaring population and a limited food supply. He went on to forewarn, “Most informed opinion believe that the collision is going to take place. At best, this will mean local famine to begin with; at worst the local famines will spread into a sea of hunger.” Lord Snow went on to prophesy an initial collision date sometime between 1975 and 1980. His prediction was tragically accurate. The local famines began in 1973. Whether they spread into a sea of hunger depends on the response of our own and other governments.

There is no more common denominator for all mankind than a man's need for his daily bread. Food is the essential condition for human survival in the Sahilian Africa, the Andes Mountains of Bolivia, the plains of India, or Garrett County, Md.

The stark truth is that our ability to produce food on this planet is not keeping pace with the numbers of mouths we must feed. Despite valiant efforts by governments, by the international community, by the scientific community with the development of miracle seeds and fertilizer and the so-called "green revolution" to solve the world food problem, we are on the verge of cataclysmic food shortages in Asia, Africa, and parts of South America this year, not 1975, not 1980, nor the year 2000.

The surplus stocks formerly held in reserve in the United States and Canada are almost exhausted and no longer offer the security against widespread hunger and starvation they did in the decades of the fifties and sixties.

World supplies of grain are at the lowest level since the end of World War II, with only enough reserves to last for 27 days in the event of a major drought in Asia. Moreover, the world fish catch has declined materially, and there are indications that in many areas of our great oceans, seas, and estuaries, the fish population has been seriously reduced.

Despite a record world harvest last year, escalating demand for food from the Western World as well as the Developing Nations nearly doubled the price of basic food grains. The rising cost of foods which is a cause of increasing concern to many American families today is literally a matter of life and death for a billion Asians with an annual income of \$150 or less and one-third of a billion Africans with an annual income of \$130 or less, spending over half of their total annual earnings for food.

Fertilizer—which has petroleum bases and which is an essential element to increase food production—has become prohibitively expensive to the poorer nations of the world since the increase of world oil prices. In India, the fertilizer, petroleum, seed, and food grains which they imported in 1972 cost in hard dollars approximately \$500 million. In 1974, the same essentials to high food production will cost between \$3 and \$5 billion.

The population of the world today is more than 3.5 billion people. It is increasing at the rate of approximately 75 million persons each year or 200,000 additional babies to feed each day. During the three decades since Pearl Harbor, the world's population has almost doubled from approximately 2 billion persons to over 3.5 billion, or almost 1.5 billion new human beings. If the present rate of population increase continues, demographers expect that over the next three decades (that is, 1970 to 2000) almost 3 billion more people will be added to our planet's present population or almost doubling from 3.5 billion to 7 billion persons.

The cause of this tremendous 20th century population explosion is a combination of a medical and public health revolution which since World War II has dramatically lowered the world death rate and a birth rate which has remained high. Cholera, malaria, and yellow fever, which once claimed 6 or 7 of every 10 children born in the "third world", have been virtually arrested. However, these same families still have 10 or more children. This combination of a high birth rate and a falling death rate has resulted in an "express train" rate of population growth in the developing world and has

brought us suddenly to a decisive juncture of too little food and too many people to feed.

During 1974, conservative estimates are that somewhere between 200 and 400 million of our fellow human beings will stare starvation directly in the face. Over 10 million persons, most of them children 5 years of age and under, will perish as a direct result of too little food to eat.]

Three weeks ago on April 25, the Secretary-General of the United Nations, Kurt Waldheim, received a Declaration describing the world food and population crises and calling on governments to act. It was signed by over 1,500 civic leaders and governmental officials from over 100 nations, including 20 U.S. Senators and 40 Members of the House of Representatives. It was accompanied by personal messages subscribing to its importance by the Shah of Iran, the Prime Ministers of India, Senegal, Sri Lanka, and the Secretary of State of the United States. Although the presentation took place with representatives of 25 nations present and with considerable advance press and media notice, it was all but buried in the news reports of the day.

Such is the grip of "Watergate" on the media, press, and national leadership that the present precarious state of world food production made critical by continued world population growth has moved upon us almost unnoticed. As a result, we see a May 13, 1974 issue of Time magazine which has an appalling but truthful four-page article entitled, "Famine Casts Its Grim Global Shadow," buried in the center of a magazine focused almost entirely on Watergate tapes and Mr. Nixon's predicaments. Last October, in an effort to persuade the Japanese Government to organize and fund a major Asian aid program centered on assistance to population stabilization programs and food production programs, I accompanied six members of the Japanese Diet, including former Prime Minister Kishi, and 20 members of the Japanese Government into four areas of Asia—Philippines, Thailand, Indonesia, and India—in order to forcefully and dramatically educate them on the world population and food crisis. The trip was under the auspices of the United Nations for Population Activities. The day I took the Japanese delegation on a walking tour of the Howrah, the infamous Calcutta slums, and the streets around the Calcutta railroad station, we were exposed to scenes which defy description and beliefs as to the depths into which human life has sunk on parts of this planet. No description of Lucifer's region by theologians or writers of the past are as utterly grim and grotesque as a walk on the streets of present-day Calcutta. The sight of starving children struggling with ravens and emaciated dogs for scraps from rotting piles of garbage or of the late evening garbage trucks picking up the corpses from sidewalks in the daily cleanup leaves one with a sickness of soul and spirit for days on end.

The reason for this testimony, however is not to comment on Calcutta, but to advise my fellow Americans that we are now facing "Calcuttas" in Mauritania, Mali, Senegal, Gambia, Upper Volta, Niger, and Chad, indeed the whole Sahelian Belt of African nations below the Sahara Desert where thousands of infants, children, and

adults are slowly dying of starvation each day. Only the valiant efforts of an emergency worldwide aid program organized by the Food and Agricultural Organization of the United Nations and supported by the United States kept over a million Africans from death by famine.

In Bangladesh, conditions are now reportedly worse than they are in West Bengal, if that is possible. The shadow of famine is beginning to loom in Bolivia and Ecuador in our sister continent to the south. In Ethiopia, Yeman, Southern Yeman, Uganda, Kenya, Tanzania, and Nigeria, as well as isolated parts of the northern part of India, the black flag of hunger and starvation is beginning to flap.

Unfortunately, we in the United States have not yet focused on what may be "long term" the most dire results of this crisis, that is, the collapse and dissolution of governments and relevant institutions of society under the weight of starvation and its byproducts of unemployment, violence, and death.

Nature abhors a vacuum. A collapse of a government, whether it is Bangladesh, India, Ethiopia, or Bolivia, can often bring far-reaching consequences. In this particular period of history, a major government collapse in India might have grave, far-reaching consequences if Russia or China "move in" to protect what they deem as their vital interests.

What is happening now in Africa, India, Asia, and South America has vital economic consequences to the United States. More and more third world countries are forced to go on "dole" because they can no longer feed their increasing populations. The burden to support them falls on the United States and other nations of the Western World. Economically, we lose valuable markets for our products. As more and more third world citizens become weakened by malnutrition and are no longer productive, the total gross product of the world's goods and services fall, and make no mistake, so will the standards of living and the quality of life in the Western World, including the United States.

Although there are no easy answers or ready solutions to this world crisis, there are steps which can and must be taken by the United States and the "developed world" in an effort to provide the leadership necessary to delay, reduce, and hopefully avert the global tragedy which is rapidly engulfing us.

1. We should make every effort to focus world-wide attention on the forthcoming United Nations Conference on Population and Food. The former will be held in Bucharest, Rumania, in August and the latter in Rome in November.

2. We should encourage the Soviet Union, China, France, and all our Western allies to take an active role in the Conferences and to support the plans of action adopted.

3. We should propose in the World Population Conference a world plan of action encompassing the following objectives:

- a. A goal of global population stabilization by the year 2000 based on providing every woman in the Developing World of child-bearing age with the information and contraceptive assistance necessary for her to voluntarily space or limit the size of her family.

This could be financed 50% by each developing country itself and 50% by western bilateral and multilateral aid for about Four Billion Dollars per annum.

b. A goal of at least one population census in every developing nation by 1985 giving particular attention to data relevant to planning and formulation of population policies. It is incredible that so many developing nations have no vital statistics at all.

c. A goal of research on the broadest plains relating to the social, cultural and economic determinants of population growth as well as the scientific development of more effective contraceptive devices.

d. A goal of a major global program of education, information, and training on population subjects and population areas.

e. A goal for the adoption of an individual population policy by every member nation of the United Nations by 1976 based on the individual needs and problems of each sovereign country.

4. We should encourage every Western nation to earmark not less than 30% of its total foreign aid program to multilateral and bilateral population programs.

We should propose in the World Food Conference in Rome a world plan of action encompassing the following objectives:

a. An immediate all-out effort to rebuild the world's food reserve. Proposals have already been advanced by F.A.O. Every member nation has a responsibility, but that of the United States and Canada is primary.

b. A strengthening and development of the world's food information system so as to provide more lead time to react to famine situations on an ad hoc basis anywhere in the world.

c. Programs to increase the food production of the developing world by concentrating Western aid programs on food and population.

d. Undertake a major world effort to develop and expand fertilizer production in and for the developing world.

e. Undertake a major world effort to develop and expand irrigation capability in the developing world.

[Mr. Tydings also submitted a copy of the Declaration on Food Population which is retained in the committee files.]

Mr. DE LA GARZA. Senator, the procedure before this committee has been to hear all the witnesses and then allow the witnesses to come back for questioning.

Mr. TYDINGS. I have one problem, Mr. Chairman, I have an appearance, I am afraid, in court at 11:15, so maybe—

Mr. DE LA GARZA. Well, we will not detain you, Senator.

We would like to have you stay but, Mr. Matsunaga, have you any questions of the witness?

Mr. MATSUNAGA. Yes.

Thank you, Mr. Chairman.

I wish to congratulate you on your statement, Senator Tydings.

I think we need more statements such as yours that you have made throughout this country, not only before Congress. I think Congress is conscious of what you have pictured, but then, you well know, Congress does not move unless it is faced with a crisis, and I do not believe Congress as yet fully appreciates the fact that we are in a food crisis.

We had a fuel crisis, an energy crisis, recently, and I am with you in foreseeing an even greater crisis in food shortage.

As a matter of fact, looking at it from the world situation the crisis is upon us now, but it will not be until the people of the United States begin to write in and even wire their Senators and Congressmen that the Congress is going to take any active steps toward meeting the situation.

Yesterday I was on the steps of the Capitol being presented some cucumbers by Congressman Burke of Massachusetts, who had introduced a bill providing for the free distribution of seeds to families desiring to have seeds for home gardening purposes.

As a cosponsor of that measure, I think we need to dramatize the actual crisis which we are now in, and in which we will be more deeply involved, perhaps within the next 2 or 3 years.

I congratulate you, Senator, and I wish you would take maximum action right down to the people so that they in turn will be awakened to the point of writing their Congressmen. Perhaps, Congress will then get moving to meet the food crisis, before it becomes as emergent as the energy crisis was. That is my question, Mr. Chairman.

Mr. DE LA GARZA. Thank you, very much for your question.

Senator, I might inform you if you are not already aware that the declaration signed by some Members of the Congress was signed by the Speaker of the House, Hon. Carl Albert, and it was a letter to all Members expressing his concern that prompted the beginning of the hearings.

It was also the concern of the chairman of the full committee, Chairman Poage of Texas, expressing an interest that further assisted us in the beginning to have these hearings.

I think that you have made a very great contribution to the overall hearings, Senator, and specifically it had not occurred to us that it might be well to have oversight hearings after the meetings in Bucharest and Rome, and I assure you, sir, that we will.

We will follow up and have all oversight hearings after all of the material has been digested and presented.

Mr. TYDINGS. Mr. Chairman, if I might suggest one more thing.

I think it might well be for you and interested members of your subcommittee to meet with the U.S. delegations, both to the population conference and to the food conference before they go.

I think it would be very important that you have some idea of what they are going to do—their position that they are going to take.

I think it very important they know you are going to be having oversight hearings on what they have accomplished when they come back.

I think that the interest of you and the distinguished members of your subcommittee would be a very, very important factor in the success of the delegation.

It might even be, members of your subcommittee perhaps could attend the food conference in Rome.

I know that the population conference will probably be a difficult time for you to get away but I would think that you really or at least, these would be things you might wish to consider.

Mr. MATSUNAGA. Mr. Chairman, I have a question.

Senator, you mentioned the family planning program in India and Pakistan.

I am rather proud of the fact that I was the introducer of the amendment to Public Law 480 to provide for that program.

I was very pleased—this was back in 1966—that we adopted the amendment to Public Law 480. After the program had been initiated it was reported to me that the family planning program was working very successfully, particularly in India, but I am somewhat perturbed by the fact that the the population growth in India is still up to about 12 million a year.

That is equivalent to one Australia every year.

Mr. TYDINGS. I wish that I could tell you that the Indian Government had a good family planning program.

It does not.

Quite candidly, in my judgment, and I have been in India a number of times, particularly, to work in their family planning program, they have not really given full support to the government to a family planning program.

It has been more of a program of charts and public relation releases than it has been a program of action.

Those of us in the world effort do not consider India to really have a viable planning program.

They were the first and Pakistani of foreign countries to announce they had or they were going to have a family planning program.

They have used the aid which our leadership provided to some extent if you were to analyze the program personally I think you would see what I mean.

Now, there are, Mr. Chairman, there have been a number of countries in Asia which have effective programs and if I might—I do not have those charts—I do not have those charts—I do not think I have them with me, but we have the United Nations fund for population activity in connection with the Bureau of Census of the United States which has put together some very good graphs which illustrate personally for you and the chairman to show the difference in those countries which have had aggressive family programing, just within the last 5 years, and those which have not.

Unfortunately, India has not had a good program.

I will tell you some countries that have had good programing, South Korea, Taiwan, Singapore—these are countries which have had real, actual face and credit efforts by the government cooperation with the people and the results have been dramatic, but I wish—I should have had the charts with me today, and I don't but I will get them for you.

Mr. DE LA GARZA. If you will supply them for the record we will incorporate them in the record.

[The charts had not been received at the time of printing.]

Mr. MATSUNAGA. I would appreciate that very much.

Of course, it was reported to me in 1969 or 1970 that more than 3 million loops had been inserted in young mothers in India alone, and about 3 million men—fathers—had had vasectomies.

Mr. TYDINGS. Those statistics may have been accurate in that particular year.

There was 1 year when the program seemed to gain impetus but since then the Indian government has reduced their own commitment insofar as the appropriate for families and they have refused to permit the use of the pill in India until a few weeks ago.

There was just every indication that they were really—

Mr. MATSUNAGA. As you know, the program calls for the use of rupees which we cannot take out of that country, and which must be spent there, if they are to be spent at all.

We are to spend American owned rupees for the welfare of the Indians—that was the full intent of my amendment to Public Law 480 in 1966.

Mr. TYDINGS. Well, I think it was a splendid amendment and that was the real determination of the Indian Government.

I might point out the governments themselves—the people themselves have got to really want to move a program to be really out in their support of a program for it to work, and at least to date that has been one of the—I think really tragedies in India that the government has not really given the full support but given only lip service.

Mr. DE LA GARZA. Thank you very much, Senator.

We will allow you to make your appointment and we appreciate your being here.

Mr. TYDINGS. I appreciate your kindness.

Mr. DE LA GARZA. We very much appreciate your being here, you have made a valuable contribution.

#### STATEMENT OF DR. LESTER BROWN, OVERSEAS DEVELOPMENT COUNCIL

Mr. DE LA GARZA. We welcome you, Dr. Brown. We await your testimony and might inform you that possibly every witness heretofore has stated that either to one question or more that those will probably be answered by Lester Brown.

Mr. BROWN. Thank you, Mr. Chairman.

Mr. DE LA GARZA. So we await your testimony.

#### THE CHANGING FACE OF FOOD SCARCITY<sup>1</sup>

Mr. BROWN. In the early seventies the soaring demand for food, spurred by both continuing population growth and rising affluence, has begun to outrun the productive capacity of the world's farmers and fishermen. The result has been declining food reserves, skyrocketing food prices, and intense competition among countries for available food supplies. Fundamental changes in the nature of the world food problem have left governments, institutions, and individuals everywhere unprepared and vulnerable.

Growing global insecurity on the food front is directly related to the precipitous decline in world food reserves. Since World War II,

<sup>1</sup> This statement is drawn from "By Bread Alone," by Lester R. Brown with Erik P. Eckholm, to be published by Praeger Publishers in fall 1974.

the world has relied on two major food reserves: carryover stocks of grain in the principal exporting countries and cropland held idle in the United States under government farm programs. Together they provided a substantial buffer against the vagaries of weather and the whims of the market place. In 1961 these reserves amounted to 222 million tons of grain, or 95 days' worth of world consumption. By 1974, however, they had declined to a level representing global needs for only 26 days.

Thus in mid-1974 the world food supply-demand equation was precariously balanced. A poor harvest in any major producing country—the United States, the Soviet Union, India, or China—would send economic shock waves not only throughout the food sector of the world economy but, as it fueled the fires of inflation, throughout its other sectors as well. The vulnerability of the supply-demand balance to the weather suggested that the climate itself might well replace pollution as the dominant global environmental concern.

In this situation, national governments have resorted to a variety of techniques to obtain or ensure adequate food supplies for their people. Their actions have given rise to a new phenomenon: a global politics of food scarcity. Thus, during the summer of 1972, the Soviet Union employed secrecy to corner the world's wheat market by buying a large share of the exportable supplies of wheat before even the American Government knew what was happening. The following summer, the United States—the source of 85 percent of all the soybeans entering the world market—abruptly announced an export embargo on soybeans in an effort to curb soaring soybean and food prices at home. This action, taken without warning or consultation with other countries, triggered a wave of strong diplomatic protests from Europe and Asia. For the billion people in East Asia for whom soybeans are a vital food staple and source of scarce protein, this U.S. decision posed an ominous threat.

Short supplies of food and energy dramatize the extent of global interdependence. No country is entirely isolated from the effects of these scarcities—or from their trade and monetary repercussions. The capacity of U.S. agriculture to supply low-cost food to American consumers was thought to be inexhaustible, yet in 1973 Americans suddenly discovered that they were sharing food scarcity with consumers throughout the world. The United States was paying its rapidly rising oil import bill with food exports. Indeed, the share of world food and energy consumption crossing national boundaries is climbing steadily. Japan imports well over half of its total cereal supplies, Egypt nearly 40 percent. The countries of the European Economic Community import nearly all their petroleum, as well as four fifths of the high protein feeds for their livestock industries. The United States already depends on imports for one third of its petroleum supplies; if its recent demand trend persists, it is expected to import half by 1985.

#### POPULATION AND AFFLUENCE

These events of the early seventies signal a fundamental shift in the structure of the world food economy. Throughout most of the period since World War II, the world food economy has been

plagued by chronic excess capacity, surplus stocks, and low food prices. But emerging conditions suggest that this era is ending and is being replaced by a period of more or less chronic scarcity and higher prices, with little if any land held out of production. Short-term price fluctuations and temporary commercial surpluses should not obscure the more basic long-term forces at work.

Changing conditions on both the demand and supply sides of the world food equation are contributing to this shift. Throughout most of history, increases in the demand for food derived from growth in population. Since the time of Malthus, the food problem has been viewed as a food/population problem. World population growth continues to be rapid, but rising affluence now has emerged as another major claimant on the world's food-producing resources.

The impact of population growth on the demand for food is easy to understand. A 3-percent increase in population generates a 3-percent increase in the demand for food. But the impact of rising affluence is not so readily understood. One way to visualize it is in terms of per capita grain requirements. In the less developed countries, only about 400 pounds of grain per year is available to the average person. Almost all of this quantity must be consumed directly merely to meet minimal food energy needs; very little can be converted into livestock products. By contrast, the average North American uses nearly a ton of grain per year. Of this, less than 200 pounds is consumed directly as bread, pastry, and breakfast cereal. The remainder is consumed indirectly in the form of meat, milk, and eggs. Thus the average North American currently uses up five times as many agricultural resources as the average Indian, Nigerian, or Colombian.

The combined effect of population growth and rising affluence is accelerating world food demand at rates without precedent in history. At the turn of the century, the annual growth in global demand for cereals was probably about 4 million tons per year. By 1950 it was about 12 million tons per year. As of 1970, only 20 years later, the world demand for cereals was expanding by 30 million tons per year—the equivalent of the annual wheat crop of Canada, Australia, and Argentina combined. And this increase in demand is incessant, occurring in years of good and bad weather alike.

#### LIMITS OF SUPPLY

On the supply side, three sets of factors are beginning to affect efforts to augment world food output as rapidly as is necessary. Serious technological constraints are limiting the rapid expansion of food, particularly beef and soybeans; all four of the major resources used to produce food, land, water, energy, and fertilizer, are now in tight supply; and in a growing number of situations, the pressures of growing demand for food are beginning to undermine the ecology of major food-producing systems.

The inability to achieve technological breakthroughs in critical areas is a significant limitation on the expansion of food supplies. In the case of beef, agricultural scientists have not been able to devise any commercially viable means of producing more than one calf per cow per year. For every animal entering the beef production process, one adult animal must be fed and otherwise maintained for a full

year. A breakthrough in this area does not appear to be imminent. This would not pose a serious problem if there were a great deal of unused grazing capacity in the world, but unfortunately much of the world's pastureland is already over grazed and much more is fully utilized.

Another technological limitation is the inability of scientists to dramatically increase per-acre yields of soybeans. As we have noted, soybeans are a major source of high-quality protein for livestock and poultry through the world, and in East Asia they are consumed directly as food by perhaps a billion people. Soybeans are therefore extremely important in economic terms. They have become the leading export of the United States, surpassing not only more traditional farm exports, such as wheat and corn, but also high technology items, such as electronic computers and jet aircraft. Yet since 1950 soybean yields per acre have increased by only about 1 percent per year while corn yields have increased by nearly 4 percent per year. Thus the world gets more soybeans only by planting more soybeans. As of 1973, 1 of every 6 acres of U.S. farmland was planted to soybeans. As idled cropland disappears in the United States, the inability to achieve a soybean yield breakthrough may create serious global supply problems.

#### LAND AND WATER

The world is now also in a uniquely serious situation regarding the supply of land, water, energy, and fertilizer. For the first time in modern history, there are shortages in each of these critical agricultural resources.

From the beginning of agriculture until about 1950, most of the year-to-year increases in world food output came from expansion of the area under cultivation. Since 1950, however, the major increases, probably four fifths of the current gains in output, are attributable to intensification of cultivation on existing land area. Most of the good cropland in the world is already under cultivation.

Estimates of how much additional land can be brought under cultivation vary widely, but none are very useful because they do not specify at what cost the additional land can be made productive or at what food price levels its cultivation would be profitable. Meaningful estimates of possible expansion of the cultivated area must take into account the level of capital inputs and technology required and the relationship of the cost of food produced on it to prices that people are able to pay. Little if any potential for new farm lands exist in Asia and Europe and relatively little in the Soviet Union. Most of the countries of North Africa and the Middle East, dependent as they are on irrigation or dryland farming, cannot significantly expand the area under cultivation without developing new sources of irrigation water.

Additional opportunities for expansion are mainly limited to the interior of Latin America and parts of sub-Saharan Africa. And even in these regions, the cost of food produced on the new land may be much higher than that of food grown in existing cultivated areas.

But the principal constraint on efforts to expand world food supplies during the final years of this century may well be water rather than land. In many regions of the world, fertile agricultural

land is still available, provided that water can be found to make it productive. But most of the rivers that lend themselves to damming and to irrigation have already been developed.

The great worldwide burst of investment in large-scale irrigation projects throughout the world during the third quarter of this century will not be repeated during the latter quarter. Thus, while the world irrigated area expanded by nearly 3 percent annually between 1950 and 1970, it will probably grow at barely 1 percent a year in the final remaining years of the century (table 1).

TABLE 1.—ESTIMATED WORLD IRRIGATED AREA, 1900-2000

Year	Estimated irrigated area (million acres)	Annual rate of increase (percent)
1900.....	100	1.9
1950.....	260	2.9
1970.....	460	1.1
2000 (projection).....	640	---

Sources: FAO, "Production Yearbook," (various issues) and authors' estimates.

With water becoming an increasingly scarce commodity, man will have to pay more attention to the efficiency with which crops, particularly cereals, use water. Fortunately, the new high-yielding varieties of both wheat and rice which underlie the Green Revolution are physiologically more efficient in using water than are traditional varieties.

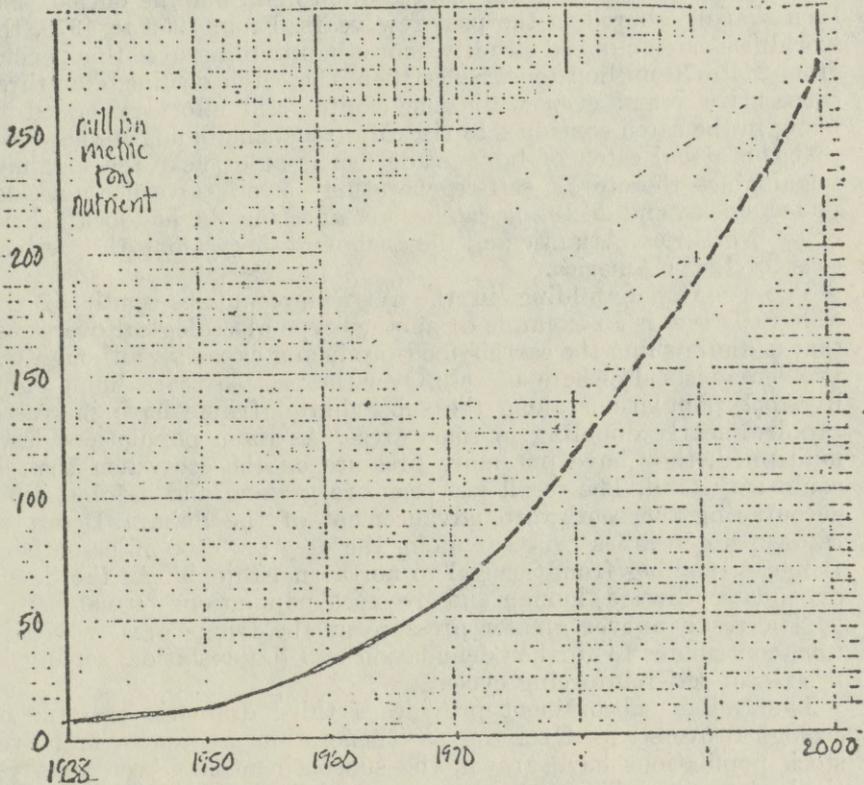
#### ENERGY AND FERTILIZER

Increasing world food production also requires a substantial increase in the amount of energy available for doing so. The recent tripling of the world price of energy is certain to affect future food production prospects, but no one can yet foresee exactly how. In the more modern agricultural systems, such as that of the United States, the amount of energy now used to produce food exceeds by several times the amount of food energy the crops themselves yield. But as energy intensive as farm production is, it consumes less than one-fourth of the energy used in the U.S. food system. The rest is used to transport, process, preserve, and distribute the food. Perhaps the grossest inefficiency in the entire process is the usual means of transporting food from market to home. The average American shopper drives a 2-ton automobile several miles to a supermarket at least once a week to transport some 30 pounds of food. In the developing countries, the future availability of energy will have a profound effect on efforts to provide adequate nutrition, for large increases in energy inputs will be necessary if food production in these nations is to increase rapidly.

It is impossible to predict precisely the level of chemical fertilizer use that will be required to meet the world's growing demand for food. Little is known about the fertilizer responsiveness of crops in the scientifically uncharted growing conditions of much of the developing world, where fertilizer use will have to grow rapidly. But

in most cases, the best farmland is already in production, and it seems certain that production on the increasingly marginal lands which must be brought into production in the future will require higher applications of fertilizer for a given yield increase than has been the case on more fertile lands. (See fig. 1.)

Figure 1. World Fertilizer Use, Projected to 2000



Source: FAO and authors' projections

Fertilizer is in very short supply. The outlook in this case, too, is for generally higher prices in the future. One reason for the fertilizer shortage is a lag in the construction of new production facilities; but even when supply catches up with demand, the rising cost of energy will undoubtedly keep fertilizer prices well above the historical level. The production of nearly all of the world's fertilizer—which accounts for roughly half of all fertilizer used—utilizes natural gas or naphtha as a raw material. In addition, the manufacturing process is an energy-intensive one, requiring large amounts of electrical power. The combination of soaring energy prices, the enormous capital requirements needed to create new production facilities, and the time required to bring new facilities into produc-

tion means that nitrogen fertilizer will be in critically short supply for many years at least.

#### ECOLOGICAL UNDERMINING

Finally, the ecological undermining of major food-producing systems also is beginning to have an adverse effect on the prospects of increasing world food production. Until recently, the oceans were viewed as an almost limitless source of protein, but the outlook has been sharply altered in the past few years. From 1950 to 1970, the world fish catch climbed steadily, more than tripling over this period, from 21 to 70 million tons. Since then, the catch declined for three consecutive years, even while the capital and effort expended to bring in the catch continues to rise. Many marine biologists now feel that the global catch of table-grade fish is at or near the maximal sustainable—therefore, self-regenerating—level. Overfishing, depleted stocks, and declining catches are affecting the haddock fishery of the Northwest Atlantic and the anchovy fishery along the western coast of Latin America.

The tragedy unfolding in the African countries south of the Sahara Desert is an example of another type of ecological overstress that is diminishing the earth's food-producing capacity, although the problem exists elsewhere as well. Over the past 35 years, human and livestock populations along the sub-Saharan fringe have increased rapidly, nearly doubling in some areas. As these populations have multiplied, they have put more pressure on the ecosystem than it could withstand. The result has been overgrazing and deforestation, encouraging the southward advancement of the Sahara Desert at rates up to 30 miles per year along the desert's 3,500-mile southern fringe, stretching from Senegal to northern Ethiopia. As the desert expands southward, human and livestock populations retreat before it. The result is ever greater pressure on the fringe area, which in turn contributes to further denudation and deforestation, setting in process of self-reinforcing cycle.

The Indian subcontinent provides a third dramatic example of ecological overstress. Over the past generation, as human and livestock populations have grown, the subcontinent has been progressively deforested. This trend has increased the incidence and severity of floods. The situation is most serious in the Himalayas and the surrounding foothills, for this is where nearly all of the subcontinent's major river systems—the Indus, the Ganges, and the Brahmaputra—originate. The long-term dangers inherent in continuing deforestation could have been firmly predicted several years ago, yet many were surprised when Pakistan's August 1973, flood—the worst in its history—washed away entire communities and, in some regions, destroyed the recently harvested wheat crop in storage as well as the summer crop standing in the fields. Since the deforestation trend has not been checked, one can only predict that the incidence and severity of flooding in Pakistan, India, and Bangladesh will be much greater in the future than it is at present. In effect, deforestation, particularly in Nepal, may be gradually undermining and diminishing the subcontinent's food-producing capacity—to the

grave detriment of the nearly three-quarters of a billion people who now depend on it.

Clearly, the food-producing ecosystems in many parts of the world are being threatened by the pressures of continuously growing demand for food. The examples given above are only three of the many that could be cited. The time has come to systematically inventory these ecological stresses and assess their impact on the world's food-producing capacity and on future prospects.

#### INDEX OF WORLD FOOD SECURITY

Since World War II the world has been fortunate to have, in effect, two major food reserves—one in the form of grain reserves in the principal exporting countries, and the other in the form of reserve cropland, virtually all in the United States. These two reserves have provided a valuable degree of price stability, since their size could be adjusted to compensate for production fluctuation. Most importantly, they have provided a critical safety valve when crop failures or droughts have created major unexpected import needs, as in India or the Soviet Union.

Grain reserves, including substantial quantities of both foodgrains and feedgrains, are most commonly measured in terms of carryover stocks—the amount in storage at the time the new crop begins to come in. World carryover stocks are concentrated in a few of the principal exporting countries namely, the United States, Canada, Australia, and Argentina. Since 1960, world grain reserves have fluctuated from a high of 155 million metric tons to a low of about 100 million metric tons. When these reserves drop to 100 million tons, severe shortages and strong upward price pressures develop. Although 100 million tons appears to be an enormous quantity of grain, it represents a mere 8 percent of annual world grain consumption, or less than 1 month's global needs—clearly an uncomfortably small working reserve and a perilously thin buffer against the vagaries of weather and plant diseases. As world consumption expands by some 2.5 percent annually, so should the size of working reserves; but over the past two decades, reserves have dwindled while consumption has continued to climb.

The second major source of stability in the world food economy throughout much of the postwar period was the reserve of idle U.S. cropland. For the past dozen years or so, the Government has paid to keep roughly 50 million acres idled under farm programs. Although this source of supply cannot be tapped as quickly as the grain reserves, most of this acreage can be brought back into production within 12 to 18 months once the decision to do so has been made.

In recent years, the need to draw down grain reserves and to utilize the reserve cropland has occurred with increasing frequency. This first happened during the food crisis years of 1966 and 1967, when world grain reserves were reduced to a dangerously low level and the United States brought back into production a small portion of its 50 million idle acres. It happened again in 1971 as a result of the corn blight in the United States. In 1973, in response to growing

food scarcities, world grain reserves once more declined, and the United States again resorted to cultivating its idle cropland—but to a much greater extent than on either of the two previous occasions. Government decisions in early 1973 permitted much of the idled cropland to come back into production, and in 1974 no Government payments will be made for keeping cropland fallow.

Global reserve stocks fell to close to 100 million tons in 1973, and still further in 1974. Thus world grain reserves have dropped to their lowest level in more than two decades, although the world's population has increased by half in the interim. The sum of global reserve stocks and the potential grain production of idle cropland gives a good indication of the actual total reserve capability in the world food economy in any given year. Taking this total as a percentage of total world grain consumption provides a rough estimate of global food security for the year. As the following table demonstrates, the world is now in a situation of extreme vulnerability. In 1973 and 1974, world reserve capabilities in relation to consumption needs have fallen far below any precious level in the postwar era, plummeting from the equivalent of 95 days of world consumption in 1961 to only 26 days in 1974.

TABLE 2.—INDEX OF WORLD FOOD SECURITY

	Reserve stocks of grain	Grain equivalent of idled U.S. cropland	Total reserves	Reserves as days of annual grain consumption (number of days)
	(Million metric tons)			
1961.....	154	68	222	95
1962.....	131	81	212	88
1963.....	125	70	195	77
1964.....	128	70	198	77
1965.....	113	71	184	69
1966.....	99	79	178	66
1967.....	100	51	151	55
1968.....	116	61	177	62
1969.....	136	73	209	69
1970.....	146	71	217	69
1971.....	120	41	161	58
1972.....	131	78	209	64
1973.....	106	24	130	39
1974 (projected).....	90	0	90	26

Source: Prepared on the basis of U.S. Department of Agriculture data.

From the end of World War II until quite recently, world prices for the principal temperate zone farm commodities such as wheat feedgrains, and soybeans have been remarkably stable. Since in the years ahead world food reserves may be chronically low and the idled crop acreage in the United States may be further reduced or even disappear entirely, very volatile world prices for the important food commodities can probably be expected.

#### DEPENDENCE ON THE NORTH AMERICAN BREADBASKET

The extent of global vulnerability is demonstrated by the degree of the world's dependence on one region in North America for exportable food supplies. Over the past generation, the United States has achieved a unique position as a supplier of food to the rest of

the world. Before World War II, both Latin America (especially Argentina) and North America (the United States and Canada) were major grain exporters. During the late thirties, net grain exports from Latin America were substantially above those of North America. Since then, however, the combination of the population explosion and the slowness of most Latin American governments to reform and modernize agriculture has eliminated the region's net export surplus. With few exceptions, Latin American countries are now food importers.

As table 3 illustrates, over the past three decades, North America—particularly the United States, which accounts for three-fourths of the continent's grain exports—has emerged as the world's breadbasket. The exports of Australia, the only other net exporter of importance, are only a fraction of North America's. Moreover, the United States is now not only the world's major exporter of wheat and feedgrains but also the world's leading exporter of rice. Thus, for example, North America today controls a larger share of the world's exportable surplus of grains than the Middle East does of current world oil exports.

TABLE 3.—THE CHANGING PATTERN OF THE WORLD GRAIN TRADE<sup>1</sup>

Region	[Million metric tons]				
	1934-38	1948-52	1960	1966	1973 <sup>2</sup>
North America.....	+5	+23	+39	+59	+91
Latin America.....	+9	+1	0	+5	-3
Western Europe.....	-24	-22	-25	-27	-19
Eastern Europe and U.S.S.R.....	+5	-----	0	-4	-27
Africa.....	+1	0	-2	-7	-5
Asia.....	+2	-6	-17	-34	-43
Australia and New Zealand.....	+3	+3	+6	+8	+6

<sup>1</sup> Plus sign indicates net exports; minus sign indicates net imports.

<sup>2</sup> Preliminary, fiscal year.

Source: Based on U.S. Department of Agriculture data.

Exportable supplies of the crucial soybean are even more concentrated than those of grains. Although China supplied nearly all the soybeans entering world during the ensuing decades has gradually absorbed its exportable surplus. As of 1973, China is importing small quantities from the United States. The position of principal supplier has been taken over by the United States, which provided over 90 percent of the world soybean exports in the sixties and early seventies. With world demand for high quality protein surging upward, Brazil—virtually the only other nation capable of exporting soybeans on a sizable scale in the foreseeable future—has rapidly boosted its soybean production and exports. For many years to come, however, the United States is likely to continue supplying three-fourths or more of the world's soybean exports.

#### REDEFINING FAMINE

The changing nature of the world food problem is forcing us to redefine our understanding of food scarcity. Traditionally most analysts have viewed the projected demand or need for food against

the technological potential for expanding world food production. It is relatively easy to envisage a doubling or tripling of world food output based on known reserves of land and water, achieved through vastly increased inputs of energy and fertilizer. Some even suggest the possibility of a severalfold increase on the assumption of the uniform application of advanced technology and the most sophisticated management techniques available. That there is a vast technological opportunity for expanding food supplies is not debatable, but this is not the real problem. The critical issue is at what price the additional resources will be brought into use. We know that most good land in the world is already under cultivation. We know that, with a few exceptions, the most desirable irrigation sites already have been developed. We know that energy, and therefore fertilizer, will be more costly in the future than in the past. We know that in the more advanced countries, where yields are already high, further increases in production will be far more costly than the increases of the past.

To use these marginal resources, world prices for food must rise above their historic levels. Unfortunately, recent food-price rises already have far exceeded growth in income among several hundred million of the world's poorest people. As a result, the food-intake level of millions of low-income people is being pushed below the survival level—in many regions reversing the long-term trend of improved nutrition, lengthening life expectancy, and declining infant mortality.

Historically, famine has been limited to relatively small geographic areas, as in Ireland in 1847 and in West Bengal in 1943. But advances in global and national food distribution and transportation systems now ensure that food scarcity is allocated according to income levels, with scarcity concentrated among the world's poor, wherever they are. Today, even while the threat of traditional famine persists in some areas, a less visible crisis of hunger and malnutrition is emerging among the world's lowest income groups—whether in the Philippines, Bangladesh, sub-Saharan Africa, northeastern Brazil, or among the Andean Indians. The silent crisis of malnutrition may be denying close to a billion human beings the basic right to realize their full genetic potential, their full humanity.

#### RESPONSES

The prospect of a long-term steady climb in food prices, outstripping the purchasing power of a large segment of mankind, presents the international community with a formidable challenge, necessitating a radical shift in the traditional approach to food scarcity. Unless an effort is made to slow the growth in world demand for food, the world will be forced further and further up the cost curve as ever more marginal resources are brought into use.

The deterioration of the world food situation during the first half of the current decade, together with currently foreseeable trends, makes it quite clear that the world cannot remain long on its present demographic path. The choice is between famine and family planning, for future population growth clearly will be reduced by rising death rates, as is already occurring in some African and Asian coun-

tries, if it is not reduced by declining birth rates. An effort of unprecedented proportions is required to reduce birth rates among the more affluent—who exert such a disproportionately large per capita claim on the earth's scarce resources—as well as among the poor, where birth rates tend to be so high. Programs must be immediately launched to make family-planning services available to everyone, to meet the basic social needs of the poor that affect motivation for smaller families, to encourage new social roles for women, and to reorient national economic and social policies so as to promote low fertility.

A simultaneous effort is needed to simplify diets among the more affluent to reduce not their nutritional value, but their wasteful per-capita claim on the earth's scarce agricultural resources.

Today, several important factors are encouraging simplification of diets among the affluent: the need to economize on food expenditures in order to counter the effects of inflation at the household level; the need to reduce various ecological stresses associated with efforts to expand food production continuously; and the need to reduce intake of livestock products for health reasons. In addition to these self-interest reasons, there is of course a moral reason for simplifying diets. In a world of scarcity if some of us consume more, others must of necessity consume less. The moral issue is raised by the fact that those who consume less are not those who could benefit from tightening their belt but the already undernourished poor.

If those in the most affluent countries were to simplify their diets and reduce waste, the future overall claims of these countries on the world's agricultural resources would be greatly diminished, freeing up food resources and holding food prices lower for that still large segment of low income, undernourished people in the world.

The changing nature of the food problem also calls for a major shift in the emphasis of efforts to increase supplies. The opportunity for easily expanding production in the developed countries has diminished sharply now that idled cropland in the United States has been returned to production. There is little prospect of quick, easy gains in the United States, Western Europe, the Soviet Union, or Japan, although substantial gains still are possible in all but Japan.

The world's principal unrealized potential for expanding food production is now concentrated in the developing countries. Although soil quality in Bangladesh is as good as in Japan, rice yields are only one third of those attained in Japan. India's area of cropland is roughly comparable to that of the United States, yet it harvests only 100 million tons of grain while the United States harvest 250 million tons. And corn yields in Brazil and Thailand are still less than one third those of the United States.

As resources become scarce, the comparative advantage in additional food production shifts toward those areas where the resources offer the greatest gains. Today, the increase in food output that can be produced with an additional ton of fertilizer or gallon of fuel is far higher in the developing countries than in the industrial countries. Since fertilizers are already used very heavily in the agriculturally advanced nations of Europe, Japan, and the United States, an additional pound of fertilizer applied in these nations may return

no more than five additional pounds of grain. But in countries such as India, Indonesia, or Brazil, another pound of fertilizer can yield at least ten additional pounds of grain. It is unfortunate and ironic that when world fertilizer shortages emerged in 1973, the more advanced nations acted to restrict their fertilizer exports to the poor nations, where the fertilizer could have produced much more food.

A similar situation exists with respect to energy. Additional inputs of energy to agriculture in countries like the United States and Japan are bringing rapidly diminishing returns in food production. In most developing countries, by contrast, additional energy inputs to operate irrigation pumps and in the form of fertilizers are an essential key to tapping vast unexploited food-production potential.

Although all these factors indicate that the greatest unrealized agronomic potential now resides in the developing world, this potential will not materialize easily. Agricultural development in the poor nations involves complex social, political, and economic changes; and without a strong commitment to these changes on the part of the governments of these countries, the needed agricultural progress will not occur. But in most cases the modernization process can be greatly facilitated by appropriate kinds of technical and economic assistance from the more prosperous nations.

For a variety of reasons, special attention in the developing countries needs to be focused on farmers with small landholdings. Growing evidence suggests that where small farmers have access to needed inputs, credit, and supporting services, they engage in labor-intensive cultivation and produce considerably higher yields of food per acre than do farmers on large estates. The recent shifts in emphasis by the World Bank, the U.S. Agency for International Development, and other development agencies to give greater attention to small farms and rural development are an important step in the right direction, but government agencies within the developing countries have often failed to reorient their own programs to encourage progress among the poorer small farmers. In most developing nations, small-farm progress can contribute simultaneously to the solution of several acute problems. It can help to improve income-distribution patterns, reduce unemployment, check the swelling flow of people from the countryside to the cities, and greatly expand national and world food supplies. This approach has a further important benefit; evidence from developing countries in many parts of the world indicates that a rural development strategy centered on small farms, by spreading the benefits of economic progress among the poorest groups, can create a social environment that greatly increases the motivation to limit family size.

#### NEED FOR A FOOD RESERVE

Over the past two decades, nations have devised numerous means for managing commercial abundance—including special farm-subsidy programs and the withholding of cropland from production. It has now become essential to develop the policies and institutions, both national and international, for managing scarcity. Foremost

among the new institutions needed is a new world food-reserve system. World food reserves can be built up in times of relative abundance and drawn down in times of acute scarcity. This would help to support prices for producers during the inevitable periods of production in excess of immediate world demand and to restrain price increases for consumers during times of scarcity. In effect, the stability that surplus American agricultural capacity has provided for a generation would be restored at least partially by a world food reserve system. A system of global food reserves would provide a measure of supply and price stability in the world food economy that would be in the self-interest of all nations. Clearly the world community also has a basic humanitarian interest in ensuring that famine does not occur in the densely populated low-income countries following poor crop years—an assurance the affluent nations may be less able to provide in the future if the current system of autonomous, nationally oriented food planning is allowed to continue without modification.

In 1973, A. H. Boerma, the Director-General of the U.N. Food and Agriculture Organization (FAO), proposed the creation of a new system of internationally coordinated national food reserve policies. Under the FAO plan, all nations—both exporters and importers—would hold agreed minimum levels of food stocks. Governments would consult regularly to review the food situation, evaluate the adequacy of existing stocks, and recommend necessary actions.

The FAO plan received preliminary international approval at the FAO's biannual Conference in November 1973. If it is to be implemented effectively, the United States must provide strong political and economic support at the World Food Conference in November 1974 and beyond. In the past, the United States has provided the world with safe reserve levels largely as a side benefit of its domestic farm income program. In the sellers' market for foodstuffs which emerged in 1973, these reserves—both large grain stocks and idled cropland—were reduced substantially. In these conditions, it would be highly unrealistic to expect the United States alone to bear the considerable expense of building grain reserves large enough to ensure world security. The FAO plan has the advantage of spreading responsibility for reserve maintenance among both the exporting and importing nations of the world.

Under the FAO proposal or any other world food reserve plan, special measures will be necessary to assist poor nations in establishing storage facilities and building up needed reserves. Among such possible measures are concessional grain sales to help the poorest nations buildup reserve stocks, and a new source of concessional assistance, perhaps in the form of an earmarked expansion of the World Bank's soft-loan program or of a special fund within the FAO.

But spreading responsibility for reserve stock management more widely among nations does not absolve the United States and other major exporters from responsibilities for maintaining reserve stocks. Within the U.S. Government, there has been considerable resistance in some quarters to governmental involvement in reserve management—a practice recently ended by the Nixon administration. Citing

the problems of farm programs in previous decades, when the Government found itself saddled with massive surpluses that helped depress farm prices and were very costly to store, some highly placed officials have suggested that all U.S. reserves should be held in private commercial hands.

However, circumstances have now changed, and the events of the last 2 years have already demonstrated the dangerous and economically disruptive consequences—in the domestic as well as world economies—of proceeding without careful reserve management. Sudden supply and price changes have had a crippling, disruptive impact on the U.S. livestock, baking, and canning industries, as well as on efforts to manage the national economy and bring inflation under control. Unexpected export controls on soybeans and other high protein feeds, and the threat of such controls for many other commodities—including grains and fertilizers—have not only disrupted normal commercial relations, but have raised a threat to the very fabric of the emerging international economic order.

The changing world food situation calls for a U.S. Government policy decision to insure that both governmental and private reserve stocks are built to adequate levels when the opportunity is there. In order to reduce farmers' fears that the presence of large reserves will be used to hold prices excessively low, it will also be necessary to guarantee reasonable farm price levels. However, food reserves are too important to the national interest to be left entirely in the hands of private traders, whose priorities are necessarily not identical with the national welfare. The United States may no longer have the desire or the ability to hold reserve stocks for the world, but both domestic needs and continuing international responsibilities require new care in reserve planning. The precise reserves needed and the price levels at which Government stocks are built up or drawn down will have to be determined through careful analysis of market conditions, climatic risks, and progress in stockbuilding in other nations.

#### FUTURE FOOD PROSPECTS

An assessment of future food production prospects is an incredibly complex undertaking. One must be at once an agronomist, an economist, an ecologist, a meteorologist, and a political scientist to begin to understand the scope of the problem. This difficulty is reflected in the poor record compiled by those who attempted to forecast changes in the world food economy. Very few anticipated the reversal in the oceanic fish catch. The mass Soviet grain purchase, in 1972, took the world almost completely by surprise. No one expected the doubling of world wheat, rice, feedgrain, and soybean prices of the 1972-74 period. The U.S. Department of Agriculture, with one of the finest economic analysis units available, projected a 3-percent annual rate of food-price inflation early in 1973; the rate turned out to be closer to 20 percent. Few foresaw the possibility that the vast acreage of idled U.S. cropland would be called back into use within a 2-year period and it is by no means certain that this step will overcome scarcity and return food prices to a more "normal" level. The

slack that has existed in the world food economy since the end of World War II has now disappeared, at least temporarily.

Food production prospects are clouded by the scarcity of all the basic inputs—land, water, energy, and fertilizer. Farmers everywhere are faced with rising costs for these essential resources. With most good farmland in the world already under cultivation, additional land is becoming more costly and less productive. Most of the easy irrigation projects have already been undertaken. Farmers in much of the world are confronted not only with higher fertilizer costs as the cost of energy rises but with lessening returns on fertilizer use.

The amount of grain produced with each additional ton of fertilizer used is beginning to diminish at the global level, largely because of the high levels of use in such areas as North America, Western Europe, and Japan. Each additional million tons of fertilizer applied by the world's farmers now adds less food than was added by the preceding million tons. Energy prices have tripled over the past 2 years; yet we know that further increases in agricultural yields will require enormous additional amounts of energy to fuel tractors and irrigation pumps, and in the form of fertilizer.

One of the most disquieting developments on the food front is the unanticipated downward trend in the world fish catch during the early seventies following 20 years of continuous growth. There is a very real prospect that the world catch of table grade fish may not expand much more, and, in the absence of a cooperative global approach to the management of oceanic fisheries and control of the swelling flow of pollutants, it may decline even further. Here the problem is not merely the possibility of diminishing returns on investment and in additional fishing capacity but the prospect of negative returns. Additional investment in fishing fleets now contributes to overfishing and actually reduces the catch in many fisheries.

If the world fish catch fails to resume its upward trend, the pressure on supplies will become intense. Large countries such as the Soviet Union and Japan, which have come to depend heavily on fish, will be forced to substitute poultry, pork, or beef if they are to maintain animal protein intake. This, in turn, will require them to import vast additional quantities of feed grains, putting even greater pressure on the world's exportable cereal supplies.

Assessing the adequacy of future food production depends on the answers to many questions that are, at this juncture, essentially unanswerable. At what point will the trend in rising yields per acre in the advanced countries tend to level off? The quarter century now ending was marked by rapid growth in per acre yields in virtually all industrial societies. Corn yields in the United States have nearly tripled since World War II. But is it likely that they will triple again over the next quarter century? What about dryland agriculture in such areas as the Great Plains of North America, Australia, and the Soviet Union? Are substantial increases in prospect there, or will they come slowly and grudgingly? And what about the livelihood of rapidly increasing rice yields? No major producing country, not even Japan, has yet succeeded in achieving an increase in rice

even remotely approaching that of corn in the United States or wheat in Northwestern Europe.

One of the principal keys to future food production prospects is the combination of technology from the industrial countries with the capital and flared natural gas of the Middle East to produce abundant supplies of moderately priced fertilizer. The Middle East has the raw materials and the capital to become the dominant supplier of comparatively cheap nitrogen fertilizer for the rest of the world. Whether or not it will do so depends very much on international political relationships. Probably no other single factor can affect food production prospects over the next decade as much as the outcome of this question.

In assessing future food prospects it is also essential to separate myth from reality. Many view the vast interior of Brazil as a potential source of almost unlimited food production, but available soil maps show only a very small percentage of arable land in the Brazilian interior. The fact is that even if Brazil were to double its food output, the resulting increase would not equal even 1 year's growth in world demand. Even while Brazil's leaders are talking of the need for further population growth, its cereal deficit grows larger, putting additional pressure on the world's exportable supplies. By 1973, Brazil's deficit had become the largest in the Western Hemisphere. This is not to say that Brazil may not, someday, be a net exporter of cereals, as it now is of soybeans, but its potential must not be overestimated.

When many populous developing countries were in serious trouble on the food front as population growth began to outstrip food output during the midsixties, they were temporarily rescued from their predicament by the green revolution. Production increases due to these new seeds are presenting heavily populated countries with a very brief opportunity to lower population growth, an opportunity which few governments have yet moved vigorously to exploit. If the demographic brakes are not applied soon, they will face an increasingly bleak future, for there is no new food production breakthrough in prospect comparable to that of the green revolution.

One of the most ominous trends on the world food horizon is the ecological undermining of major food-producing systems. The scale and rapidity of this ecological deterioration has no precedent. The initial southward movement of the Sahara affected only the six sparsely populated countries on the desert's immediate southern fringe, countries containing collectively about 22 million people; but as it continues, it is beginning to affect several more populous countries, including Nigeria, with 59 million people, and Ethiopia, with 28 million. More than 100 million people, equal to half the population of North America, are now threatened by the Sahara.

On the Indian subcontinent the overgrazing and deforestation resulting from overpopulation are contributing to two problems: expansion of the Thar Desert in northwestern India, and an increase in the frequency and severity of flooding. To date there has been no detailed analysis of this situation. Available evidence, fragmentary though it is, suggests that the situation is deteriorating and, in all probability, at an accelerating rate.

These ecological trends are well established and rather predictable. Another question of even greater importance is whether the Monsoon Belt may be shifting southward in Africa and Asia, as some meteorologists now believe may be the case. If this is so, the resulting reduction in food output will confront the world with a much more serious food problem than any we have so far mentioned.

World agriculture also faces critical capital shortages as the requirements to achieve a given increase in output rise. This is particularly apparent with fertilizer. The new fertilizer production capacity required to meet projected growth in world demand over the next dozen years must equal the total created to date. Stated otherwise, the outlays for new plant capacity over the next dozen years must equal those of the several decades since the industry began.

On the plus side, there is still a very substantial potential for raising yields in many developing countries assuming that the requisite inputs of water, energy, and fertilizer are available to realize this potential. The new high yielding dwarf wheats and rices underlying the green revolution are early maturing and have more flexible planting dates, thus expanding the opportunity for multiple cropping—again assuming that additional inputs are forthcoming. New opportunities may also exist for double-cropping in temperate zone countries. Historically, little attention has been paid to this potential, simply because overproduction has been a problem in the past generation, during which the technology, especially the intensive use of chemical fertilizer, has made double-cropping possible. With food supplies now much tighter, the combination of a winter grain crop such as wheat and a summer crop such as soybeans could become an important source of additional output in the immediate future in such locales as the southern portion of the U.S. Corn Belt.

Also on the hopeful side is the fact that some governments have demonstrated that they can achieve rapid gains in food output. We know that farmers respond to economic incentives. Some governments have also demonstrated that they can put the brakes on population growth. A handful of developing countries, possibly including China, have already matched the remarkable reduction in birth rates in Japan between 1948 and 1955.

The adequacy of future food production may be influenced more than anything else by the extent to which we can slow growth in population. If food output can expand rapidly enough to meet the growth in demand as now projected, it will do so only with a steadily rising price level—a level beyond that which the poorest segment of mankind can afford. Unless future growth in population and food demand slows well below the rate currently projected, painfully high food prices seem inevitable in the future. In the absence of a massive supplemental food distribution program, reaching the literally hundreds of millions in the world's lowest income group for whom the cost of enough food to survive is gradually exceeding their grasp, death rates will inevitably rise, again becoming the ultimate check on population growth.

## THE NEED FOR LEADERSHIP

Efforts to cope with food scarcity cannot be viewed in isolation. They are part of a broader effort to create a workable world order in an age of resource scarcity, worsening inflation, and growing interdependence among nations. The changes required are not trivial, and they will not come easily. The risk is that the dimensions and the urgency of the unfolding world food problem will not be recognized and confronted soon enough.

There is an age-old temptation to leave the difficult task of problem solution—in this field as in others—to someone else. The churches want to leave it to business, business wants to leave it to political leaders, and many political leaders prefer to follow rather than lead. The problems the world faces today are of such immense proportions that everyone will have to participate in solving them. If we are to change behavior, we must have information on the circumstances that make it necessary to do so, whether these are the ecological undermining of major food systems or worsening inflation resulting from excessive consumption. The communications media must play a major role in this area; unless they take on this task on a large scale, there is little hope that we can change direction short of a major global catastrophe.

We delude ourselves if we think the years ahead will be easy. At best they will be traumatic, and they could be catastrophic. The issues we have outlined will place great stress on the international political fabric. The crucial question is whether we can create a workable world order for an increasingly interdependent world. This will require a level of leadership, understanding, and generosity of spirit that few past generations have been called upon to supply.

## RESPONSES BY LESTER R. BROWN TO QUESTIONS SUBMITTED BY THE SUBCOMMITTEE

1. Can world food production be increased without disastrous ecological consequences? What about eutrophication of streams and lakes due to increased fertilizer use—have we found an economical approach to combat such eutrophication?

1. Ecological undermining of food-producing systems induced by expanded agricultural activity is not a new development. What is new is the scale and acceleration of the process. As a global demand for food increases, the potential for an accompanying intensification of current ecological damage will also grow. Particularly in less-developed countries, where the greatest efforts at expanded food production must be made, mismanagement of land and water and such inputs as fertilizer and pesticides could exacerbate the topsoil erosion, silting, flooding, over-grazing, over-fishing, eutrophication, wildlife extinction and inadvertent climate modification witnessed in recent decades.

An economical cure for eutrophication is not yet apparent; the extent of the problem is not even yet determined. However, the conflicts between economic efficiency and ecological soundness are myriad, and societies are increasingly forced to make unpleasant trade-offs between the two values. Many potent, low-cost pesticides threaten some species of wild life with extinction. Chemical fertilizer is far cheaper than organic fertilizer, but runoff is a more serious problem; and beef finished in large commercial feedlots is cheaper than that finished in family-farm feedlots, but waste disposal is much more difficult.

2. Do you feel any real progress has been made in the less developed countries toward slowing their population growth? Do population control measures have a realistic chance of success in these countries without corresponding economic development?

2. While a few developing countries have made progress in slowing population growth, most have not. Part of the reason is that governments have strongly supported birth reduction only recently or have yet to do so. Another problem is that a distressingly large share of the world's fertile population does not have ready access to family planning services. In some instances, this is because the services are not locally available, in others because they are too costly for many who need and want them. Yet even if family planning services were made available to every man and woman throughout the world, population growth rates would be measurably reduced. The historical record indicates that human fertility does not usually decline very much unless certain basic social needs are satisfied. Birth rates do not normally drop voluntarily in the absence of an assured food supply, reduced infant mortality rates, literacy, and at least rudimentary health services. In the future, far more attention must be devoted to designing economic and social policies that spread these fundamental improvements in well-being more evenly among national populations, even in nations where per capita income is still at a lower level. Social progress for the poor in most developing nations will necessarily require rural agricultural progress that directly involves and benefits the broad masses—progress that will simultaneously mean higher food production.

3. Is it realistic to expect developing nations to "bear much of the burden" of maintaining grain reserves? Do they possess the necessary storage capacity and technology?

3. Measures will be necessary to assist poor nations in establishing special storage facilities and building up needed reserves. Among such possible measures are concessional grain sales to help the *poorest* nations build up reserve stocks, and a new source of concessional assistance, perhaps in the form of an earmarked expansion of the World Bank's soft-loan program or of a special fund within the PAO.

4. What incentives does the private sector have to maintain grain stocks if government will also be maintaining them? If a choice must be made do you personally favor private or government held grain reserves in the United States, and why?

5. Maintenance of large grain reserves has historically depressed prices, a fact of which producers are well aware. Are you suggesting that we ask them to maintain grain reserves which may, in the long run, depress their prices? If so, do you feel this request is realistic?

6. What real incentives do commercial interests have for grain reserve maintenance? Can they be expected to be as reliable as the government in maintain reserves? In the final analysis, doesn't maintenance by commercial interests cost consumers more than government maintenance of grain reserves while also limiting the flexibility of reserve use?

4-6. The private sector has no incentive to maintain adequate grain reserves on its own. Its priorities are not necessarily equal to the national interest. Thus, the changing world food situation calls for a U.S. government policy decision to ensure that both governmental and private reserve stocks are built to adequate levels when the opportunity is there. In order to reduce farmers' fears that the presence of large reserves will be used to hold prices excessively low, it will be necessary to guarantee reasonable farm price levels. However, food reserves are too important to the national interest to be left entirely in the hands of private traders, whose priorities are necessarily not identical with the national welfare. The United States may no longer have the desire or the ability to hold reserve stocks for the world, but both domestic needs and continuing international responsibilities require new care in reserve planning. The precise reserves needed and the price levels at which government stocks are built up or drawn down will have to be determined through careful analysis of market conditions, climatic risks, and progress in stock-building in other nations. Chronic massive surpluses may well have helped depress prices in the past, but the effect will not necessarily be the same in an area of frequent scarcity. Reserves can help prevent wild gyrations in price that are harmful to farmers, consumers and governments.

7. What efforts should be made to encourage those countries currently piling up foreign exchange assets to empty them in the area of food production and assistance to the lesser developed countries?

7. One major effort should involve persuading oil-rich states to abandon the practice of flaring the natural gas associated with petroleum extraction. The

gas could instead be used in the production of nitrogen fertilizer, whose current shortage and future adequate supply is critical to agricultural expansion in the poorer countries. Such an effort would not necessarily involve large amounts of Middle East oil revenues, but it would make good use of a vital resource that is presently being wasted. We should also encourage oil-rich countries to aid the development of agricultural research within the poor countries, and to donate generously to the U.N. World Food Program.

8. Has any serious consideration been given to the establishment world monetary fund from which nations in severe need of food assistance could draw money to purchase grain supplies from those nations holding reserves?

8. To our knowledge, no serious consideration has been given to establishing a world monetary fund for food assistance.

9. We are aware that you have lessened your personal meat intake—do you advocate that most Americans follow your example? If they do, they will need to consume more vegetable protein—much of which will probably come from soybeans. Since you have indicated soybeans are an important source of protein in many countries, will this not be somewhat counterproductive by causing soybean prices to rise?

9. The average American presently consumes almost a ton of grain per year. Yet only about 200 pounds of this is consumed directly; much of the rest is taken indirectly in the form of livestock products. Consequently a major reduction in American meat consumption would free a considerably large amount of grain or the land, water and fertilizer resources used to produce it. While additional vegetable protein would subsequently be consumed, much more of the grain and soybean production previously used in livestock feed would be available for food aid, or for low income consumers everywhere at a lower price. Much land now producing corn for animal feed could produce soybeans if that were a desired goal.

Mr. DE LA GARZA. Thank you very much, Dr. Brown.

Would you be agreeable to allow the other two witnesses to present their statements and then be available for questions?

Mr. BROWN. I will.

Mr. DE LA GARZA. Thank you very much.

Our next witness is Mr. Tony Dechant, president of the National Farmers Union.

We will be very happy to hear from you, at this time.

#### STATEMENT OF TONY T. DECHANT, PRESIDENT, NATIONAL FARMERS UNION

Mr. DECHANT. Thank you, Mr. Chairman.

Mr. Chairman, and members of the subcommittee, we appreciate the opportunity to appear before this subcommittee to discuss the world population of food supply and demand situation, and world food reserves.

The world is face to face with its most dreaded disaster—famine.

Famine is rampant in Ethiopia, in the seven African nations of the Sahel, and in areas of Tanzania, and Kenya. Near starvation plagues Bolivia, Syria, Yemen, and Nigeria. One poor harvest could bring famine to India, Bangladesh, Indonesia, the Philippines, Haiti, the Sudan, Guyana, Somalia, Guinea, Zaire, and two dozen other nations where the people face chronic food shortages.

Food is going to be the overriding issue for the rest of our lives.

We are not providing enough food for the three and one-half billion people on earth today. And at present rates of increase, population will double by the year 2000.

About one-seventh of the human race today is literally starving—starving slowly most of the time, starving faster when times are

hardest. The United Nations reports that 500 million to 600 million people are in this condition of "undernutrition". Here is how the Food and Agriculture Organization of the United Nations defines "undernutrition":

Undernutrition means inadequacy of the nutritional quality of the diet, . . . which, continued over a long period, results in either loss of normal body activity or reduction in physical activity, or both . . . For children the consequences of low calorie intake are unsatisfactory growth and physical development and a reduction of the high degree of activity characteristic of healthy children.

Another two-sevenths of the human race, about a billion people, are "malnourished". They get enough food to fill their stomachs most days, but it is lacking in nutrients essential for maintaining good health.

This leaves just over half of the human population who are adequately nourished. Yet most of these people too want more and better food—they are hungry for more meat, more milk, more chicken and eggs and sugar and fats. No more than one out of seven, or even less, get about all they want and as good as they want to eat.

Our world reserve of food on hand now is enough only for 27 days, even at present rates of consumption. If all the world's food were divided evenly, everybody would be hungry.

We have not seriously begun to solve our problem. We do not find the answer because we are asking the wrong question.

The question should not be: How can we increase the supply of food?

It should be: How can we increase the power of the hungry to buy the food they want and need? How can we increase demand for food?

We know the answer. It is before our eyes. It shouts to us. **The** answer, wherever people are well fed, is the same. Hunger ends when people find work that pays them a decent return. ★

It is not because of our tremendous food-producing capability in the United States that our American people are well-fed. It is because most American families have the ability to buy and pay for food that they **are well-fed.**

I grew up during the Great Depression of the 1930's. There was a familiar story in farmers' meetings of that time that illustrated this fundamental reality about food and hunger: In Iowa, farmers burned corn in their furnaces because they couldn't get enough money for corn and hogs to buy coal. A few miles away, Iowa coal miners shivered and starved in their shacks because they were out of work and couldn't buy either coal or cornmeal or pork.

In 1961, the United States had the largest food reserves of any nation on earth at any time in all history. Yet in that very year, we had more malnourished people in the United States than ever before in our history.

The Farmers Union understands the reality of feeding the hungry. Thirty years ago, the Farmers Union sponsored the Full Employment Act of 1946. It is the policies to which that act committed our Government that have made Americans a well-fed people.

How silly it would have been, either in 1933 or in 1961, to have worked to increase the supply of food in the United States because

we were concerned about the shocking malnutrition that existed in our pockets of poverty.

How much more sensible it was to see that demand for food must come ahead of the supply of food, in order to get the job done. We started a food stamp program in the 1960's, which the Farmers Union had advocated throughout the 1950's, and now we have greatly reduced malnutrition among our own poverty population. We did it by giving purchasing power to the hungry. The supply of food took care of itself.

How much smarter still it would be for the United States to guarantee a job at the minimum wage to every American! That would be the best way of all, the most effective way of all, to solve the problem of hunger. That would reduce the need for charity food to those who cannot work—and make it much more likely that charity could be relied on to provide adequate food for those who cannot work.

There is no serious limit upon the physical ability of the world's farmers to produce all the food that mankind needs or will need, for the rest of this century and beyond.

Approximately two billion acres of croplands are harvested in the world each year. There is nearly three times that much potential additional cropland that is suitable for agricultural production in the world—for a total of 7.9 billion acres.

But it is not free land—free for the plowing, as were hundreds of millions of our best prairie lands here in our American breadbasket. It will be expensive to develop most of this new land and bring it into production.

Yes, we can do it. We can grow the food to feed the hungry.

Well, why don't we get at the job and get it done?

I think the truth of the matter is that governments, and many others who bear various kinds of responsibility for feeding the hungry, ignore the fundamental solution to the problem of hunger because they kid themselves into hoping some half-way measures will keep the problem out of sight—at least for the time being.

Let's take a look at some of these half-way measures.

A few years ago it was "the Green Revolution". Many who should have known better went along with the illusion that the use of advanced plant genetics and other scientific agricultural technology would solve the problem of hunger.

The truth of the matter is that "the Green Revolution" was certain to increase the hunger of the hungry, and to increase their number as well, if applied in the way it was designed.

We had our own "green revolution" here in America, in the decades right after World War II. We introduced hybrid corn and mechanical cotton pickers and flame weeders and commercial fertilizers and synthetic hormones and chemical weed killers and pest killers. One of the results was to displace more than half of the people who had lived and worked on the land. Many of them could not find jobs to replace their hand-labor jobs on the plantations and farms. And before long, they were hungrier than they had ever been during the Depression of the 1930's.

Right now a different kind of halfway measure is being advocated.

This is simply to encourage, to promote, or even to compel the farmers to produce more food.

One version of it is what Secretary of Agriculture Earl Butz has done. Mr. Butz described it as taking off all the "controls" on farm production. The reality of the situation is that all effective protection of farmers' prices and incomes is eliminated.

The outcome is sure to be just what it was in 1933—and again in 1967. And for that matter, it's already beginning right today; ask any farmer what is already happening to prices of wheat and soybeans and cattle and milk.

Yes, this might give some help to feeding the hungry—for a little while. Yes, we will in all probability again have cheap surpluses of grain, that can be given away for food aid and famine relief.

But it won't solve the problem.

**There is** not the slightest chance that we will develop a food aid program which will reach as many as one out of 10 or even one out of 20 of the more than 500 million human beings on earth today who are undernourished, and who are doomed to starve to death—either quickly, or over the few decades of their **short lives**. <sup>the U.S.</sup> ★

The Farmers Union and other progressive Americans committed the United States to a full employment policy for our country 30 years ago. Those policies, imperfect though they were, brought hunger in America down to manageable proportions by the 1960's. We can finish the job of ending hunger in our country forever, before the end of the 1970's. The last important step that's needed is to establish a public service employment program that will guarantee a job to every American who cannot find work.

Now as we finish our mission of assuring adequate food for all our hungry at home, it is time for our country to exert its leadership and apply its great power to establish a full employment policy for the world.

It is an enormous undertaking.

But it is an enormous penalty we face, if we fail to do it. I doubt that our civilization can even survive such trauma and disruption as is sure to accompany recurring famines in various parts of the world that will cost the lives of tens and even hundreds of millions of people.

And big as that ambition may seem, it is not really new, nor different, from what our American goal for the world has been all along. It is present in the spirit of the Marshall plan, in the soul of Food for Peace and the Peace Corps it is visible in the works of our programs to promote economic development.

It is a way to give a sharp, clear focus to what America wants to achieve in the world.

And we Americans will not be alone in such an undertaking. All of the most prosperous and advanced countries of the world have embraced full employment policies for their own populations; many have achieved better results than we have. There is more appreciation than ever before of the interdependence of all mankind in seek-

ing the peace, security, and prosperity that every family cherishes as its primary aim.

The militancy of the "have-not" nations themselves may be a beneficial spur to the prosperous to make the economic accommodations and adjustments that are required to share the opportunity to work and to earn more widely among mankind. Whether we like it or not, the increased share of the world's wealth that is being claimed by the oil exporting countries, and perhaps soon also the exporters of bauxite, and of tropical farm products, and other raw materials, will result in wider dispersion of income and investments and the creation of new jobs.

No one need fear that the farmers of America—and of the world—would fail to respond to the pull of rising demand for food, particularly if they are protected and encouraged by reasonable measures to avoid collapsing prices when they occasionally produce short-run "surpluses"—as will surely happen—and to obtain the supplies and equipment that are needed to do their work.

It is the pull of demand—not the push of surplus supplies—that alone can end the problem of hunger. Events of the past 2 years have given us all a glimpse of the possibilities for feeding the hungry that lay ready at our hand. Demand for food briefly overtook the supply of food—and it produced a demonstration that the world can pay parity prices for food, even after 20 years of habitual farm depression. Guaranteed parity prices for farm commodities—sustained by the pull of rising demand for food generated by rising employment among those now hungry, and assured by reasonable and effective farm support and stabilization programs—is the engine that is needed to produce enough food to win the war against hunger for alltime.

Then, we must provide for the physical aspects of food itself. When we talk of food, we are talking of a physical commodity—measured in pounds and tons, occupying space that is measured in cubic inches and feet.

Food is produced seasonally and the seasons are uncertain. They are marked by drought and flood and the invasion of pestilence. Yet there is a remedy for the uncertainty of the seasons, and the shortages that may result. It is a remedy universally agreed upon, not only for shortages, but for surpluses which work such havoc in the farm economy. The remedy is reserves.

Reserves are the second innovation of the age of agriculture the logical followup to production itself. Nor are reserves limited to agriculture. They are used in every essential pursuit—ranging from metals to money—to fill needs in times of shortage, to change surpluses from curse to salvation. In other words, reserves are the essential device that must be used to stabilize a market in which supplies may at one time be in short supply, or in long supply at other times.

We are told that reserves are too costly. But let me emphasize to you: we can accumulate reserves only when we have surpluses. What is the cost? The cost of reserves is only this—the cost of not having a farm depression.

A second aspect of the physical reality of food is that it cannot be produced evenly over the surface of the earth. The basic resources for production—top soil and water—are unevenly available. And

so is the ability to produce—knowledge and technology—unevenly available.

Thus, a requirement to assure food for all is trade—not for the purpose of enriching a few, not merely for the purpose of balancing payments—but to get the food from where it is to where it is needed, on acceptable and reasonable terms. This, we believe in Farmers Union, is achievable under international commodity agreements between the producing and consuming nations of the world.

To summarize, then, we believe that food for all the peoples of the world can be provided if we recognize four major requirements: (1) It takes the pull of demand to get enough food for the hungry. (2) The business of agriculture must be stabilized by guaranteeing parity prices to producers. (3) Reserves must be utilized to stabilize the supply and the market place. (4) The distribution of commodities must be made orderly and reasonable under international commodity agreements.

Mr. Chairman, on April 2, before the Subcommittee on Domestic Marketing and Consumer Relations, one of my associates introduced the Farmers Union program for parity and abundance—I have copies here with me and with your concurrence I would like to add, also, this particular statement, a one page—

Mr. DE LA GARZA. We will be happy to receive that as part of your statement.

Mr. MATSUNAGA. Is that in the form of proposed legislation?

Mr. DECHANT. It was our proposal to the Agriculture Committee, so it has been introduced. I think it has been introduced in the Senate but in any event, I would like to again call the committee's attention to this and I think you have seen it before another subcommittee, but I would like to make it a part of my testimony here this morning in terms of not only discussing the problem but the Farmers Union believes we have some other solutions toward solving and bringing about a stable agriculture.

Mr. DE LA GARZA. Without objection that further statement will appear in the record.

Mr. DECHANT. Thank you, Mr. Chairman.

[The statement referred to follows:]

JULY, 1974

#### THE FARMERS UNION'S PLAN FOR PARITY AND ABUNDANCE

Following is the plan proposed by the Farmers Union to provide parity for farmers and an assured abundance of agricultural commodities for U.S. consumers and export customers:

1. Non-recourse commodity loans should be offered to farmers at 90% to 100% of parity, to establish the minimum floor under market prices. Stocks of commodities would accumulate in loan status to the extent that supplies were more than sufficient to satisfy the market demand at about the parity price. The producer could sell his commodity at any time during the marketing year by repaying the loan and paying the accumulated interest and storage charges.

2. Farmers should be eligible for price support loans on eligible commodities stored in any approved facility, whether on the farm, in the farmers' cooperative, or in other approved storage facilities.

3. Price support loans should be extended from year-to-year, at the option of the farmer. When a commodity loan is extended, the government should absorb the interest and storage cost for the prior year if the market price of the commodity has not reached 110% of parity.

4. When supplies in the market become short and the market price approaches 110% of parity, farmers would have an incentive to repay their loans and sell their stored commodities so as to avoid incurring the cost of continued storage. But it would not be necessary for the government to "call" loans. The farmer should be permitted to hold his commodity in extended loan status if he wished to absorb the storage and interest costs himself after the price reaches 110% of parity.

5. Commodities owned by the government should not be offered for sale into commercial markets at prices below the higher of the current market price or 115% of parity. If it should be considered necessary in order to assure that ample supplies would move into the market when needed, the Secretary of Agriculture could be authorized to enter into option agreements to buy the commodity from the farmer at a price of 115% of parity during the term of an outstanding initial or extended non-recourse loan. This would provide some flexibility to the government in meeting urgent requirements under exceptional conditions. But it would keep government-owned stocks totally insulated from the market so long as prices are below 115% of parity.

6. Voluntary or mandatory programs to restrain production of major farm commodities should be put into effect at any time that the Secretary of Agriculture determines that carry-over stocks of the commodity is likely to rise above the desired "reserve" level. Price supports should be maintained at 90% to 100% of parity. The minimum reserve should be established by Congress. The Farmers Union recommends that reserves be established at about 50% of the annual requirements for domestic use and exports in the case of food grains, 25% in the case of feed grains, and 35% in the case of cotton.

7. A new import control plan should be established which would eliminate practically all imports of any farm commodity when prices in the U.S. are below parity. A variable rate of duty, equal to the amount by which world market selling prices fall below 115% of parity, should be applied to any farm commodities imported into the U.S.

8. International agreements should be negotiated with other producing and consuming countries to provide for international cooperation to stabilize prices and supplies of agricultural commodities, particularly grains, dairy products, cotton, and sugar, through one or more of the following provisions:

- (a) minimum and maximum prices in world trade (the Farmers Union proposes a range of prices between 90% and 110% of parity);
- (b) commitments to assure supplies to importing countries, and to assure access to markets for exporting countries;
- (c) rules on the disposal or stockpiling of surplus domestic production;
- (d) limitations or prohibitions on the use of export subsidies;
- (e) cooperation among participating countries to manage the supplies put into the world market;
- (f) consultations between governments on the effects of national price support programs on world trade;
- (g) reserves of food and fiber, under the control of national governments but subject to international review, to assure importing countries of the reliability of exporting countries to meet their supply commitments, and to provide for national and international emergencies.

Mr. DE LA GARZA. Thank you, Mr. Dechant, and we invite you to wait with the other witnesses and be available for questioning.

Our next witness is Dr. Roy M. Kottman, dean of Agriculture, Ohio State University and chairman, Legislative Committee on Policy, National Association of State Universities and Land Grant Colleges.

**STATEMENT OF DR. ROY M. KOTTMAN, DEAN OF AGRICULTURE,  
OHIO STATE UNIVERSITY, AND CHAIRMAN, LEGISLATIVE  
COMMITTEE ON POLICY, NATIONAL ASSOCIATION OF STATE  
UNIVERSITIES AND LAND GRANT COLLEGES**

Dr. KOTTMAN. My name is Roy M. Kottman. I appear before you today as chairman of the Legislative Subcommittee of the Experi-

ment Station Committee on Organization and Policy, and as a member of the Legislative Committee of the Division of Agriculture, National Association of State Universities and Land Grant Colleges.

On behalf of the organizations I represent, I am pleased to indicate our gratitude for being afforded this opportunity to make a statement relative to what we in the Land Grant Colleges of Agriculture, the State Agricultural Experiment Stations and the Co-operative Extension Services believe to be a matter of serious concern to our nation and to the world, namely that we are, figuratively at least, running out of research and technology when present levels of funding are considered against the backdrop of challenges facing our nation as we contemplate future world food and fiber supply and demand.

Mounting levels of distress about the availability and cost of food during the past 2 years has done a great deal to sensitize our U.S. citizenry, as well as much of the world's citizenry, to the necessity of becoming more concerned about future world food supplies.

Some of us have been saying for many years that the abundant supply of wholesome, nutritious food available in the United States of America was not something that could, or should, be taken for granted. In other words, many of us have worked diligently to convey to the public the fact that our food supply, like all other goods and services, is not automatically or mysteriously always going to be available in the marketplace.

The factors of a rapidly increasing world population; the possibility and actuality of adverse weather conditions occurring simultaneously in several important food producing regions; and the failure of potential food exporting nations such as the United States to effect the rate of research-derived technological development and progress which would encourage and make possible vastly increased production of food have all combined to bring about a tightening of world food supplies.

The pendulum has for so long swung in the direction of leading our Nation and its citizens to believe that low food prices and subsidized agricultural production would continue to be the hallmark of our nation's agriculture, that many people could bring themselves to no other way of thinking.

Some of us who remember the drought years of 1932, 1934, and 1936 have remained convinced that it is unwise for us to be sanguine about the most vital of all human needs—our food supply. During most of the years since the Great Depression we have been both distressed and comforted by the Commodity Credit Corporation holdings which were either boon or bane for farmers, depending upon how one assesses the price structure of the past 40 years. But those same CCC supplies were in most years past a tremendous boon for both our United States and for world consumers.

Many of us remember the period during and immediately following World War II during which time our Nation espoused the concept that "food will win the war and write the peace." It was while that attitude still prevailed that funding for the USDA research

agencies, the State Agricultural Experiment Stations and the Cooperative Extension Services was provided at levels commensurate with the universal importance of food and fiber.

Our Nation was at that time sensitized to the extreme importance and vital nature of food and fiber. The public has only recently again been sensitized to a realization of that same fact. And it is a fact. It is a fact which must be brought to the attention of every man, woman and child in this country.

Food and fiber are so vitally important that we must seize every possible opportunity to raise the level of "agricultural literacy" among all individuals and organized groups in our Nation. It is a sobering fact that we have requirements in many of our universities for the study of history, the humanities, the languages, and certain of the biological and physical sciences but we have no similar requirement for college students to become literate with respect to food and fiber or the agricultural industry which produces it.

This is especially distressing because throughout their lifetimes our young people will expend a substantial portion of their earnings for food—more than for any other item of living expense with the possible exception of housing.

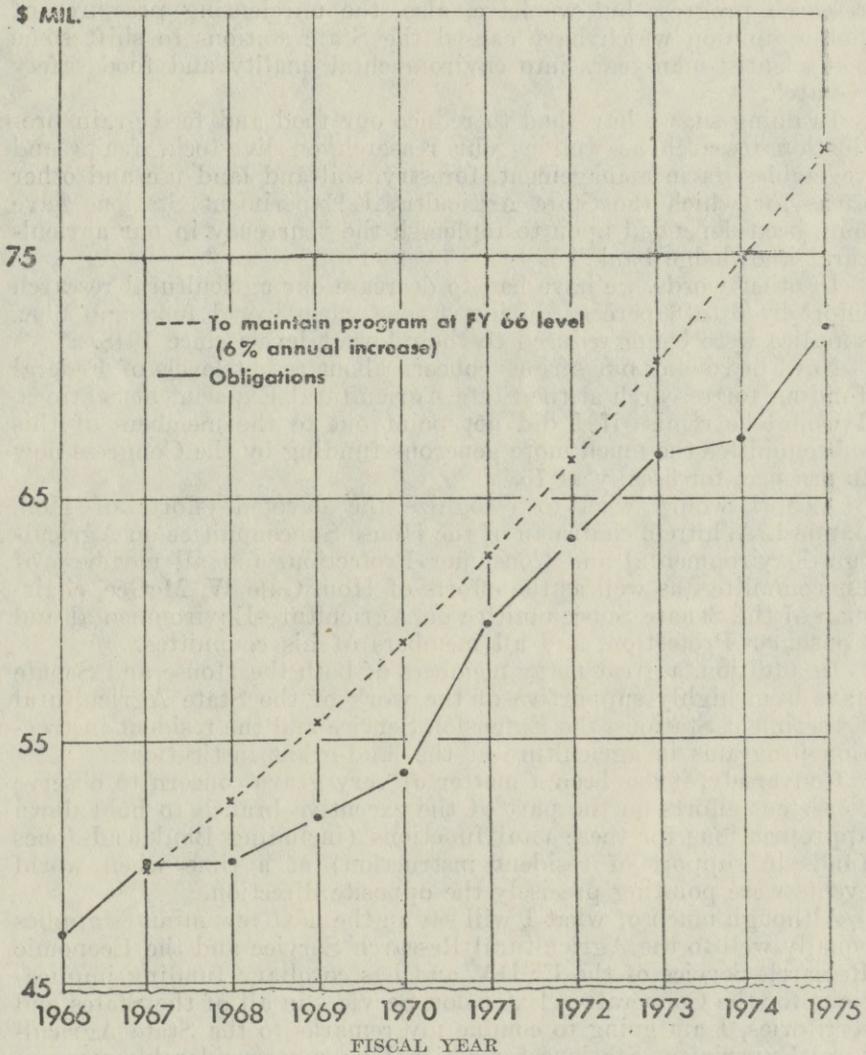
I suppose one could utilize a good deal of time contemplating the reasons why we have not initiated general education courses dealing with agriculture, or on why there has been no apparent demand for such sources on our campuses, but it would seem to me to be much more important for us to resolve that we will move in those directions in the future than to lament our omissions of the past.

I would be less than candid with you if I did not stress the fact that some of the difficulties experienced last year (fiscal year 1974) with respect to obtaining even a "steady-state" level of Federal funds for agricultural research were only the culmination of a steadily deteriorating climate for such funding. Actually, since fiscal year 1966 the State Agricultural Experiment Stations have not received sufficient Federal funds to maintain the level of program activity that was in effect in that year. (app. A). The rate of inflation (in cost of doing research since fiscal year 1966) has been greater than the cumulative annual increases received by the State stations through the Cooperative State Research, USDA.

[The referred to appendix follows:]

## MATCH PAYMENT TO STATES FOR AGRICULTURAL RESEARCH

APPENDIX A



This throttling down of agricultural research has reduced the research capacity of the State Agricultural Experiment Stations by 193 scientist-man-years in the period fiscal year 1966 through fiscal year 1973.

There were 6,146 scientists at the State Agricultural Experiment Stations in fiscal year 1966 whereas in fiscal year 1973 there were only 5,953. With a "less-than-cost-of-living" increase in fiscal year 1973, along with zero increase despite rampant inflation in fiscal

year 1974, the State stations have had to retrench in their efforts at the very time that our Nation and the world are faced with ever-gloomier predictions of future food supplies.

Not only do we have a 193 scientist-man-year deficit impeding our research progress but we have, also, the unrelenting pressures of public opinion which have caused the State stations to shift some 350 scientist-man-years into environmental quality and food safety research.

In doing so, we have had to reduce our food and feed grain production research as well as our research on livestock, fruits and vegetables, farm management, forestry, soil and land use and other areas for which the State Agricultural Experiment Stations have long been depended upon to replenish the "currency in our agricultural knowledge bank."

In other words, we have had to decrease our agricultural research effort by 6 to 8 percent during a time when world food and fiber supplies were being reduced to their lowest levels since 1948.

Now, in voicing our serious concern about recent levels of Federal funding for research at the State Agricultural Experiment Stations, I would be remiss if I did not point out to the members of this subcommittee the much more generous funding by the Congress now in prospect for fiscal year 75.

Also, I would wish to recognize the devoted efforts of Hon. Jamie L. Whitten, chairman of the House Subcommittee on Agriculture-Environmental and Consumer Protection, and all members of his committee, as well as the efforts of Hon. Gale W. McGee, chairman of the Senate Subcommittee on Agriculture-Environmental and Consumer Protection, and all members of his committee.

In addition, a great many members of both the House and Senate have been highly supportive of the work of the State Agricultural Experiment Stations, the Extension Service and the resident instruction programs in agriculture at the land-grant institutions.

Conversely, it has been a matter of very grave concern to observe consistent efforts on the part of the executive branch to hold down appropriations for these vital functions (including Bankhead-Jones funds in support of resident instruction) at a time when world events were pointing precisely the opposite direction.

Although much of what I will say in the next few minutes applies equally well to the Agricultural Research Service and the Economic Research Service of the USDA, and has corollary funding implications for the Cooperative Extension Services in all of the States and territories, I am going to confine my remarks to the State Agricultural Experiment Stations for which I have a considerable measure of direct responsibility in this presentation.

The need is urgent for increased funding by the Federal Government to the State Agricultural Experiment Stations in order that they may: (1) meet the rapidly inflating program costs for scientific manpower, equipment, supplies, and the many other costs related to conducting agricultural research, and (2) improve their capability to develop to new levels of productivity the modern miracle of research which has enabled new knowledge to be generated for an ever more abundant supply of food and fiber.

It is axiomatic that tomorrow's supply of food and fiber depends on today's agricultural research.

The potential payoff from agricultural research is dramatic. Research has in the past, and will in the future, lead to increased productivity of our major crops, livestock and poultry. As station scientists probe the new frontiers of science, our Nation will be the benefactor of dramatic improvements in photosynthetic efficiency (resulting in higher yields for all our crops); in nitrogen fixation by legumes and perhaps nodulation of nonleguminous plants (with savings in nitrogen fertilizer and in the hydrocarbon fuels utilized in its manufacture); in improved technology for using or disposing of waste products (both from cities and farms); and in protection of our crops and livestock through new techniques of pest and parasite control.

Additional research efforts at the State stations will lead to improvement of the quality of life for all citizens but especially for those who live in the small towns and rural areas of our country.

Agricultural research findings will enhance our environment, provide mechanisms for controlling and utilizing waste and farm-related pollution, and will even help in solving the transportation problems related to rural America.

Agricultural research is among the best guarantees of greatness for our Nation in the years ahead. It is vital, however, that an expanded program of agricultural research be initiated now rather than after the impending food and fiber crisis inevitably brings distress and suffering worldwide. To insure a future worthy of our nation's great heritage of the past bespeaks an urgent need for increased support of agricultural research and extension.

There is just no question but what agriculture is America's most basic industry. Furthermore, American farmers have proven that they are the most efficient and most productive farmers in the world.

Their efficiency and productive capability is vitally dependent on agricultural research and extension as well as the resident instruction programs in the agricultural sciences taught at our colleges and universities all across the Nation.

Today, America's agriculture must prepare to make an even greater contribution to our Nation's welfare than it has in the past. We urgently need additional food and fiber to meet the demands of our ever-expanding population; to meet world market demands and thus provide us with foreign exchange; and to do our part in alleviating hunger throughout the world.

Our Nation is entering a new era in its international relations—one not characterized by military might but by the availability of natural resources and food.

Congress, through the Hatch Act of 1887, established our Nation's network of State Agricultural Experiment Stations. These stations, associated with the land-grant universities in every State and territory, are uniquely qualified to conduct research which will increase food and fiber production thereby fostering our Nation's health and well-being. As the members of this subcommittee know so well, State governments are required by the Hatch Act legislation to provide matching funds.

The result of this Federal-State cooperation has been a dynamic and effective research program which has contributed enormously to the production of abundant food and fiber, has improved rural living, and which, last year, boosted agricultural exports to an estimated \$19 billion.

In closing these remarks, I should like to make reference to a most excellent monograph prepared by Dr. S. H. Wittwer, assistant dean, College of Agriculture and Natural Resources, and director, Michigan Agricultural Experiment Station, entitled, "Research Recommendations for Increasing Food, Feed and Fiber Crop Production in the U.S.A." Dr. Wittwer prepared his recommendations in the form of a "special report to the National Science Foundation/Research Applied to National Needs." The following quotation from the introduction to that report emphasizes the scholarly content of it.

It is both timely and appropriate that there be a national program for increasing the research investment for enhancement of food, feed, and fiber crop production. There is also a degree of urgency.

Never before have we had so many people, never have standards of living been higher, never has the capacity to produce and the demand for resources been greater. Never before have we produced so much on so few acres. Never have there been so many conflicting demands for the essential inputs into food, feed and fiber producing systems.

These include land, water, energy and fertilizer.

There are close linkages between crops grown for human consumption and those for feed, fiber and conceivably those for fuel. All are renewable resources.

Table I (herein omitted) lists the channels for disappearance of supplies of cereals and feed grains in the U.S.A. for 1971. The use proportions will vary with the season and nation. Surprisingly high proportions are consumed as livestock feed in the United States.

The role of livestock in our agricultural economy, and in human nutrition, and as consumers of grain must be dealt with. Similarly, there are alternative uses for timber and wood.

Cotton is grown both for fiber and feed, and more recently as a food crop with the development of gossypol-free seed. The products of agriculture and forestry are also major sources of energy but are seldom considered as such.

Approximately one-third of our food production capacity can be traced to the use of fertilizer as a soil amendment. We are competing directly with sources of energy for this fertilizer. We not only have a "food-fertilizer" problem, but we have a "food-energy-fertilizer" problem. Food, feed, fiber, timber and energy may be considered as one.

The products of agriculture, forestry, and the range can all be viewed alternatively, as food or fiber on the one hand, or as energy on the other. Agricultural products and by-products constitute a vast energy resource. Increased productivity enlarges that resource.

Critically needed are research investments to maximize or optimize the production of food, feed, and fiber per unit time with the least expenditures of the nonrenewable resource of land, water, fuel, and fertilizer.

The two most important energy-free (there is no charge for solar energy) but energy producing biochemical processes—photosynthesis and biological nitrogen fixation—the very springboard for the production of carbohydrates, proteins, fiber and energy are receiving only token research and development priority and support.

Man has, through the ages, evolved strategies for manipulating the plant and its environment to maximize these energy conversion processes. The thread of this report will follow these two most important biochemical processes on earth; the technological inputs at hand, and those yet to be developed, that may be marshalled to increase the productivity of the major food, feed and fiber crops of the nation.

One looks to production capacity reserves. These reserves include technology—that which is now in reserve and that which can yet be created. Tech-

nology and research become focal in world food and energy shortfalls which have become more difficult than at any time since the devastations of World War II.

Our resource base is flexible with time and technology. To what extent can we enhance the productivity of renewable resources of food, feed and fiber per unit land area or water increment, per unit of energy input per fertilizer unit per time interval?

Our report will be addressed to this issue.

It has been a privilege and a pleasure for me to offer this testimony relative to world food supply and the serious nature of our presently inadequate research investment.

Thank you.

Mr. DE LA GARZA. Thank you very much.

We have a call of the House, and I have some questions which I happen to have prepared and if you would be good enough I will have counsel give them to you and submit your answers for the record.

Dr. KOTTMAN. By all means.

[Dr. Kottman's responses to the questions and additional material follows:]

THE OHIO STATE UNIVERSITY,  
Columbus, July 30, 1974.

HON. ELIGIO DE LA GARZA,  
House of Representatives,  
Washington, D.C.

DEAR MR. DE LA GARZA: On behalf of our Colleges of Agriculture, State Agricultural Experiment Stations and State Cooperative Extension Services, I wish to express appreciation to you and to the members of your Subcommittee for the privilege of offering testimony to your Subcommittee on the morning of July 25, 1974.

I am especially pleased to be provided an opportunity to respond to the seven questions which were handed to me by your Subcommittee's consultant, Mr. Steve Allen. The questions and my responses follow:

1. *What capabilities do our Land-Grant Colleges possess to assist developing countries build trained corps of agriculturists?*

*Answer:* A majority of our Land-Grant Colleges of Agriculture have had experience in U.S. AID-supported University Development contracts in the developing countries for anywhere from 10 to 20 years. My own College of Agriculture and Home Economics at the Ohio State University has had 18 years of experience in Northwest India, 10 years of experience in Brazil and several years of experience in various other countries in Asia, Africa and Latin America. As just one example of what has been which is, I believe, representative of what can be done in the future, I offer the following summary statement of our efforts with institutions in Northwest India during the period 1955-1973.

Since 1955 the College of Agriculture and Home Economics has had programs financed by AID and foundations in development of foreign institutions of higher education and research. The implementations and achievement of these institutional building programs has involved the sending of Ohio State faculty to the host country institutions. Concurrent with our faculty being abroad, a number of faculty from the foreign institutions have received appropriate technical training in the United States, thus greatly assisting the development of their own institutions. These programs have provided a significant and useful experience to some 100 faculty of our College. Because of these experiences our program in Teaching and Research have been greatly enriched.

The programs in India began in 1955 and were formally terminated on June 30, 1973. Over this period OSU cooperated with the development of four Indian Agricultural Universities which included seven separate campuses. During the last year, terminal reports have been prepared and published on these projects in India. It was unfortunate that the financial support for the relationship between the Indian Universities and The Ohio State University was terminated.

A small amount of financial support to continue an exchange relationship would be highly beneficial to the Punjab Agricultural University, to India, and indeed the United States.

While the program as supported by USAID terminated June 30, 1973, a few programs and activities continue, involving The Ohio State University and the related institutions in India. The Department of Agricultural Engineering of this College has had a project supported by the Ford Foundation assisting the development of agricultural engineering at one university, the Punjab Agricultural University, and this continued during the last year but terminated June 30, 1974. Likewise, a student exchange program, self financed, has continued with OSU students going to India and some Indian faculty who were already here, continued their graduate program at The Ohio State University. Some faculty from OSU continue to visit India and Indian faculty continue to visit The Ohio University. It is hoped that an exchange of students and faculty will continue and perhaps expand in the future if they can be financially facilitated. Communications between The Ohio State University faculty and the Indian faculty will continue.

The institutional development program in which Ohio State University has been engaged in India is considered highly successful. Perhaps this can be more significantly expressed by quoting from a letter which I received from a USDA scientist who had just visited for the first time one of the Indian institutions, the Punjab Agricultural University. "I had a visit to PAU last week and after seeing what I saw must write you . . . The Punjab Agricultural University is a going concern! In 10 or 12 years they have an institution where competence is high—you walk down the hall and see door signs Dr. \_\_\_\_\_ Ph.D., Ohio, Dr. \_\_\_\_\_ Ph.D., North Carolina, etc. And then you visit the labs and you find the men every bit as confident as in a U.S. Land-Grant University. They make no bones about how then got going with Ohio State as the Land-Grant cooperator. Forty percent of their total PAU budget is for research and by golly they are getting it done *plus* the tried and true prescription of Teaching, Research, and Extension.

"And then I came back and there was The Ohio State U. report—all on beautiful glossy paper and exceedingly well done. Furthermore, I've been there and I know it's true. All in all I can't help being proud of our Land-Grant system *which works* as was in all ways evident at Ludhiana.

"I just had to write before the glow passed—it's good to find a bright spot here." End of quote.

A more extensive description of the work of six Universities in India (Ohio State, Kansas State, Missouri, Illinois, Tennessee and Pennsylvania) is included in a book-length report to be published shortly entitled "Partners With India—Building Agricultural Universities" published by the College of Agriculture, University of Illinois, Urbana, Illinois. I have asked the folks at Illinois to send you a copy of the report when it has been published. In the meantime, they will be sending you parts of the manuscript as available.

I am of the opinion that the type of University Development program which several of our Land-Grant institutions have undertaken in the developing countries over the past 20 years is the best possible vehicle for increasing food production on a long-term basis. Further, I am firmly convinced that unless and until top-flight indigenous institutions for Resident Instruction, Research and Extension are built into the infrastructure of each and every developing country, the continuity of effort required for helping each country to develop its full potential for food production will never be realized. I am a strong proponent of University-to-University assistance under sponsorship of AID so that there will be, indeed a feeling of responsibility on the part of the U.S. participating Universities to make sure that their own University Development project in a developing country is going to be successful. My observations lead me to believe that multi-University efforts under consortium arrangements are never as satisfactory as those wherein one institution is provided the responsibility to see to it that a sister institution in the developing country is brought along in all facets of its development to the point that it can proceed under its own power. This is precisely what the College of Agriculture and Home Economics of The Ohio State University has accomplished in terms of the Punjab Agricultural University at Ludhiana, at Northwest India.

In summary, I have no hesitancy in stating that our Land-Grant Colleges of Agriculture along with the supporting disciplines at our Land-Grant institutions

are capable of providing the type of assistance needed to build Colleges of Agriculture in the developing countries in a way that will enable them to produce their own well-trained corps of agriculturists on into the future. What we lack today is a firm and definitive policy along those lines on the part of U.S. AID as well as monetary support to carry out programs similar to those to which I have alluded.

2. *What kinds of programs in farming technology both productive and labor intensive are currently being developed by Land-Grant Colleges?*

*Answer:* Our Land-Grant Colleges of Agriculture have long since established a solid basis in theory and practice which makes it possible for their graduates to go out on a job and perform all of the tasks that are essential to modern farming whether labor intensive or labor extensive. Increasingly our Colleges of Agriculture are offering internships so that students who do not come from farm or ranch are provided an opportunity to gain "on-hands" experience with operation of machinery, management of livestock and all of the other activities which are essential to food and fiber production. All of our students are required to take work which gives them the basic know-how in farm crops and soils, in livestock products and in agricultural power and machinery essential to modern-day farming technologies.

*What kinds of scholarships or grants-in-aid should we provide agriculture students from developing nations to enable them to take advantage of these programs?*

*Answer:* In most instances it is essential that the scholarships or grants-in-aid cover all of the expenses of students from the developing nations while they are in the United States. The following information from The Ohio State University will provide a reasonably good guide to the cost of such grants-in-aid at all of the Land-Grant institutions: Costs per year as of 1974—Tuition—\$2736; Room and Board—\$3600; Books and Supplies—\$250; Local Transportation, Special Training Fees, Medical Expenses and Miscellaneous—\$400 to \$800. Total—\$7000 to \$7400.

3. *Can world food production be increased without disastrous ecological consequences?*

*Answer:* There is no question but what world food production can be doubled, tripled or even quadrupled without precipitating disastrous ecological consequences. In stating this, I would wish to point out that a considerable amount of research will be required in order to make sure that various agricultural practices are not contributing seriously to water, air, or land pollution. Research at the Illinois Agricultural Experiment Station has shown that there is less loss of nutrients into ponds and lakes in that state now than there was 20 or 30 years ago when the amounts of fertilizer used were only a fraction of what are now being used and when production per acre was only about half of what it is at the present time. Dr. Sam Aldrich, Assistant Director of the Illinois Agricultural Experiment Station, has done outstanding work in this regard and his work indicates clearly that food production can be increased dramatically without disastrous ecological consequences. As a matter of fact, it would appear that if we accomplish the research that needs to be accomplished and then utilize our Extension Services to see to it that the new technologies are applied by farmers, it should be easily possible to improve on the good job we have done in the past with regard to the ecological consequences of food production.

4. *Have we found an economical way to combat eutrophication of streams and lakes due to increased use of fertilizer?*

*Answer:* As outlined in the answer to the previous question, we have indeed demonstrated that increased use of fertilizers need not contribute to eutrophication of our streams and lakes. Several studies currently underway at the State Agricultural Experiment Stations offer additional data on this subject. As a matter of fact, most of the evidence presently available suggests that increased use of fertilizers actually makes it possible to reduce the loss of sediment through erosion which is the major source of eutrophication of our streams and lakes.

5. *Why has our research not enabled us to increase soybean yields as rapidly as we have been able to do in grains?*

*Answer:* I am of the opinion that paucity of research effort on soybeans throughout the years is the major reason that we have not achieved the yield increases which many of us believe we should be able to achieve. It has not been until the past decade that either the State Agricultural Experi-

ment Stations or the Agricultural Research Service has really begun to remove resources from other types of research in order to place them into use for soybean research. As was outlined in my testimony before your Subcommittee, the past ten years have been a most difficult time for the State Agricultural Experiment Stations because of the lack of resources being made available to the State Agricultural Experiment Stations by the Federal Government and by the respective State Governments which provide matching funds under the Hatch Act legislation requirements.

There are, of course, a number of theories as to why soybeans do not respond to application of fertilizers and several of them are being investigated at the present time. I am encouraged by some of the plant breeding research with which I am familiar which leads me to believe that we will shortly be making considerable breakthroughs with regard to increasing soybean yields. Again, I would emphasize that we tend to get research results about to the extent that we are willing to commit resources to the research endeavor. One thing that we should not continue to do is to pull funds away from other types of good and useful agricultural research in order to increase our effort on soybeans. Such short sighted action (precipitated by paucity of research funding) will merely mean that at some future time we will be caught short with regard to our research base for corn, wheat, sorghum, rice, oats, barley, etc. What is needed is substantial improvement in funding for the State Agricultural Experiment Stations under the Hatch Act authorization. I am confident that, provided such funding, we would shortly see the type of results which would enable us to increase soybean yields and at the same time keep pressure on all the other important crops so that each one of them can continue its contribution to our feed and food supply for both domestic consumption and export.

6. *What would the cost be of including a 3 hour general course in agriculture in the required curriculum of our State Universities and Land-Grant Colleges?*

*Answer:* This is a very difficult question to answer without making a detailed study to obtain estimates of definitive costs. My off-hand estimate (which I believe is not too far wrong) would be approximately \$100 million annually. While I may have underestimated this figure by a considerable amount, I am quite confident that if there were to be \$100 million in Federal appropriations, to be matched by the States, what you have suggested could be accomplished in a most excellent manner.

*Do you feel that the benefits would justify the costs?*

*Answer:* I feel highly confident that the benefits would justify the costs. As indicated in my testimony before your Subcommittee, the average citizen spends more of his or her take-home pay for food throughout his or her lifetime than for any other one item with the possible exception of housing. For millions of our College and University graduates to be essentially illiterate with regard to the agricultural industry is an educational anomaly of dramatic importance not only to themselves but to their country and to the entire world. I would believe that such a course would provide a ratio of benefits to costs far beyond that of a great majority of our College and University offerings which are now and previously have been on the list of requirements.

7. *Are you personally familiar with research regarding the effects on photosynthetic efficiency of air pollution?*

*Answer:* I am pleased to report that the Laboratory for Environmental Studies at the Ohio Agricultural Research and Development Center has done a good deal of research on the effects of air pollution. In this connection, I am enclosing herewith a copy of materials used during a workshop held recently on our campus at The Ohio State University. While air pollution is a matter of concern, the evidence suggests that much progress is being made toward cleaning up the most serious situations which have prevailed in the past. I have enclosed, also, a paper written by Dr. Ohlrogge, of Purdue University, which indicates the folly of our removal of sulfur from smokestack emissions when crops require sizable amounts of sulfur which will in the future have to be applied as a soil amendment along with fertilizers in order to maintain efficient crop growth. In this connection, it is significant to note that much of what is taking place relative to the environment is based far too much on emotion and mis-information and far too little on scientific evidence. This can only be corrected through a substantially increased program of research

at the State Agricultural Experiment Station and at other qualified institutions.

I trust that the foregoing will prove helpful to you. Please feel free to call on me if I can be of further assistance.

Sincerely yours,

ROY M. KOTTMAN,  
Dean and Director,  
Chairman, Legislative Subcommittee, ESCOP.

Enclosures.

[The workshop materials referred to are held in the committee files. Dr. Ohlrogge's paper follows:]

#### ABSTRACT

Excessive concentrations of compounds of sulfur and nitrogen in the atmosphere cause severe health problems. They also cause serious corrosion problems. Sulfur and nitrogen must be added annually to most Indiana soils to prevent these nutrients from limiting yield. Most of the nitrogen is added as commercial fertilizers. Most of the sulfur is added in the natural rainfall. Removal of almost all of these pollutants from the atmosphere will require Indiana farmers to spend annually over a million dollars for sulfur alone. Much greater effort should be spent eliminating localized pollution problems without interfering with the agricultural economy.

Plants have been shown to be able to absorb  $\text{SO}_2$  from the atmosphere through the stomata. Low levels of  $\text{NH}_3$  in the atmosphere likewise should be capable of utilization by plants. The great sensitivity of some plants to  $\text{NH}_3$  and the great tolerance of other species to ammonia suggest the ammonia utilization from the atmosphere by plants has some intriguing possibilities.

Another stimulating problem is the development of an ammonia based agriculture. Many pollution problems could well be solved by such an agriculture. Some of the opportunities of these and similar problems will be discussed.

#### THE GOOD IN POLLUTION<sup>1</sup>

(By A. J. Ohlrogge, Professor of Agronomy, Purdue University, Lafayette, Ind.)

#### INTRODUCTION

The pendulum of public concern about our environment has swung in a wide arc during the past 5 to 10 years. Too often the voices causing the movement are those of the "arm chair alarmist" and the "honeymoon scientists." Too often people with expertise have not spoken or when they have spoken are not heard. This state of affairs prompted me to present some thoughts concerning two areas of air and water pollution—sulfur dioxide and ammonia in the atmosphere.

#### THE SULFUR DIOXIDE STORY

Great efforts have been made during the past 10 years to remove sulfur dioxide from the atmosphere. Federal and state standards for air pollution have been established. The Indiana air pollution control board (5) has established as the "primary standards"—the maximum allowable limits for the protection of public health:

"(A) 80 micrograms per  $\text{M}^3$  (0.03 parts per million maximum annual arithmetic mean) 24-hour samples.

(B) 365 micrograms per  $\text{M}^3$  (0.14 parts per million) maximum 24-hour concentrates not to be exceeded more than one day per year. Secondary standards—the maximum allowable limits for protection of vegetation and materials:

##### 1. Sulfur Dioxide ( $\text{SO}_2$ )

Primary standards—The maximum allowable limits for protection of public health:

(a) 80  $\text{ug}/\text{m}^3$  (0.03 ppm) maximum annual arithmetic mean (24 hour samples)

(b) 365  $\text{ug}/\text{m}^3$  (0.14 ppm) maximum 24-hour concentration not to be exceeded more than one day per year.

<sup>1</sup> Journal Paper No. 4625 Purdue Agric. Exp. Sta.

Secondary Standards—The maximum allowable limits for protection of vegetation and materials:

(a) 60  $\mu\text{g}/\text{m}^3$  (0.02 ppm) maximum annual arithmetic mean (25-hour samples)

(b) 260  $\mu\text{g}/\text{m}^3$  (0.10 ppm) maximum 24-hour concentration not to be exceeded more than one day per year.

(c) 1,100  $\mu\text{g}/\text{m}^3$  (0.42 ppm) maximum 1-hour concentration not to be exceeded more than once per year.

Sulfur dioxide values may be converted to ppm using the conversion factor  $2,620 \mu\text{g}/\text{m}^3 = 1.0 \text{ ppm}$  at  $25^\circ\text{C}$ . and 760 millimeters of mercury."

Controls are certainly needed. I wonder, however, whether in establishing limits, full recognition has been given to the total involvement of a pollutant in the political, economic and biological ecosystems.

Impressive, indeed, is the desolation caused by  $\text{SO}_2$  in the atmosphere of the Ducktown-Copperhill Tennessee area. Completely denuded are thousands of acres of former forest lands. In the late 19th century the open hearth smelters belched out sulfur dioxide that killed plants by the  $\text{SO}_2$  in the atmosphere. Revegetation was almost impossible after  $\text{SO}_2$  was controlled because of the extreme acidity that developed in the soils. Erosion of the denuded soils was rapid. All of this occurred over 70 years ago and yet today desolation still reigns in this area of Tennessee.

Impressive also is the tremendous volume of  $\text{SO}_2$  that is belched out of the industrial complexes and the metropolitan areas. Estimates (6) as high as 40-50 million tons have been made. These can be converted into railroad trains of sulfur that would reach almost across the United States twice from east to west. However, if all of this sulfur were evenly distributed on the entire U.S. it would amount to about 10 pounds per acre.

Let us not be carried away by these impressive figures and situations. We must also remember that sulfur is an essential element in plant and animal growth. Sulfur is not overly abundant in our soils. Sulfur deficiencies in the United States and Canada have been recognized for over 30 years. Deficiencies in Minnesota, Michigan and Canada are of long standing.

There are no large sulfur reserves in our soil. This can easily be demonstrated by taking a light colored mineral soil into the greenhouse. Alfalfa is planted and fertilized adequately with all the nutrients except sulfur. After a second or third cutting, response to sulfur additions will be obtained.

Sulfur additions to soils through phosphate fertilizers has declined to a negligible level. Twenty-five or thirty years ago many, many tons of sulfur were supplied through the use of 20% super phosphate and ammonium sulfate. The use of ammonium phosphates and anhydrous ammonia has almost completely eliminated sulfur additions to our soil.

Vegetation contains approximately 0.1 to 0.2 percent of sulfur. The carry-off of sulfur in our soybean and corn crops would be approximately 10 pounds per acre per year for an average crop. These figures might well double for the high yielding fields of the most productive and effective farmers, that is, corn yields of 150 bushels and soybeans of 60 bushels per acre. Approximately 10 million acres of plowed land in Indiana is in corn, soybeans and wheat. The carry-off of sulfur amounts to approximately 100 million pounds or at two cents per pound of sulfur applied on the land would be evaluated at 2 million dollars per year. Workers at the Ohio State Plant Analysis Laboratory indicated that approximately 40% of their corn leaf samples show potential sulfur deficiencies. I do not believe that this sampling adequately represented the total state because the number of samples was relatively small.

With this large carry-off of sulfur, very small reserves in the soil and the very small additions of sulfur, why do we not have sulfur deficiencies all over the state of Indiana? The answer is simple. Sulfur dioxide in the atmosphere is returned to the land in precipitation. A survey by Bertramson (1) in 1947 indicated that the sulfur additions in the rural areas of Indiana approximated 21 pounds per acre per year. In the highly industrial area of Gary this figure rose to 140 pounds per acre per year. These figures when related to the crop need explained why today we do not have wide spread sulfur deficiencies in Indiana. Removal of all of the sulfur from the atmosphere or a large part of it certainly could result in the need for sulfur additions to our soils. It is difficult for me to believe that it makes economic sense to spend a lot of money to take sulfur out of the atmosphere which would otherwise be returned to the land, and then spend money to buy this

sulfur back to put it on the land. The problem is to eliminate or remove the great sulfur dioxide pollution problems from industrial areas on those late summer and fall days when atmospheric conditions contribute to accumulations and hazardous conditions. I wonder whether our pollution boards and pollution control people have considered the possibility of washing out the sulfur dioxide from the atmosphere of our major cities. There are cities around the world in which the streets are washed down once a week or even every night. What are the economics of the problems involved in installing large irrigation guns on some of the tall buildings in Chicago? These would be turned on at night to wash out the air during periods of pollution problems.

#### THE ROLE OF PLANTS IN DECONTAMINATING THE ATMOSPHERE

About 40 years ago, researchers of sulfur dioxide pollution demonstrated that plants were capable of absorbing  $\text{SO}_2$  from the atmosphere. Not only did they absorb it, but incorporated it into their organic forms. The root systems were not completely isolated from the above ground atmosphere and therefore their experiments were not without question. Some of the  $\text{SO}_2$  might have been absorbed by the soil and then subsequently taken up through the root system. Fried (4) at Purdue in 1947, carried out a definitive experiment using  $^{35}\text{S}$ . The root system medium was physically separated from the atmosphere surrounding the tops of alfalfa plants. Radio-active sulfur labeled  $\text{SO}_2$  was added to the atmosphere at an approximate concentration of 0.1 part per million. Two days after the addition of the labeled sulfur dioxide in the atmosphere, radio-activity was detected in the nutrient solution. During the next week the nutrient solution was changed every day to minimize the absorption of the labeled sulfur by the roots. The radio-active sulfur was excreted from the root system into the nutrient solution. After approximately 10 days the alfalfa was harvested and the sulfur in the alfalfa was fractionated. High activity was found in the soluble organic and also the insoluble organic fractions. Thus clear evidence for the absorption and the utilization of sulfur from the atmosphere was obtained. These results, of course, are not surprising since it is difficult to imagine any type of an exclusion mechanism that might exist at the stomata. All gaseous ions would diffuse through the stomata opening into the cellular space according to Fick's diffusion law. The high solubility of  $\text{SO}_2$  in the saturated atmosphere and water films would result in absorption and the creation of a diffusion gradient. The winter and summer 1971 issues of the Sulfur Institute Journal (2,3) report interesting experiments in Europe. Dr. Faller at the Justus Liebig University at Giessen, Germany studied the absorption of  $\text{SO}_2$  by sunflowers, corn and tobacco. His first experiment showed clearly that all three species could obtain a large quantity of  $\text{SO}_2$  from the atmosphere. The sulfur concentrations in the plant tissue were surprisingly high and indicate that leaf absorption can build up higher levels of sulfur in the leaves than can root absorption. Apparently roots have an exclusion mechanism which does not exist in the leaves.

After the preliminary experiments with the three crops, a more detailed study was made on tobacco which is reported in the summer issue (3). Here four levels of sulfur were introduced into the atmosphere.

These aerial treatments were supplied with and without sulfur being present in the root system of the nutrient culture. Clear evidence was shown that the tobacco plants grew equally well with atmospheric sulfur being the only source of sulfur for the plants.

None of these experimenters carried out the really critical experiment: That is how far will leaves deplete the sulfur in the atmosphere surrounding the leaves? Wide differences exist between species with regard to carbon dioxide depletion from the atmosphere around the leaves and plants. I would suspect that similar differences exist in regard to the utilization or depletion of  $\text{SO}_2$  in the atmosphere surrounding the leaves of various species of plants. The fact that .07 of a part per million of  $\text{SO}_2$  supplied almost enough sulfur indicated that nutrition of plants from the atmosphere could occur without being in violation of some of the current control regulations on pollution.

#### THE AMMONIA STORY

It has long been known that plants are capable of absorbing nutrients through their leaves. Micronutrient sprays and macronutrient sprays are

effective. These nutrients exist as ions in solutions when they are applied to the plants. It is only reasonable then to predict that ammonia which is extremely soluble in water would also be absorbed and utilized by the plant. This thought stimulated the writer to present the concept of fertilizing the atmosphere with nitrogen for our crops. This was first presented at an American Farm Research meeting held at Purdue University approximately 12-15 years ago. Dr. S. H. Wittwer in the Horticulture Department at Michigan State University, has also speculated on enrichment of greenhouse atmospheres with ammonia. Preliminary experiments are reported to have been conducted by Dr. Wittwer with good success. To the best of my knowledge his results and also the report to the American Farm Research Association were not reported in print.

The reasoning with regard to ammonia is very simple. The carbon composition of plant material is approximately 40-50%. Plants obtain practically all of their carbon from an atmosphere which contains approximately 300 parts per million of carbon dioxide. The nitrogen composition of plant material is approximately 1/30 of the composition of carbon. If both nutrients are to enter through the leaves then the concentration of ammonia—1/30 of the CO<sub>2</sub> concentration should be able to supply the nitrogen requirement. 1/30 of 300 parts per million is 10 parts per million. Therefore it would appear that 10 parts per million of ammonia in the atmosphere ought to supply the nitrogen requirements. This, of course, is not that simple, since there is a question of what level can the plant deplete the carbon dioxide or the ammonia. For a safety factor we can double this and say that 30 to 40 parts per million of ammonia should meet the total nitrogen requirement of the plant. Three days prior to attending the Indiana Academy of Sciences meeting at Earlham I received a call from Washington concerning the review of a science article. The title was "Absorption of Atmospheric Ammonia by the Leaves of Plants."

I believe that green plants can play a very significant role in decontaminating the atmosphere of pollutants. I believe this is an area that needs to be researched and the results considered by people in pollution control positions. The role of green belts around cities and through cities can have possible significant effects on the quality of living not only by providing a place to play but also by improving the air. Obviously a thousand acre corn field cannot make a dent in the atmospheric content of sulfur near a smokestack that is belching up sulfur dioxide at the rate of a ton or more per hour. This fact, however, does not deny the potential contribution of vegetation as not only a factor of pollution control but also a significant factor in the economics of fertilization.

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Mr. DE LA GARZA. We appreciate very much your being here.

I would appreciate very much your making available your contributions to our hearing and without objection we will submit statements for the record that have been submitted for the committee by the different organizations and allowing the members to extend their remarks in the record.

With that, the subcommittee stands adjourned.

[Whereupon, at 12:08 p.m., the hearing was adjourned.]

[The following statements and letters were submitted to the subcommittee:]

STATEMENT OF HON. PAUL FINDLEY, A REPRESENTATIVE IN CONGRESS FROM THE  
STATE OF ILLINOIS

## FAMINE PREVENTION THAT WORKS

I congratulate this subcommittee for conducting these hearings on the world food situation. The challenge of feeding the world's expanding population is formidable. It deserves the attention of all thoughtful citizens.

The American people will, I am sure, respond to the challenge with substantial aid for both famine relief and famine prevention in the years ahead as they have in the past.

We surely will not disagree on that point.

The central question we should consider is this: Can the American people do a still better job in meeting this challenge, and if so, how?

My suggestions:

Concerning famine relief, I recommend a change in Public Law 480, the Food for Peace program, so that donations of grain for famine relief can occur regardless of whether the grain is in surplus.

Under the present law, the Secretary of Agriculture technically cannot authorize donations for famine relief unless he finds that the commodities are surplus, that is, in excess of requirements for dollar sales and domestic requirements.

The present low level of stocks makes these conditions important for the first time.

Our experience with famine relief shows that, on an average, \$300 million a year in donations is required. I recommend that this sum be appropriated annually for famine relief, with authority to the Secretary to acquire these supplies as market and famine conditions warrant.

This change will establish a famine-relief grain reserve upon which stricken areas can depend. With this change, no one can properly charge that U.S. charitable instincts are only surplus deep.

This famine-relief reserve, I strongly believe, is the only grain reserve our government should establish at this time.

Concerning famine prevention, I propose that the American people adopt a longterm program that our own experience proves to be sound. Let us invest in the education of farmers in the developing countries.

Over the past century, our state governments working closely with the federal government have developed in this nation the finest agricultural support system the world has ever known—the system of landgrant colleges of agriculture, through which the highly skilled profession of food production has been established and constantly upgraded. Nowhere else is the vocation of agriculture so exalted or successful, and much of the credit for this advance belongs to the land-grant system, which involves classroom training, extension service, and research.

The greatest contribution the American people could make to prevent world famine would be to help developing countries establish their own land-grant system through which each can build its own reliable and progressive food production system.

It will require patience and commitment by the American people.

It is longterm, but based on our own experience, it will work.

For this purpose, I recommend that the federal government convert the resources of its present foreign-aid program into longterm contracts for agricultural education abroad.

Let me illustrate how this would work. Under a typical contract, the college of agriculture at one of our state universities would be given 10 years in which to help India establish, organize, and staff a land-grant-type agricultural educational institution—with classroom, extension and research services.

India has the rainfall, soil and climate to produce enough food for twice its present population. All it needs is well-trained, well-motivated farmers equipped with the right tools.

Investment in agricultural education makes sense abroad, as it does here at home.

This program will not have the drama of shiploads of wheat streaming endlessly to a food-deficit country, but in time it will build the foundation for successful and enduring self-help.

Instead of creating dependency and despondency as often occurs when hand-outs get to be a habit, this program will build self-sufficiency and self-respect. In the longterm, it will help developing countries become good customers for American products of all kinds.

Properly handled, and coordinated with education in population control, "land-grant" education can prevent famine world wide—and, I believe, accomplish the goal within our lifetime.

Those comments are on the positive side.

Now a few words of warning.

First, Washington is on a grain stockpile kick that, to say the least, is premature. What is needed today is food production, not supply-management stockpiling by the government. Agriculture Secretary Earl Butz deserves a rousing cheer for turning loose for maximum production all of America's cropland. He would have done it sooner if the law had allowed. But even this year, when for the first time in at least 20 years, all cropland was released from government set-aside, doleful voices complained that this action would produce a glut. Secretary Butz deserves credit for putting first things first, that is, getting full production under way.

For the first time in years, the federal government is out of the grain business. Grain prices—and therefore farm income—are the best in years.

This naturally has created adjustment problems. For years private interests—a notable example is the baking industry—as well as foreign countries have relied on our government for warehousing services. The years of brim-full CCC bins caused warehousing in the non-CCC area to atrophy.

Private interests, including farmers, and foreign countries will expand their warehouse facilities once they are convinced the U.S. government will stay out of the warehouse business. I predict a swift expansion forward contracting and the development of futures contracts covering at least two years. To illustrate interest in this possibility, the Soviet foreign trade minister recently told me that his government would like to make price contracts for soybeans for as long as five years in advance.

If, instead, the federal government should get back into the business of buying, selling and storing grain with the objective of price and supply management—the favorable developments I have mentioned will of course not happen.

Heavy government holdings, inevitably controlled by political factors—not just economics—will again hang over the market to the disadvantage of farmers, consumers and taxpayers.

Any time the government owns large stocks of grain, it controls agricultural prices. And that concerns farmers because they know that no matter what politicians promise, when 200 million consumers start shouting about high food prices, they make a lot more noise than 3 million farmers. A good example is the export embargo that was placed on soybeans last summer. Another is the freeze on beef prices, and we all saw what disastrous effects that had on the livestock industry.

The only way effectively to encourage farmers to full production to meet the world food shortage is to remove the apprehension they naturally feel whenever the government has the ability to adversely affect farm prices.

Frankly, I have grave misgivings about the federal government ever engaging substantially in supply-management stockpiling. In any case, our primary objective at this stage should be policies that will give farmers incentive and confidence to move ahead with maximum production.

Second, let's stop calling for export-import controls. Foreign markets are vital to American agriculture and to the broad national interest. To keep them and expand them, we must treat contracts with foreign customers with the same consideration as those at home.

Third, let's drop the eat-less-meat theme. Conjecture by politicians about the desirability of eating less hamburger and other meats has the same adverse effect on producer confidence as price freezes and talk of price rollbacks.

Let me be specific. If the American people are persuaded to eat less meat, the present financial difficulties of beef and pork producers will be intensified.

Many of us recently voted for legislation to guarantee credit for livestock producers so they can stay in business and keep producing meat. It will be hard for some to reconcile that vote with their suggestion that each American eat one less hamburger a week.

If meat consumption goes down, inevitably so will livestock prices. This, in turn, will force down the price of cheese, poultry, eggs, and soybeans, as well as feed grains.

An eat-less-meat program that is successful will hit hard the agricultural interests of nearly every state in the Midwest. How much?

Eating less meat would adversely affect 78 per cent of all farm receipts in Minnesota, 85 per cent in Iowa, 71 per cent in Illinois, 82 per cent in Missouri, 82 per cent in South Dakota, and 74 per cent in Nebraska.

It's true that the consumer, in giving up his hamburger, really isn't making a great sacrifice. The real loser is the rancher, the feeder, the feed grain producer, the feed-mill operator, and anyone whose livelihood is affected by the prosperity of these people.

If, instead of giving up a hamburger, the citizen will donate a dollar a week to CARE, CROP, Catholic Relief, or a similar charitable program, he will make a significant and immediate contribution to starving people without causing a long chain of unfortunate side effects.

The best way to assure an adequate food supply in the years ahead is to rest our confidence on the strength of our private marketing system, and let it continue to provide the kind of incentives that will expand the productive limits of American agriculture.

And at the same time, the most effective tool we can possibly extend to developing countries for them to use in attaining their own level of self-sufficiency is agricultural education, the same type of education that has served us so well.

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STATEMENT OF HON. JOHN F. SEIBERLING, A REPRESENTATIVE IN  
CONGRESS FROM THE STATE OF OHIO

Mr. Chairman, your Committee deserves to be commended for holding hearings on an issue of such critical import as the world food shortage. This problem is affecting millions of people all over the world, from the American housewife who is struggling to keep up with rising food prices, to the African peasant who is struggling to keep alive.

It is a sad commentary on our nation of "progress" that in the 20th Century when we have developed the technology to send men into outer space that we have not applied our technological know-how to adequately meet our most basic need—the need for food. The technology is available. The problem is that we are not using it. We have not had to use it, until now. American agriculture, aided by the "Green Revolution," has always been able to keep one step ahead in the race between population and food production. Our food for peace program—Public Law 480—has done a superb job in that respect, until now.

Now we are losing the race. While the global demand for food has increased by half in the past two decades, world grain reserves have dropped by half. New constraints are making themselves felt on our food supplies aside from population, including the growing demand of the newly affluent nations for better food—mainly more meat and dairy products—exhaustion of our fisheries in the oceans, changing climatic conditions, and the natural limits of our land resources.

The technology of the Green Revolution is no longer adequate to meet the world's growing demands for food. Demographic experts predict that our food supplies will have to *double* within the next 25 years in order to maintain current levels of per capita consumption. The Green Revolution cannot perform that kind of a miracle. We must seek a new technology that can.

On June 19 of this year I introduced the Food Research and Development Act to develop a new food technology. The bill, HR 15479, has been referred to this Committee. It would establish a government-sponsored research and development program to apply new methods of protein production, fertilizer production, and processing of vegetable protein to our food needs. In addition, the bill would provide for an education program and demonstration projects to encourage market acceptance of the products produced by such methods.

A central goal of the bill is to help encourage reduced reliance on animal protein in the American diet. Animal protein is an extremely inefficient way of supplying food energy. It takes 21 pounds of grain and vegetable protein to

produce just one pound of animal protein. Yet, most of the protein in the American diet comes from animals, in the form of meat and dairy products.

Vegetable sources supply protein of equal quality, particularly soybeans (the Japanese have made soybeans a staple of their diet for years.) Yet, in this country about half of our annual crop of vegetable protein is used to feed livestock. Right now, the average American eats the equivalent of five times as much grain as the average person living in India due to the preponderance of meat and dairy products in our diet. At a time when people are starving by the hundreds of thousands in the impoverished areas of the world, we must reassess our own eating habits.

The Food Research and Development Act would encourage greater consumption of vegetable protein as an alternative to animal protein by providing funds for the development of methods of processing vegetable protein into "imitation" meat and dairy products. Some success has already been made in this direction with the introduction of vegetable oil as a substitute for animal fat, most notably as margarine. Margarine has established itself so well as a competitive product to butter that it is no longer considered an "imitation" product by many people. Soybean meat extender also became popular last summer when meat prices skyrocketed, but most people still consider it no more than a meat supplement. In the future, however, "meat" made totally from soybeans may be the rule. As Agriculture Secretary Earl Butz recently noted, "We have the technology to make better hamburgers out of soybeans than out of cows." Indeed, modern technology has made it possible to duplicate the flavor, texture, appearance, and nutrition of nearly every existing meat product—from bacon to pork chops—and many dairy products as well.

Many of these products are already commercially available, although not at prices the average consumer can afford. The Food Research and Development Act would help find ways to market these products at low cost, hopefully much lower than the products they imitate, and to expand their production.

By using more of our grain supply directly to supply human food instead of animal food, we would have not only a bigger grain surplus to share with the rest of the world, but a better balance of payments and lower food prices. Additionally, greater human consumption of vegetable protein may produce a healthier population since it contains none of the saturated fat and cholesterol found in meat and dairy products which doctors warn their heart patients to avoid.

As another alternative to animal protein—or at least an alternative method of producing it—the Food Research and Development Act would promote the development of "single-cell" protein. Single-cell protein is produced by single-celled microorganisms, known as "microbes" for short. Microbes are the tiny organisms such as bacteria, yeasts, and molds used to ripen cheese, ferment wine, and produce penicillin. People have been eating them for ages, but only recently has their full potential as a plentiful source of protein been discovered. The possibilities for their use as food are amazing.

Scientists working at the U.S. Army Laboratories in Natick, Massachusetts have discovered a way of using microbes to produce protein from old newspaper, clothes, and other organic materials. Their discovery involves the use of a special enzyme to break down the cellulose in these materials into glucose, a type of sugar which is used to feed protein-producing microbes. The scientists have set up a small pilot plant which is designed to convert 100 pounds of waste paper into 50 pounds of glucose a day. Their work has fantastic possibilities not only for easing the world food shortage, but for solving many of our waste disposal problems as well.

Other scientists working in laboratories for British Petroleum have put microbes to work producing protein from petroleum. In fact, they have already begun marketing it as a feed supplement for livestock. According to British experts, all of the world's protein needs could be met by using only one percent of the oil and gas now being consumed as fuel throughout the world.

Microbes can also be used to produce fertilizer. Scientists at the University of Wisconsin think they have developed a super microbe that can turn the nitrogen in the air into fertilizer eight times as fast as normal microbes. At a time when critical shortages of chemical fertilizer are threatening to reduce existing crop yields, the success of their research could be revolutionary.

The Food Research and Development Act would provide funds for this type of research and any other research designed to increase agricultural output. To help put the results of these and other research efforts into practical use, the bill would direct the Secretary of Agriculture to take all possible steps to assure that full and complete information about them is made available to industry, the general public, and federal, state, local, and international authorities, through demonstration projects and other means.

Of course, developing new types of food won't help the world food problem unless people eat them. This won't pose any problem in the starving nations of the world where people must eat any food they can get in order to survive. But it may pose a problem in countries like the United States where the people have very fixed tastes and eating habits and might not relish the thought of eating protein made from soybeans or newspapers.

To help promote market acceptance of new food products in the advanced nations, the Food Research and Development Act would direct the Secretary of HEW to set up an education program for schools and nonprofit organizations relating to the preparation and use of such products. The program would include the preparation of course outlines, visual materials, classroom teaching aids, food samples, and the training of teachers to conduct courses in the preparation and use of such food products. The bill also directs the Secretary of Agriculture to make such new food products available for school lunch programs.

The possibilities I have mentioned for improving the use of our agricultural resources and developing new types of protein and fertilizer are only some of the alternatives available. Other new ways of producing food are being explored. New discoveries may be imminent. The future of the world's population depends on the willingness of the industrialized nations to take the initiative to develop these new food sources and to make the best possible use of existing agricultural techniques. As the world's greatest producer and per capita consumer of food, the U.S. is in a unique position to take this initiative.

Right now, the portion of the federal agricultural budget being devoted to the discovery and practical application of new ways of increasing food production is miniscule in comparison to the size of the hunger problem the world is facing. It is going to take an effort comparable to the energy R & D effort we launched in response to the energy crisis in order to meet the food crisis. If we don't begin this effort now, the situation could become catastrophic.

The Food Research and Development Act is, of course, only one of many different steps which must be taken to deal with the growing shortage of food. The world food crisis is a complex problem related to an intricate web of economic, political, and social issues. It is not going to be cured overnight. My bill is intended not as an immediate solution, but as an intermediate and long-term program for helping to meet the growing demand for food.

As your Committee studies the world food shortage, I hope the concepts presented in my bill will be helpful.

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CONGRESS OF THE UNITED STATES,  
HOUSE OF REPRESENTATIVES,  
Washington, D.C., July 30, 1974.

HON. E DE LA GARZA,  
*Chairman, Subcommittee on Department Operations,  
Committee on Agriculture,  
Washington, D.C.*

DEAR MR. CHAIRMAN: I understand your subcommittee has recently held hearings on the food-population equation and the development of a strategy to deal with the very grave problems of famine and overpopulation.

Of particular interest in the development of different plans have been a variety of food reserve proposals, which set up national or international commodity reserves which could be drawn down in times of need. Such proposals have numerous problems of storage and transportation, as well as the fear of farmers that national reserves would be used by governments to influence prices. Nevertheless, some form of reserve may be the only approach, and I expect the World Food Conference in Rome to consider reserve proposals care-

fully this November. I understand your committee will be following closely the work of that conference as well as the Population Conference to be held in Bucharest.

I have for some time been deeply interested in the problems your committee has been discussing, and I have developed a food reserve proposal which I hope would merit your consideration. As with all such proposals it is in the draft stage, and I suspect would not achieve widespread acceptance without some revision. It does, however, attempt to deal with some of the problems of other reserve plans that I mentioned above.

I would hope that in your committee's work on long range strategies to deal with these problems, you will be able to include my suggestion in your deliberations.

Sincerely,

GILBERT GUDE.

INTERNATIONAL FOOD BANK PROPOSAL NO. 2

(Submitted by Hon. Gilbert Gude, a Representative in Congress from the State of Maryland)

The United Nations World Food Program is to be revised along the following lines:

1. Participating countries would agree to pay a percentage of each unit of a commodity sold (percentage to be agreed upon in the treaty establishing the organization) for export by that country. The percentage would be based on then prevailing market prices, and would be paid by the government to the bank.

2. Bank accepts all incoming funds, places them in one account, and:

(a) Buys commodities itself on the market. Extent of purchases would be at the discretion of bank managers. Storage and transportation costs would be borne by the bank. Purchases would become bank property and not the property of the country in which they are stored. The bank would be authorized to construct storage facilities in key locations around the world, subject to agreement by each host country. Stored commodities could be made available directly from storage or immediately from purchase to countries in need, need to be determined by the bank.

(b) Buy commodity future on any commodity exchange. Futures contracts would be purchased to insure available supplies at some future point of possible short supply. Contracts could be:

i. held for delivery by the bank, in which case commodities would be added to storage in (b) above, or made available directly to needy countries.

ii. transferred directly to needy countries which would be required to hold them for delivery.

iii. sold by the bank. Bank would not be permitted to speculate, but would be required to make all its decisions on the basis of anticipated demand for basic food crops. If a sale produces a gain, proceeds would go to the bank's account. If a loss is incurred, it would come out of the account.

3. Bank transfers to countries will be based on the amounts necessary to meet the needs of the populace, in the bank's judgment.

4. If sufficient funds were not available to meet all needs, the bank could:

(a) reduce the amounts to which each needy nation would otherwise be entitled.

(b) appeal for additional commitments by surplus countries.

(c) borrow funds to add to the accounts, loans to be guaranteed (up to agreed upon limits) by signatory nations.

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STATEMENT OF JAMES A. MCHALE, SECRETARY OF AGRICULTURE,  
COMMONWEALTH OF PENNSYLVANIA

Governor Shapp became increasingly concerned about the lack of a consistent National Food Policy by actions of Secretary of Agriculture Butz in 1972 and 1973. In 1972, Secretary Butz paid out about \$4 billion dollars to encourage

farmers not to produce. In 1973 the large multi-national grain trading corporations sold more than \$400 million dollars of grains and soybeans to Russia at bargain basement prices. This was done without the U.S. Department of Agriculture's knowledge of what was going on until it was too late for farmers to receive some of the benefits of price increases that these large sales, which were followed quickly by scare buying of other nations, brought about. Consumer food prices rose spectacularly as a result of these and other actions.

Governor Shapp convened a National Conference on Food Policy in Hershey, Pennsylvania on December 6 and 7, 1973. At the end of this very successful conference, the participants in the conference requested that I convene an ad hoc committee to explore what steps could be taken to stimulate interest and action at the grassroots in America. Two ad hoc committee meetings resulted in the formation of the World Hunger Action Coalition. Herbert Waters, President of American Freedom from Hunger Foundation, was elected Chairman and Martin McLaughlin, from Overseas Development Council, was chosen as Executive Secretary.

At the same meeting, World Hunger Action Coalition voted to ask Governor Shapp and Senator Percy to act as co-chairmen of a National Advisory Commission of Public Officials to advise and assist World Hunger Action Coalition.

I ask permission to insert in the record a copy of the summary conclusions contained in the Report of the National Conference on Food Policy and a copy of the "Working Document of the World Hunger Action Coalition." I wish to also file for the record a list of the organizations, which have indicated their support of the objectives of the World Hunger Action Coalition. New supporters are adding their names to this list almost every day.

The food crisis which the people of the world face has been brought about by several factors. Some of the long-term situations which have helped to bring on the food crisis are:

1. A widening gap between food production and population growth. The large population increases are in some of the poorest countries.

2. The reduction of the fish population due to excessive fishing and lack of conservation practices. There has not been sufficient development of a systematic breeding and growing of fish.

3. Many scientists feel that we are witnessing large scale changes in climate. These changes affect the ecology and substantially decrease food production.

4. Very inadequate conservation of land and water resources.

5. Failure to dignify farmers and rural people by allowing serf-like conditions to continue in many areas of the world. Land reform, production credit, adequate technical assistance, general education and provision of adequate income incentives have been almost totally lacking in vast areas in the less developed countries. Practically every country in the world, poor or rich, has treated its farming population as second class citizens. Farmers and rural people have endured a much lower standard of living than their countrymen living in the cities.

The very strong emphasis on urbanization and industrialization has emphasized the necessity to increase food production by improvement of farming methods by providing adequate income incentives to working farmers.

Some of the short-range factors are:

1. The disruption of farm production caused by the Indo-Pakistani war and the loss of at least one crop in Bangladesh.

2. The disruption of food production in Indo-China. The United States sent millions of tons of rice, wheat and feed grains to Indo-China to make up for the drop in rice production due to the war.

3. The lack of conservation practices and violation of ecological balances brought about by an excessive population of people and animals in the arid Sahel region of central Africa.

4. The massive sales of grains and soybeans to Russia, which brought about fear-crisis buying of our foodstuffs by many countries at bargain prices due to the dollar devaluation. The massive sales to Russia and the rush to buy our foodstuffs by other countries wiped out our reserves, a year after the U.S. had spent \$4 billion to reduce production of wheat and feed grains.

5. The disappearance, at least temporarily, of the anchovetas in Peru.

6. The drastic rise in oil and other raw material prices. This caused a rapid increase in the price of fertilizers and other production supplies. Production of

miracle wheat and rice has been and continues to be adversely affected because of a lack of fertilizer and other production supplies.

All of these causes and effects have brought about worldwide inflation in food and energy prices which have in turn severely lowered the food intake and the general standard of living of poor and low income people at home and over the world.

#### A NATIONAL FOOD POLICY 1929-1972

Notwithstanding its weaknesses, inconsistencies and many changes, the United States had a National Food Policy from the passage of the 1929 Agricultural Act adopted during the Hoover administration, until 1972 when Secretary Butz, through administrative actions scuttled or misdirected most of the policies which had been operating during the last three decades. We did have an ever normal granary reserve which helped us and the world during the World War II, the tragic period following that war, the Korean War and the Vietnam War. This same set of adjustment policies made it possible for the United States to provide the needy people of the world with billions of dollars of foodstuffs through UNRRA, the Marshall Plan, Public Law 480 and other activities.

All of these actions have been carried out while providing the American consumer with ample supplies of food and fiber, at relatively low costs.

These same food policies enabled us to earn large amounts of foreign exchange by selling our food and other farm commodities abroad. These sales helped reduce our unfavorable balance of trade, which was brought about, in part, by four wars in one generation.

#### NEEDED: A NATIONAL FOOD POLICY

Now we must establish a National Food Policy, which will serve the needs of an entirely different situation than we have faced before.

We do not have reserves of grain or of easily reclaimed land. We are on a highly volatile world market as to food and fiber. American consumers are no longer insulated from the world market. The producers of the United States are dependent to a substantial degree on world market fluctuations and uncertainties. Our dollar and the international monetary system is highly unstable. We do not have the market stabilizers, for food and fiber that we had a few short years ago.

At the present time we do not have the components of a National Food and Fiber Policy unless one can call the so-called free world market a policy. I do not.

The magnificent increase in efficiency of production has been brought about by a substantial intervention. First, by the Homestead and other free land grants to farmers by our Federal government. Second, by the provision by our Federal government of a nation-wide system of land grant colleges, the vast network of research and experiment stations demonstrated to farmers by a nation-wide system of federal-state extension services. Third, by a development of the finest and largest cooperative and direct credit system in the world. Fourth, by the encouragement of farmer-owned and controlled marketing, processing and supply cooperatives through the Capper Volstead Act and later in the thirties the Farmer Credit Administration system of Banks for Cooperative, Production Credit Associations. Fifth, by the establishment of direct to former Federal government credit through Farmers Home Administration. Sixth, by stabilizing farmers' income, most of the time at inadequate levels, through the ever-normal granary program, CCC loans, price supports, Soil Conservation Payments, ASCS-REAP payment. Seventh, enactment and use of Public Law 480, Food for Peace. Eighth, International Commodity Agreements for wheat.

All of these actions provided the American farmer with enough confidence in his future that he was willing to make the changes; the ever-increasing, very high capital investments in more land, new technology, new seeds, hybrid animals and billions of dollars mechanization, which enabled him to far out-distance industry in his productivity per man-hour. The American farmer must have the equalizer—the bargaining power, if you will—of a federal farm program and a National Food Policy if we are to avoid the multi-nationalization of

food and fiber by multi-national private corporations operating in cooperation with state controlled corporations of other governments.

America's rural heartland, once the cradle of isolationism can now be a dynamic force in American foreign policy. The American farmer is the new internationalist. Our farmers need the expanding world markets for food.

In an address to the United Nations on May 9, 1974, Senator Hubert Humphrey outlined a four-part world food action program which included increased food aid, establishing world and national food reserve programs stepping up fertilizer production and expanding agricultural production. I heartily endorse Senator Humphrey's World Food Action Program.

Food reserves are low, maybe three weeks supplies, at least until the new grain crop can be distributed. Hunger and starvation stalks the land in the Sahel region of Africa, Bangladesh, Latin America and India. UNICEF recently reported that hunger, malnutrition and famine is likely to be the fate of four to five hundred million people in these parts of the world.

We should immediately announce to the world that the people of the United States continue to feel a deep moral conviction about helping the less fortunate of the world. We will act now on our convictions. We will ask others who are able to do so to join us in this emergency effort. Especially the newly-rich oil-producing exporting countries.

The neo-classical market economic models of Secretary Butz and the modern day realism and humanitarianism of Secretary Kissinger has divided counsel from our Executive branch as to how or whether we should respond to the crying needs of world hunger by setting up emergency reserves. Secretary Kissinger made an eloquent statement of the World Hunger problem at the United Nations. Unfortunately, a U.S. initiative submitted to the U.N. late in the session was rejected.

Secretary Butz has been quoted as saying, "Hunger is relative. If your larder is empty you cut back some." Senator Humphrey responded to this remark by saying, "I am not sure how you cut back on an empty larder. That sounds like starvation to me."

Since half of the world's people are hungry and malnourished, they need the food produced in the more developed countries of the world.

We must use our imagination and our ingenuity to see that their stomachs are filled and that we help them to help themselves by substantially increasing their own food production.

Because we have not maintained adequate reserves of food, fiber, petroleum, fertilizer and other production supplies, we are now facing the difficult question of whether we will share our short or skimpy supplies of foodstuffs and production supplies with the less fortunate hungry people of the world.

This is the moral question facing the American people. The question to be answered is just how strongly do we believe in the philosophy "food for myself is a material concern, food for my brother is a moral concern." Are we concerned enough about the hungry people here at home and in the world that we are willing to provide the money, the food, and the effort to help feed the starving and the hungry wherever they live? Are we willing to create the emergency reserves as provided in Senate Resolution 329?

I feel that we have the moral conviction and the courage to do our part. But, we must act now—rapidly and with dynamic leadership. We can—we must—we will do it now because it is the humanitarian—the right—the moral thing to do.

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STATEMENT OF EDWARD M. KINNEY, ASSISTANT TO THE EXECUTIVE DIRECTOR,  
CATHOLIC RELIEF SERVICES, U.S. CATHOLIC CONFERENCE

A MATTER OF CONSCIENCE

My name is Edward M. Kinney. I am an assistant to Bishop Edward E. Swannstrom, Executive Director of Catholic Relief Services—United States Catholic Conference, the official overseas relief and development agency of the Catholic hierarchy of the United States.

I have been in charge of CRS P.L. 480, Title II food distribution programs since their inception in 1954. Since that time, almost 11 million tons of dairy products, grains and grain products, dried beans, rice and fats and oils valued

at more than \$1½ billion have been programmed, shipped overseas and distributed by Catholic Relief Services to as many as 29 million needy men, women and children in one year in 70 countries. CRS annual shipments of U. S. Government-donated foods reached a high in the early 1960's of 867,000 tons. I have seen Title II programs evolve from simply a means to dispose of America's crop surpluses to their present day status of thoughtfully planned schemes involving millions of the world's poor in a meaningful and, overwhelmingly, "self-help" way. The part America, and in particular the American voluntary agencies, has played in waging war on world hunger, then, is consequently well known to me.

I consider it a privilege to submit this testimony to this Committee. I commend it for calling upon the Congress to take the leadership in carrying out now the positive and constructive steps so urgently needed to avert a world famine.

I deem this resolution of overwhelming importance for it urges upon America and Americans a course of action which, if adopted and implemented promptly, could literally save the lives of millions of our fellow human beings in the coming months.

The whys and wherefores of the present potentially disastrous global food situation are well known to this Committee: the failure of world food production to keep pace with global food consumption; the present, still spreading, drought in Africa; the disappointing monsoons of the past year or two in India; the failure of the Peruvian anchoveta catch; the almost complete disappearance of exports from the traditionally rice exporting countries of Southeast Asia; the emergence of ecological limitations as a factor in world food supply; the devaluation of the dollar; the oil embargo and the consequent monetary bind in which the so-called affluent nations find themselves, etc. These and other factors have combined to virtually eliminate the world's surplus of grains. And it is upon grains that the masses of humanity depend for their daily subsistence. Now, the world finds itself with a dangerously thin margin—a reserve estimated to have dwindled to less than one month's supply—separating millions upon millions in the developing countries from the sinister spectre of starvation.

Before the House and Senate now are resolutions pertaining to the participation of the United States in an international effort to reduce the mounting risk of a global famine and to act without delay in the long and proud tradition of the American people to alleviate human suffering.

Food, that without which human life cannot be sustained, has become virtually synonymous with power. North America, and principally the United States, has become the granary of the world. And North America, it is said, dominates the world's food supply to a greater degree than the Middle East dominates oil.

Food can be an instrument for good or a weapon for evil. Thus, today, Providence has placed upon America an enormous responsibility. That is, to discharge the trust our magnificent agricultural capacity has thrust upon us wisely and for the good of all humanity. This is the intent of this resolution.

Most of America has yet to realize the proportions of the calamity the world will face unless action is taken now to meet the challenge. Many of the Senators on this committee have been active in furthering the aims of the WORLD HUNGER ACTION COALITION in its attempts to arouse America to the very real and quite imminent threat of massive starvation in the developing world. Two food policy conferences, one in Hershey, Pennsylvania, and one in the Twin Cities of Minnesota, have already attracted wide attention. Two more meetings under the sponsorship of the Coalition to rally grass roots support for an American food policy are planned before the World Food Conference convenes in Rome in November. Still, there is more to be done.

This resolution is of extraordinary importance, not alone because of its content but because of its bi-partisan sponsorship. It is a call to action from both sides of the aisle to *all* Americans, and its message must get through if the people of the United States, weary and Watergated as they are, are to re-assume the role of moral world leadership America once held. Through this resolution, Congress can help show the way.

World conditions today call for a joining together of the major food producing nations in a crash effort to combat world hunger by expanding na-

tional food aid programs to a degree proportionate to each's share of world food exports. It encourages, as indeed it should, the OPEC nations to invest a fair share of the windfall profits the energy crisis has enabled them in this multi-national effort to prevent the poor and hungry of the world from starving to death.

This resolution is practical. It suggests not only food aid but the combining with some of the means and technology to expand the production of food in food deficit countries. It proposes a major effort to increase world fertilizer production and, as a corollary, a self-imposed reduction in non-critical, non-food producing uses of fertilizer on the part of the peoples of the developed world.

This resolution is action oriented. It urges the President and the Secretaries of State and Agriculture to restore P.L. 480, Title I sales and Title II grants to at least 1972 levels. It calls upon the President and his two cabinet members to formulate forthwith within the cooperative framework proposed by it an American response to the world food crisis and the needs of the peoples of the most severely affected countries.

It is most encouraging to note that the actions urged by this resolution include the restoration of P.L. 480, Title II food distributions to at least 1972 levels. (During the last three years, the number of recipients included in such programs has been cut almost 40%.) Such programs are no less important than Title I sales for they are the real measure of America's compassion and concern, reaching as they do through America's voluntary agencies in a direct and personal way the needy of those lands in which most of the world's population, and the overwhelming majority of the world's poor, live. The tremendous wheat and corn crops American farmers are now harvesting mean that the foodstuffs to meet our domestic needs, restore our normal reserve, meet Title I demands and return these programs to their former levels, and then some, are readily available.

Recently, on a nationwide morning television newscast, the saintly little Mother Teresa from Calcutta pointed out with worry that the help she received as a donation from the people of the United States has, in the past few years, simply disappeared. Not that Title II food aid for the Indian people has been discontinued. What is involved is a classic example of bureaucracy at work. Year after year, changes upon changes are made in category eligibility, per person ration, etc. in Title II programs. Programs begun on the basis of individual need are still being arbitrarily terminated on the basis of country economic viability. Among the categories no longer eligible for Title II donated foods under existing programs are the aged, the unemployable, and the health cases which, unfortunately, in many instances, represent those most in need of our help. Even the school feeding programs, which have contributed so importantly to the health of millions of children overseas, are presently being phased out by bureaucratic edict.

In fact, if today one is not a pregnant mother or a child under five or able to participate in a food-for-work project, one has precious little chance of receiving U.S. food assistance under Title II. This means, of course, that the 46,000 lepers throughout India whom Mother Teresa's helpers accept as their responsibility, and the approximately 3,000 poorest of the poor who are literally being kept alive through food distributions arranged under the auspices of this selfless woman's Calcutta Home for the Dying, are simply shut off from any official assistance from the people of the United States.

I have no quarrel, to be sure, with the importance of feeding the pre-school age child or the pregnant or lactating mother, or with utilizing food as payment for work performed on community projects. I do believe, however, that there is room in America's heart (and in P.L. 480, Title II programs) for at least a "widow's mite" for the lame, the sick, the aged and inform, and it is in the belief that this committee may feel similarly that I bring this situation to its attention.

Terence Cardinal Cooke, in asking the Catholics of the Archdiocese of New York to observe Wednesdays as days of fast and abstinence and to contribute the money thus saved to programs on behalf of the starving of Africa and Asia, said:

"The union of God's family on earth demands from each of a more personal role as we came face to face with a calamity of such proportions, the gravity of which we are only now beginning to realize."

It is to this more personal role each of us must play in meeting the impending world food crisis that I refer in terming America's responsibility a matter of conscience.

The present balance between world food production and consumption is so precarious that, as Senator Humphrey stated before the meeting on the World Food and Energy Crisis at the United Nations, we face a real danger of losing the battle we have been waging for the last twenty-five years against poverty and disease in the developing world. This simply cannot be permitted to happen. We must take action on all fronts—by increasing food aid, by increasing world food production, and through a world food security system, and we must do it without further delay.

I suggest this committee might well ask the American delegation to the World Food Conference to call for a "Declaration of International Conscience" to be issued by the Conference itself under which the nations of the world, jointly and severally, would confirm their acceptance of responsibility each for the other in terms of their relative ability to furnish foods and/or funds for a concerted international effort to avert global famine.

Individually, nationally and internationally, to my mind, a prompt, just and equitable response to this world emergency is fundamentally, and without doubt, a matter of conscience which cannot be denied. I heartily endorse an affirmative action on the part of the House of Representatives in support of such response at the earliest possible moment.

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#### STATEMENT OF THE CHAMBER OF COMMERCE OF THE UNITED STATES OF AMERICA

RECOMMENDATIONS ON WORLD FOOD CONFERENCE PRESENTED TO AMBASSADOR EDWIN M. MARTIN, COORDINATOR OF U.S. PARTICIPATION IN THE WORLD FOOD CONFERENCE.

##### *General Recommendations*

1. The U.S. Government should welcome a conference on world food security issues. In their discussions, conference participants should seek to share information, identify common goals and develop constructive proposals designed to enable developing countries to become more self-sufficient in their food requirements. However, the U.S. Government delegation should oppose efforts to reach specific agreements on international trade and aid with the governments represented at the World Food Conference since permanent mechanisms, such as the General Agreement on Tariffs and Trade (GATT) and other international bodies, already exist for these purposes.

2. The U. S. delegation should favor the creation of an international mechanism to collect and exchange information on national food production and supplies. Such information is needed to enable each country to make wise policy decisions with respect to food production, needed reserve stocks, trade potential and food aid requirements.

3. The World Food Conference should consider the production problems and potentials of developing countries and should offer proposals to alleviate these problems and develop their potentials. Such proposals should reflect an awareness that production and marketing systems in these countries must provide sufficient income incentives to encourage farm enterprises to produce abundantly and efficiently for growing consuming markets within these countries.

4. The recipient countries should, wherever possible, permit access to their own marketable resources by the developed countries in return for assistance received from the developed countries.

##### *Technical Assistance*

5. The U.S. and other developed countries should cooperate in their efforts to assist developing countries increase their food production. The types of equipment and facilities provided must be adapted to the land resources, size of farming units, supply of labor and capacity for technical skills. Educational and technical assistance should be provided in farm management and in the operation and maintenance of production equipment.

6. Technical, educational and financial assistance should be organized on a multi-year basis to enable the developing countries to develop their own resource potentials more effectively and completely.

7. There is need for more fertilizer throughout the world, particularly in the developing countries. Greater emphasis should be given to fertilizer production in all countries where the materials for such production exist. Even though the raw fertilizer material may be produced in the developing countries, the fertilizer should be manufactured wherever it will provide the most efficient assistance to the developing countries.

8. There should be established in the developing countries an effective food distribution and marketing system, as much as the food produced in and donated to the developing countries never reaches the consumers. To reduce losses from rodents and spoilage; storage, transportation, processing and marketing facilities should be improved.

9. Assistance to the developing countries should be contingent on the recipient country's efforts to improve its own productive capabilities, and to develop an effective approach to family planning.

#### *Food Aid*

10. Food assistance to needy countries is an international responsibility that should be shared by all of the developed countries—importers as well as exporters of food—and by those developing countries that have the financial means to contribute.

11. The U.S. Government should continue its commitment to make food available for emergency famine relief and for intermediate term adjustment assistance through donations, concessional sales and other forms of aid. However, food donation without compensation in any form should be limited to famine relief in emergency situations.

12. Food assistance to developing countries should not be used by recipient countries as a disincentive to increase domestic food production.

13. Concessional sales and barter arrangements, where authorized, should be made available to developing countries where such assistance enables these countries to achieve economic and political stability and become viable participants in world trade.

#### *Food Reserves*

14. Building up large quantities of world food reserves may be counter-productive. Experience has shown that such stockpiles depress prices which in turn discourage production, both in surplus and deficit food producing countries.

15. Each developed country should be responsible for establishing its own reserve food supplies whether for domestic use, for trade or for aid programs; or whether they are stored domestically or in a foreign country. The U. S. Government should not maintain unsold reserves in a foreign country.

16. The U. S. Government should announce as early as possible in the marketing year the volumes of food products it intends to purchase for food aid in order to (a) provide a maximum of advanced information to United States producers and (b) prevent commercial sales from depleting all stocks before acquisition of commodities for foreign aid.

17. By the same token, other developed countries wishing to acquire food stocks from the United States for their own domestic use or for donation, should negotiate for these purchases early in the U. S. commodity marketing year.

18. If an international organization acquires funds for food assistance, the funds should be expended on a world-wide tender basis to purchase food from the cheapest source possible. The "stockpile" of such an organization should be in the form of money, not commodity warehouse receipts.

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CHURCH WORLD SERVICE,  
New York, N.Y., July 31, 1974.

HON. E (KIKI) DE LA GARZA,  
Chairman, Department Operations Subcommittee, House Agriculture Committee,  
U.S. House of Representatives, Longworth House Office Building, Washington, D.C.

DEAR MR. DE LA GARZA: We are writing to congratulate you for holding hearings on the subject of World Population and Food Supply and Demand and World Food Reserves and to share with you our concerns and recommendations on these matters.

Church World Service is an agency of the National Council of Churches of Christ in the U.S.A., which, on behalf of its 31 member Protestant and Orthodox denominations, carries out programs of relief and development in more than forty countries around the world. Our efforts, in partnership with Christian councils of churches in those countries and with the World Council of Churches, are designed to assist poor people in the poorest countries, particularly in rural areas, to improve the quality of their life.

Since the twin issues of food and population are so central, we have over the years come to focus on programs to increase local food production, provide nutrition, family planning and public health education, and train local people in the needed skills to train others in these fields. At the international level, we have been involved in United Nations discussions and will be represented both at the World Population Conference in August and at the World Food Conference in November.

Based on this background and on these concerns, we wish to make the following observations and recommendations:

1. Reports from our field staff in such far flung areas as Niger, Ghana, the Sudan, Bangladesh, Indonesia, and Haiti confirm the testimony of experts whom you have heard: that 1974 is indeed a grim year for food harvests.

2. Food shortages and the resultant suffering is particularly great in rural areas. We share the concern you have expressed for "the one family plot in India and Ethiopia." We focus our own efforts on the small farmer and others, particularly in remote areas, and welcome the thrust of the Foreign Assistance Act of 1973 in the same direction. We feel that an integrated approach to rural needs is necessary to assist balanced population growth sensitive to local patterns and needs.

3. While we currently administer PL-480 Title II programs in 6 countries and encourage the expansion by the Administration of PL-480 program to meet the deteriorating world food situation of 1974, we see a longer term solution in providing people in food-deficit countries with "the necessary tools and technology to provide for themselves," as you have phrased it in the Hearings.

4. We support, and feel that the American people will support, an increased response by the U.S. Government to the problems you are discussing. Although the responsibility for meeting of global needs should be shared among various nations, the United States with its agricultural and other resources has a special responsibility, as Congressman Alexander has expressed it, "to become a leader in the fight on hunger." Both bilateral and multilateral channels are available. Since we have food and highly productive land, otherwise in short supply, we should continue to provide food as part of our contribution. We commend for your support the Resolution on World Hunger, H.R. 1155, now pending before the House, which sets the sort of increased American response we are recommending in this multilateral context.

5. We support the creation in the United States of a domestic grain reserve, as we have testified before your companion committee in the Senate. We call to your attention the fact that in the absence of such a reserve, the United States had to defer in July, 1973 a response to the request for food for hungry people in the Sahel. A grain reserve would, as we understand it, help to assure that foodstuffs are available for overseas emergency use in countries which cannot buy food on the commercial market.

6. We urge the development of a national food policy which would resolve separate and sometimes contradictory policies which now exist. One element of such a national policy would be an ongoing commitment to make food available to meet humanitarian needs overseas, since in present circumstances the poorest countries are unable to purchase food at commercial rates. Trade policies which encourage food production in the developing countries are also, in our view, desirable.

We welcome the continuing interest of the committee in the issues of world food and population and encourage your active support for appropriate national and international actions which are recommended by the World Food and Population Conferences later this year.

We attach for your information a copy of our recommendations to the U.S. delegation to the World Food Conference.

Sincerely,

NANCY L. NICALO,  
*Acting Executive Director.*

Attachment:

CHURCH WORLD SERVICE AND LUTHERAN WORLD RELIEF RECOMMENDATIONS  
FOR THE U.S. DELEGATION TO THE WORLD FOOD CONFERENCE, MAY 1974

I. OVERALL CONSIDERATIONS AND CONCERNS

A. *A Framework of Responsible International Interdependence*

1. We urge the U.S. delegation to participate in World Food Conference (WFC) discussions fully within the context of the new international economic order which the Special Session declared its united determination to work to implement.

2. While the U.S. Government has expressed reservations about certain features of that new order, it should make clear its full support of "equity, sovereign equality, interdependence, common interest and cooperation among all States."

3. Recognizing the dependence of the U.S. on other nations for certain basic raw materials and their dependence on the U.S. for manufactured goods and services, we urge the creative and careful use of the resources of our finite planet in mutual interdependence.

4. This approach should result in U.S. support for measures increasingly multilateral in character.

5. In the context of global interdependence, actions taken at the WFC to increase agricultural production, strengthen world food security, and adjust trade policies should be regarded as in the interests not only of the food-deficit countries, but of the U.S. and other developed countries as well.

a. The removal of the international instability caused by widespread hunger, malnutrition, disease, unemployment, and other forms of human misery and the bridging of the widening gap between rich and poor nations will contribute substantially to a more stable, peaceful, and just world for all of its members.

B. *A Response to the World Food Crisis Which Expresses the Shared Concern of all Member U.N. Countries for an Adequate Diet for all People*

1. We recommend that at the WFC the world community be challenged to make specific commitments such as the following:

a. For major food-exporting *developed* countries, a pledge of ten percent of their annual agricultural exports for humanitarian uses in the developing world.

1. For the U.S., this involves a doubling of current Food for Peace efforts, an action we believe both possible and imperative. An increased response of this magnitude would be commensurate with reduced food availabilities at manageable prices in the LDCs.

b. For other *developed* countries, a comparable input in funds, material and/or technical assistance should be encouraged to be made available for the same purposes.

1. Such funds could be used in the LDCs through U.N. administrative mechanisms for food purchase, agricultural assistance, and/or the managing, storing, and distributing costs of food available from other sources.

c. Food-exporting *developing* countries should be encouraged to participate by making food available on grant or concessional terms to LDCs in need for purchase; LDCs could use funds from their own budgets or from (b) above to acquire food in this fashion.

d. Food-importing *developing* countries should be encouraged to contribute in-kind services in the management and distribution of the food received, as well as other meaningful assistance.

1. As a corollary of the policy recommended in Section II.A.5 below, we urge that immediate steps be taken to alleviate the burden of massive debt service among the LDCs, provided that the LDC funds thereby available be used by each LDC government for purposes of agricultural and economic development.

e. In short, there is real as well as symbolic value in having countries, whatever the state of their economic development, share in an interrelated response to the world food crisis.

C. *A Focus on the Needs of the Poorest Countries, and on the Poorest Persons within each Country*

1. Such places and persons, to whose needs we attest, are the focus of the Foreign Assistance Act of 1973 and of efforts by Church World Service and Lutheran World Relief and other voluntary organizations.

2. Governments should be encouraged, amid the conflicting demands on their limited resources, to make a special commitment on behalf of persons most in need and least able to fend for themselves.

3. Assistance agreed upon at the World Food Conference should, to the extent consonant with LDC government priorities, be used to enhance their abilities to meet the needs of poor persons.

*D. Recognition and Encouragement of Voluntary Agency Contributions to World Food Needs*

1. The U.S. delegation should urge the World Food Conference as a whole, in addition to stimulating greater support for bilateral and multilateral measures, to take into account the proven and potentially expandable efforts of voluntary agencies of all countries in such areas as:

a. Relief and development activities among the poor at the village level, where the roots of poverty exist.

b. Administering food aid programs, agricultural and economic development projects, and nutrition and health education efforts.

c. Providing technical assistance and training in needed skills for local persons.

d. Piloting new approaches and model schemes prior to large scale replication by others.

e. Providing support and encouragement for counterpart agencies to become significant partners with their governments in support of human development.

f. Broadening the response of the international community to human need.

2. While the WFC is a meeting of governments, it should also articulate the humanitarian concerns of peoples for each other, a concern expressed in the Western tradition of actions by private citizens through their voluntary agencies.

3. Since intergovernmental discussions in general and the early planning for the WFC in particular have focused on the solutions of problems by governmental means, explicit attempts are needed to draw non-governmental resources into WFC discussions.

a. Because of the significant involvement of American voluntary agencies in combatting hunger, the U.S. delegation in particular needs to be a strong advocate of the voluntary agency roles in helping to solve the world food crisis.

b. The U.S. delegation should ensure that the WFC specifically encourages the active cooperation with voluntary agencies of U.N. units such as FAO, the World Food Program, UNDP, and others.

1. While generally good cooperation already exists and while specific measures are already being taken to enhance these relationships, some additional modifications of existing U.N. agency procedures may help to facilitate increased cooperation.

2. CWS and LWR are prepared to consider administering, in selected situations, food aid projects utilizing food received from the World Food Program rather than from the U.S. government.

a. We would welcome discussions well in advance of November to allow for the working out of appropriate guidelines and arrangements to enable the announcement of specific projects at the Conference itself.

4. All of the above notwithstanding, we believe that voluntary agencies cannot and should not become the major channel of governmental assistance in relief and development.

*E. Multifaceted Solutions to be Proposed and Supported by the U.S.*

1. Given the complex causes of food scarcity and the variety of solutions needed, we urge that multiple approaches be advocated and supported by the U.S. delegations.

2. Increased food aid, urgent as it is, is only one of a number of measures which deserve U.S. support.

a. We believe, as noted above, that sizable increases in American food assistance are imperative, optimally matched by increases from other large food producing countries. As food assistance becomes an increasingly shared endeavor, we are not opposed to its ceasing to be America's distinctive contribution to world hunger.

- b. Given the deepening predicament of many food deficit countries, we believe that a significant increase in our donation program is imperative, along with a significant increase in concessional sales of food for those countries with limited ability to pay full prices.
3. While immediate measures to combat critical food shortages are urgent, these should not deflect attention from medium and longer term solutions to world food problems.
- a. Aid to agricultural development in both material (such as seeds, tools, and fertilizer) and technical assistance (such as expertise in animal husbandry and marketing) is critically needed, as is expanded nutrition education.
- b. Given the massive increase in agricultural research needed to solve LDC agricultural problems, we urge that a more active role in providing technical assistance by the agricultural attaches in U.S. Missions and by the American based staffs of the U.S. Department of Agriculture and State universities be explored.
4. Since agricultural poverty has systemic as well as immediate roots, measures to bring about basic structural changes in LDC societies should be encouraged along lines they find appropriate.
- a. Revised patterns of land ownership, enhanced availability of capital, and other measures to further economic justice are all likely to have positive impacts on agricultural productivity.
5. We urge that the thinking of the other 1974 U.N. Conferences be brought to bear on the issues being considered by the World Food Conference, since responsible family planning, responsible use of the seas, and responsible food and environmental policies are interrelated.
6. Recognizing that many of the Conference recommendations will draw on U.N. agencies for implementation and require international support, the U.S. should pledge substantially increased resources to the United Nations system.
- a. We commend the U.S. government for its current support of intergovernmental agencies such as UNICEF, FAO, WFP, and UNDP, and view increased support as a means of advancing the welfare of the whole family of man.

#### *F. A Non-Political Approach to World Food Needs*

1. We believe that all persons have a right to food which fulfills a basic human need.
2. We believe that the long-term interest of the U.S. will best be served by showing a concern for the hungry regardless of their race, color, creed, or political persuasion.
- a. Similarly, countries in which food shortages exist should not deny food to any segment of their population by reason of any of those factors.
3. Realizing that food policies cannot be immediately extricated from political considerations, the U.S. government should support the establishment by the WFC of a mechanism to orchestrate more effectively food availability with food need.
- a. Countries whose needs remain neglected through bilateral assistance should become increasingly the focus of multilateral concern.

## II. PARTICULAR AGENDA ITEMS

### *A. Increasing LDC Food Production*

1. We believe this deserves priority attention because it enables LDCs to develop an increasing measure of self-sufficiency in food and to improve the economic and social condition of their citizens, particularly the agrarian poor.
- a. An adequate diet for all persons within each country is basically each country's responsibility, to be met to the fullest extent possible by and from local production and commercial imports, supplemented where and as necessary by outside assistance.
2. We believe that an essential corollary to increased production in the LDCs is greater effectiveness and efficiency for their small farmers in financing resource acquisition (seed, fertilizer, tools, etc.) and in marketing their products (through transport, sales, etc.)
- a. We believe that cooperatives (e.g., for production, marketing, and transport) can offer one effective form of assistance toward this end.

3. We urge that care be exercised to avoid in LDCs the excessive energy consumption patterns of U.S. agriculture.

4. We urge policies and assistance designed to increase the efficiency of small-scale farming.

a. Our experience has suggested that intermediate technology (such as improved tools, windmills, and animal-drawn plows) is generally more serviceable than more complex techniques geared to increasingly short oil products.

5. Recognizing that the sale of food, even at concessional terms, can create massive debt, every effort should be made so that debtor nation status shall not in and of itself be an economic deterrent to development. (Cf. I.B.I.d.1 above.)

#### *B. Strengthening World Food Security*

1. On the basis of extensive experience, we support an expanded program of food aid: for emergency relief as needed, but primarily for development purposes.

a. We do so realizing that the great bulk of America's agricultural exports need to and should continue to move through normal commercial marketing channels.

2. We support the idea of an international network of national food reserves along the lines formulated by the Director General of FAO.

a. Since food production and availability is a complex matter which does not respond overnight to new situations of need, we urge that the U.S. government support national and international planning processes which allow for multi-year agricultural projections and food assistance commitments.

b. Given imponderable factors which make predictions of food availabilities at best somewhat uncertain, we urge that conservative rather than overly optimistic projections be used in WFC and U.S. government planning to allow a safe margin between anticipated crop yields and human needs.

3. We support a national food reserve which would enhance our country's ability to respond to international needs.

4. While the U.S. should not and cannot singlehandedly feed the world, it should, in our view, commit itself to the use of our abundant resources to increase systematically our own agricultural production against the spectre of mounting world famine.

a. In addition to the continued utilization of all arable land, the U.S. should explore the possibility of encouraging the planting in the U.S. of those crops of maximum nutritional value and of greatest utility to the hungry people of the world.

#### III. SPECIFIC ACTION STEPS

A. We urge the U.S. delegation, in preliminary discussions with other countries, to lay the groundwork for specific action steps to be announced at the Conference and implemented at once.

B. We, for our part, are taking a number of concrete steps.

1. We pledge our continued involvement as a vehicle for the movement of food from public and/or private sources from the U.S. to LDCs and for providing agricultural and other forms of development assistance at the grass roots level.

2. Pursuing their suggestions to the First Preparatory Committee, we are exploring with the Sudan and Brazil governments projects in increased food production, using multilateral, bilateral, and private resources under their coordination.

3. We are actively publicizing the issues of the Conference among the people we represent, and sense a growing expectation of and support for generous and imaginative leadership on the part of the U.S. delegation.

a. We are actively communicating these views to the U.S. Congress to encourage legislative branch support for the U.S. delegation's initiatives.

4. We will actively participate in the final two meetings of the Preparatory Committee and at the Conference itself with an eye to exercising a constructive influence in discussions with delegations on these issues.

5. We pledge ourselves to work for the implementation in this country of the appropriate conclusions of the WFC.

WAR CONTROL PLANNERS, INC.,  
Washington, D.C., July 24, 1974.

HON. E DE LA GARZA,  
Chairman, Department Operations Subcommittee, Committee on Agriculture,  
House of Representatives, Washington, D.C.

DEAR CONGRESSMAN DE LA GARZA: After attending your hearing yesterday on the world food supply and population problems, and appreciating the depth of the serious concern shown by you and the other members present, we hope you may find it helpful if we offer a few highlights from our twenty years study, work, observation and writing in the field of approaching world tragedy and chaos.

The subjects discussed yesterday by the distinguished witnesses in 'agricultural economics' are only a small segment of the approaching time of troubles. The true character and magnitude of humanity's problem did not come into focus for the Subcommittee yesterday. It is in this area where we might be helpful by breaking open new kinds of pro and con and creative discussion among the 'experts'.

Secondly, there are technological breakthroughs in process which may have a direct bearing upon the world human situation, which have been under preliminary exploration in the House Science & Astronautics Committee. Because Congressmen Bergland and Brown are members of *both* committees there may be an interesting bridge of common interest.

#### OVERLY SIMPLIFIED PROJECTION OF THE STRATEGIC SITUATION

There are limited energies and resources within reach on the Planet Earth at acceptable social cost. Humanity might have a future, trapped and forced to live on the planet, if these energies and resources can be directed effectively toward production of food, clothing, housing, clean air & water, health, education and wellbeing for all human beings in world population held within prudent limits.

But in contrast: Increasingly for the past generation the Kremlin and the White House have commandeered the cream of the available energies and resources (and of human creativity too) to be consumed in an ever-escalating race to produce the power to destroy all humanity.

Humanity is faced with a choice for losers in the coming years: (1) sudden death at the sudden deadly dead-end of the runaway arms race, on the one hand or on the other hand; (2) slow death in the coming years through starvation, pestilence, disease, pollution, agony, violence and other ugly ways on a planet incapable of sustaining its human population and also the race to produce the power to exterminate its human population in nuclear war.

No great political genius is required to recognize why, on a planet where human needs are not being met on such a massive scale, the idea of burning up scarce energies and resources in a race to produce the power of death for humanity, is not a popular or vote-getting issue world-wide.

Great tidal waves of human relief and renewed hope for Life may sweep across world populations to support either the Soviet Union or the United States, whichever superpower is capable of a breakthrough to greater vision and nobility, and a massive commitment of its human and natural resources to the task of pioneering the future global systems and institutions of world peace through law.

India is but one unattractive example of how a nation, sinking in the swamp of malnutrition and human decay, has been compelled to invest its creativity and wealth in the production of nuclear bombs. On all sides, as both superpowers sell or give armaments to both sides of wars, and impending wars, the political power rulers of the planet place a higher priority on escalating the power to annihilate humanity, than on feeding the starving, housing the overexposed, clothing the shivering, and healing the sick.

All humanity is waiting for world statesmanship to emerge to provide world leadership forward toward civilized global systems and institutions of world peace through law, when the energies and resources of the planet can be utilized to *conserve life* rather than seeking security by threatening to destroy all life.

The United States today has the power (1) to meet all requirements for national defense and IN ADDITION (2) to lead the world pioneering the global

systems and structures of future world civilization, free from war. *But no such global objectives are tolerated either in the beleaguered White House or in the bewildered Congress.*

After some years of research the Senate Select Committee on Nutrition and Human Needs came to conclusions about the need for world-wide monitoring systems for food production, trade and inventories. One result of this is the Senate Foreign Relations Committee has now added to the State Department appropriations bill an Amendment creating a new structure within the State Department to maintain such inventories, utilizing among other things, the new Earth Resources Technology Satellite systems.

This leads to the subject of breakthrough technological capabilities.

#### A GLOBAL INFORMATION COOPERATIVE

On May 2, 1974 Congressman James W. Symington, Chairman of the Space Science and Applications Subcommittee of the House Science and Astronautics Committee held a public briefing at which we opened the discussion with our audio-visual briefing on a large scale U.S. strategic power initiative utilizing American global PRO-HUMAN *military and civilian* earth-orbiting information-gathering satellites in a Global Information Cooperative.

Enclosed (Exhibit A) you will find a reprint from December 1973 SPECTRUM (professional journal going to 160,000 members of the Institute of Electrical and Electronic Engineering in nearly every major world city). This is a panel discussion by distinguished members of IEEE on the feasibility of a major large scale U.S. global compassionate power initiative A Global Information Cooperative. Gradually in the coming years these global intelligence services will become open-to-the-public inventories of all potential dangers to the public for the entire planet (whether dangers of hurricane, or danger of blight, or danger of pollution, or danger of war, or danger of food shortages, or any toher potential threat to the public wellbeing) . . . and also will provide earth resources development services to the people of ALL nations, to assist in their economic progress and wellbeing.

Enclosed (Exhibit B) is an editorial from July 30, 1973 Aviation Week & Space Technology suggesting just some of the pro-human services available to struggling humanity from these new earth resources development services: now readily available.

Enclosed (Exhibit C) is a summary of the new initiative condensed by the editors of Esquire. (Exhibit D) A projection of the initiative published in Bulletin of Peace Proposals in Oslo, Norway. (Exhibit E) A public statement by Dr. Edward Teller, renowned nuclear scientist supporting this Global Information Cooperative as the base for a world-wide U.S. peace initiative.

Enclosed (Exhibit F) is a summary by the editor of *Air Force Times* March 28, 1973.

Please Note: *We are not seeking your support for any particular political action or legislation. We are NOT lobbyists.* Our mission is to open widest possible pro and con and creative professional and public and political discussion . . . world-wide . . . of man's emerging new global systems capabilities and management skills and ways they can be directed toward bringing runaway world crisis under proper pro-human control, rather than directed toward escalating the weapons to destroy humanity in an instant.

Please Note: This large scale experiment to help humanity through runaway world crisis, will be In Addition TO all requirements for national defense (ad the Manhattan Project was In Addition TO prosecuting World War II). No jeopardy to the national security need be incurred.

Please Note: There is no need to first "negotiate" with the Kremlin or any other foreign power before electrifying world populations on both sides of all conflicts around the world, by this awesome commitment of American creativity and power to the great task of pioneering Life support systems for planet earth, as in the 1960s we pioneered the systems to make the Moon safe for human visits.

At this moment when the White House is collapsing and the American people are looking to the Congress for leadership . . . which has not emerged . . . the following is one concrete example of the failure of the Congress.

The simple, unclassified prospectus on page 85 of SPECTRUM in the box "PROPOSAL FOR A GLOBAL INFORMATION COOPERATIVE" involves *simultaneously* at least eight Committees in the Senate, eight Committees in

the House of Representatives, and several Joint Committees. For more than three years no Committee has cared, or dared, open the subject for full discussion and exploitation. No Committee has the authority or the jurisdiction !!! This is a concrete example of how the Congress has abdicated responsibility for determining the character and the objective of the sovereign power of the American people in world affairs . . . allowing this power to be usurped by powerful interests dealing directly with the White House through private contacts, ignoring the elected Government in Congress.

*Looking for a moment only at the Agricultural aspects:*—On a planet with inadequate energies and resources for world populations the character of the American people may be expressed in several different kinds of political leadership:—

1. Invest our money in becoming self-sufficient as a nation, and let the billion people die. Their death is not our fault.
2. Look for big profits selling our food supplies to the hungry people of the world and let them figure out how to pay for it. What's wrong with making a big profit?
3. Give away our food to the starving people, increasing our own domestic inflation, and delaying mass death temporarily.
4. Burn up our energies and resources on the arms race already capable of killing every man, woman and child now alive.
5. Mobilize a generation of Americans to move out across the world under the umbrella of increasing global information through A GLOBAL INFORMATION COOPERATIVE, to use American advanced agricultural know-how and know-why to help the people of all nations cultivate the arable lands of the world to produce the necessities of Life for world populations held within prudent limits.

WHICH OF THESE OPTIONS EXPRESSES THE TRUE CHARACTER OF THE  
AMERICAN FARMER?

These same questions can be asked for every other American profession.

The White House stands on option No. 1. The agricultural economist who addressed the hearing yesterday stands on option No. 2. The sentimental groups stand on option No. 3. The Pentagon stands on option No. 4. *No political leadership seems to dare to speak to the American character symbolized by action in the direction of Option No. 5.*

The pilot of even the largest transport plane in a cloud can not assure safety for his passengers, except under the disciplines of Air Traffic Control committed to the safety of ALL airplanes, large and small.

The United States Government never again will be able to assure the national security of the American people until there are global systems and structures (more complex and more effective than the present United Nations) capable of guarding the wellbeing and security of all nations, large and small. This will be the most complex and difficult challenge civilization ever has faced.

A generation of creativity may be required to develop and put through breakdown testing the experimental and prototype stages of Life Support Systems for Planet Earth . . . of which a Global Information cooperative is a first concrete example.

As it was once a *national commitment* to try to release the power of the atom . . . and as later it became a *national commitment* to make the Moon safe for human visits . . . the time has come for a far larger *national commitment of the creativity* and power of the American people to lead the world pioneering the global systems and institutions within which (one day) men and nations will seek their own security and wellbeing by guarding the wellbeing and security of their enemies and their neighbors, as themselves . . . in the tradition of the teachings of the major world religious and ethical movements through the ages.

Congressman Denholm yesterday focused attention on the situation. He suggested that there were three big ways to destroy humanity enmasse . . . through epidemics . . . through war . . . and through starvation. The relentless forward march of science and technology brought mass death by epidemics under control, thereby tripling the problem of the ways to sustain life for so many more people on the planet. In response the superpowers have focused their gigantic research and development on the second option . . . the power to

destroy humanity in war. If humanity is lucky enough to avert nuclear war, it now will tend to starve to death.

From our years of study, work, observation and writing in this field we believe that the American people are capable of greatness far beyond the small vision of the present White House and the present Congress. We welcome pro and con and creative discussion of the matter.

Sincerely . . . that there may be a future . . .

HOWARD G. KURTZ,  
(Rev.) HARRIET B. KURTZ.

[The exhibits referred to are retained in the committee files.]

