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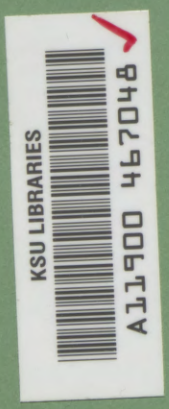
Senate Hearings

Department of Agriculture and Related Agencies Appropriations

H.R. 10509

90th CONGRESS, FIRST SESSION

Fiscal Year 1968



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Part 4 FARM LABOR IN A CHANGING AGRICULTURE

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DEPARTMENT OF AGRICULTURE AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1968

HEARINGS

BEFORE THE

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS UNITED STATES SENATE

NINETIETH CONGRESS

FIRST SESSION

ON

H.R. 10509

MAKING APPROPRIATIONS FOR THE DEPARTMENT OF AGRICULTURE AND RELATED AGENCIES FOR THE FISCAL YEAR ENDING JUNE 30, 1968, AND FOR OTHER PURPOSES

PART 4

FARM LABOR IN A CHANGING AGRICULTURE

Printed for the use of the Committee on Appropriations

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DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C. 20250

January 4, 1967

Honorable Spessard L. Holland
United States Senate
Washington, D. C.

Dear Senator Holland:

Here is a report entitled "Farm Labor in a Changing Agriculture." This report was prepared in response to a request expressed in the Senate Report on Department of Agriculture and Related Agencies Appropriation Bill, 1966 (Calendar No. 409, Report No. 423).

This report says that the seasonal nature of farm work and specialized production create fluctuating demands for farm labor. Although total employment in farming is decreasing, critical seasonal needs for workers occur in some localities--needs which cannot be met fully by local workers. The relationships between farmers and workers is changing as a result of many economic forces, including greater competition for workers from nonfarm employers.

Mechanization of many farm tasks reduces the need for workers but increases the skills required of those who are needed. Moreover, mechanization of some farm tasks in an area employing large numbers of unskilled workers, makes it harder to get workers for those tasks that are not mechanized. It reduces the total season of employment available in the area thus making the area less attractive to migrant workers.

Some growers have been successful in meeting seasonal labor needs by (1) enlistment of students and housewives for farm work; (2) training of labor supervisors to better use existing workers; and (3) training of workers themselves to be more productive and thus earn higher incomes.

Major imbalances still exist between earnings of hired farm workers and labor in nonfarm industries. In 1965, farm workers averaged $1.14 an hour compared with $2.61 for workers in manufacturing. Annual earnings of adult male farm workers was $1,300 in 1964, compared with $3,259 for nonfarm laborers and $5,130 for operators of industrial and other equipment.

Farm workers are increasingly scarce in some areas. Alert growers are meeting their needs by increasing mechanization, paying better wages, spreading the work-year for seasonal employees, improving supervision of labor, and upgrading housing and facilities.

I hope you and your committee find this report useful. I believe it contributes to a better understanding of the farm labor situation. If we can be of further service to you and your committee on this important topic, please call on us.

Sincerely yours,

Secretary

Enclosure

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PREFACE

This report was prepared at the request of the Senate Committee on Appropriations of the 89th Congress, 1st Session, in the Department of Agriculture and Related Agencies Appropriation Bill, 1966 (Report 423, July 6):

> "The committee agrees with the report of the House committee that there is a 'severe shortage of farm labor' to meet peak needs of many of the nation's producers. The committee believes that this situation will continue to exist.
>
> "Unfortunately, there is a large void in the economic and statistical data upon which our farm labor policies are based. This should be corrected at the earliest possible date.
>
> "For this reason the Department is requested to make a comprehensive study of the entire agricultural labor situation. This analysis should include, but not necessarily be limited to, such matters as the need for and availability of qualified agricultural labor in this country; the impact of shortages of such labor on the production and processing of high labor requirement crops, on employment in agriculture and industries dependent in whole or in part on agriculture, on farmers' costs, and on consumer prices for the affected commodities; and the extent to which production of competing crops has increased overseas, particularly in Latin American countries, the trends of U.S. trade in commodities requiring a heavy utilization of labor, and the impact of these trends on the American economy, including the balance-of-payments situation. The extent and feasibility of mechanizing crops now dependent on large amounts of hand labor should be the subject of analysis. Finally, some thought should be given to methods by which earnings and hours worked by piece rate employees could be ascertained."
>
> "The committee recognizes that such a study will require careful planning and extensive research. It would hope, however, that the information requested could be furnished as expeditiously as possible." (53)

This report is based upon a study conducted by the Economic Research Service, U.S. Department of Agriculture. It was developed under the direction of a Farm Labor Task Force consisting of John H. Southern, Economic Development Division (EDD), Chairman; Dean E. McKee, who was replaced by Velmar Davis, Farm Production Economics Division (FPED); and Gladys K. Bowles, EDD. The Task Force and Earle E. Gavett, Reuben W. Hecht, and William H. Metzler, FPED, Nelson L. LeRay, Ralph A. Loomis, and Robert C. McElroy, EDD, and Donald S. Kuryloski, (ESAD) developed the materials in Parts I through V of the report. Hans G. Hirsch, Foreign Development and Trade Division, was responsible for Part VI. The entire group developed the final section on programs, policies, and research needs.

HIGHLIGHTS

Current problems in farm labor demand and supply imbalances are not due to an insufficient number of people to do the Nation's work. The increasing population plus automation in both agriculture and industry have led to an overall surplus of manpower in rural areas. Although total employment in agriculture has declined sharply, labor remains a crucial factor in modern farm production and occupies a critical role in some types of production and in some geographic areas. Seasonality of agricultural work, shifts in crop and livestock location, specialization and other changes in production, and varying rates of mechanization are among the factors that create fluctuating demands for farm labor.

Critical seasonal needs require heavy labor inputs which often cannot be met by local labor supplies. At the same time, underemployment in the labor force continues to exist on farms and in rural areas. Thus, the problems of farm labor recruitment -- moving workers to areas where they are needed, housing and facilities, wage rates, and other labor-management relationships -- are gaining in importance, even though the total need for farm labor continues to decline.

The relationship between farm employers and employees is changing. Traditionally, the less desirable farm jobs have been filled by workers who have had few employment alternatives. Today, many prospective farmworkers have the opportunity to choose between the wages and employment conditions of farm and nonfarm jobs; this often brings farmers into direct competition with nonfarm employers. Often, to meet peak demands that exceed the local labor supply, farmers must recruit workers who are not normally in the labor force, or who are customarily engaged in other types of work. In competing for workers, farmers are usually at a disadvantage because they have not developed the employer skills or procedures for meeting labor needs, they cannot compete financially, or the employment they offer lacks the security of nonfarm employment. The need to fill agricultural jobs with ambitious domestic workers has come at a time when workers have an opportunity to move up the occupational ladder. Therefore, the challenge to upgrade farmwork is both immediate and difficult.

Since World War II, the average number of people who engage in agricultural production has dropped from 10 to about 5.2 million. Of these, almost three-fourths are farm operators and members of their families; the balance are hired workers.

Although the annual average number of hired workers in 1966 was about 1.4 million, about 2.8 million people did some farmwork for wages in the year. A large proportion of these workers did only a few days of work, mainly at time of most cirtical need in the summer and fall. Over half lived or worked in the South, and the majority worked on large farms.

Studies made in 1966 of critical labor supply problems indicated a tightening of the farm labor market primarily due to the migration of workers from areas offering casual and seasonal farm employment to expanding industrial and commercial areas. An undetermined proportion of this migration was associated with defense activities, particularly on the Pacific Coast.

Because labor demands vary greatly from season to season, farmers seek some assurance that sufficient labor will be available to meet all seasonal needs. Labor may be short in an area for a specific need, and yet in the same or adjoining areas, there may be unemployed workers. It is necessary to determine if these unemployed workers are unskilled, unwilling, or unable to fill the vacant farm jobs. Some workers understandably avoid heavy manual labor. When foreign workers are used for heavy, difficult work, these jobs sometime become identified as socially below consideration by domestic farmworkers.

In addition to increasing output and reducing labor demands, mechanization leads to the displacement of hand laborers and creates a need for more highly skilled workers. Mechanization also changes the established channels of labor movement during peak seasons to either accentuate or reduce peaks of labor demand.

Growers in some areas are initiating positive programs to develop a dependable labor supply. These include (1) enlistment of students and housewives as farmworkers, (2) training courses in labor-management techniques for supervisors of farmworkers, and (3) training courses for workers to improve their output and earnings.

In contrast to the declining number of farmworkers, employees in farm-related industries increased slightly from 11.5 million in 1950 to 12.5 million in 1964 (the latest data available).

A major imbalance in labor earnings exists between the farm and nonfarm sectors of the economy. For instance, in 1966 wage rates of farmworkers averaged $1.23 an hour, while workers in manufacturing earned an average of $2.71. Seasonality of employment increases the disadvantage of farmworkers. Male adult workers averaged $1,452 in earnings in 1965, as compared with $2,988 for farm operators, $3,343 for nonfarm laborers, $4,068 for service workers, and $5,317 for operators of industrial and other equipment.

Food and fiber remain a bargain in the United States. The American consumer spends an average of 18 percent of his income for food, while the average European spends from two to three times that proportion. Few price increases that occurred in 1966 can be attributed to increased labor costs.

The most recent projections of the Department of Agriculture indicate that annual average farm employment in 1980 will be about 3.6 million workers.

The demand for agricultural products is expected to continue to increase as the population increases and diets improve. The projected total output in 1980 exceeds that of 1965 by 30 percent, and projected output per man-hour of labor is about three times the 1957-59 average.

Foreign Economic Aspects

The trade balance between Mexico and the United States has been and is now favorable to the United States. Termination of the Bracero Program has, however, deprived Mexico of annual earnings from Bracero wages estimated between $30 to $60 million, depending upon the assumptions made about Bracero purchasing in the United States. Whatever the exact loss to Mexico, it was a current gain to the United States negative balance of payments. To compensate for this loss in earnings, Mexico would have to import less, export more, or borrow from abroad. Combined Mexican earnings from merchandise exports to the United States and from U.S. tourist expenditures were $301, $317, and $290 million per year less in 1964, 1965, and 1966 respectively, than comparable U.S. earnings. Thus, the termination of the Bracero Program has the effect of further unbalancing the U.S.-Mexican balance for goods and services.

Aggregate U.S. imports of certain labor-intensive fruit and vegetable crops and their principal products -- cantaloups, cucumbers, watermelons, tomatoes, and strawberries -- trebled from 1956 to 1965; and from 1965 to 1966 they increased from $66 to $100 million. Mexico is by far the most important country of origin for these imports. Mexican data show sharp increases in the production of most of these crops. U.S. exports of these crops and of asparagus, celery, and lettuce increased by about one-fourth, from $49 million in 1956 to $60 million in both 1964 and 1965 and to $61 million in 1966.

Total U.S. exports to Mexico amounted to $1.1 billion in both 1964 and 1965 and to nearly $1.2 billion in 1966, compared with an average of $827 million from 1961 through 1963. Total U.S. imports from Mexico amounted to about $690 million in both 1964 and 1965 and to $750 million in 1966, compared with an average of $570 million from 1961 through 1963.

Constructive Efforts to Develop a Farm Labor Force

Farmworkers have generally been in surplus in the American economy and have not been able to obtain increases in returns in line with their increases in productivity. The labor demand and supply situation is becoming more balanced, however, and these workers are now able to move toward more remunerative employment. Alert growers are becoming aware of this movement and are beginning to improve wages and working conditions in an effort to retain and develop an efficient and dependable labor force. Their

improvements include:

1. Substitution of mechanical power for manpower and reorganization of farmwork to reduce the heavier and the back-bending tasks.

2. Developing scales of compensation more in line with other types of employment.

3. Spreading out the work-year for seasonal farmworkers to provide more continuous employment.

4. Training supervisors to respect their workers as individuals and cooperators in the farm production process.

5. Upgrading housing and giving greater consideration to family integrity and community status of workers.

Encouragement and technical assistance in efforts along these lines could constitute a constructive public contribution to solution of the labor supply problem. Up-to-date information and research is needed for the formulation of public policies relating to farm labor.

FARM LABOR IN A CHANGING AGRICULTURE

PART I. THE CURRENT SITUATION

Structural Changes in Agriculture

Extensive adoption of engineering, biological, and economic technology has brought about significant changes in farming. These changes have resulted in fewer but larger farms, increased specialization, and greater interdependence between the farm and nonfarm sectors of the economy. These factors combine to reduce the total need for workers in agriculture, and affect in varying degrees the demand for workers at peak seasons and in different parts of the country.

Decline in farm employment (fig. 1) is largely associated with the decline in number of farms that has been the general trend since the 1930's (fig. 2) (35). 1/ Today, there are about 3.2 million farms in the United States, a reduction of more than 20 percent since 1959. Small commercial farms, with annual sales of $2,500 to $10,000, declined about a third from 1959 to 1965, with an associated drop in family employment. Farms marketing less than $2,500 annually have declined about 25 percent since 1959. Many of these are noncommercial part-time and part-retirement farms which add little to farm production and hire very little of the total farm labor. Many small commercial farm operators have off-farm employment a substantial part of the year. Farms with annual sales of $10,000 or more have increased in number in recent years; they now number around a million. As these farms hire the bulk of the wage workers, this increase has lessened the dropoff in numbers of hired workers.

Average farm acreage rose from 273 to about 360 acres during the last 10 years, and production assets per farm rose from an average of about $26,000 in 1955 to almost $60,000 in 1965. 2/ Farms of this size and value are equipped with complex machinery and equipment that demand a high level of technical and managerial skills by farm operators and their family and hired workers.

1/ Underlined figures in parentheses refer to Selected References pp.76-80

2/ A large part of the increase came from higher land values, but there was also an enlargement of the value of inventory in machines and other equipment. The decline in farms with few production assets and small acreage has greatly influenced the increasing size and value of the average farm plant.

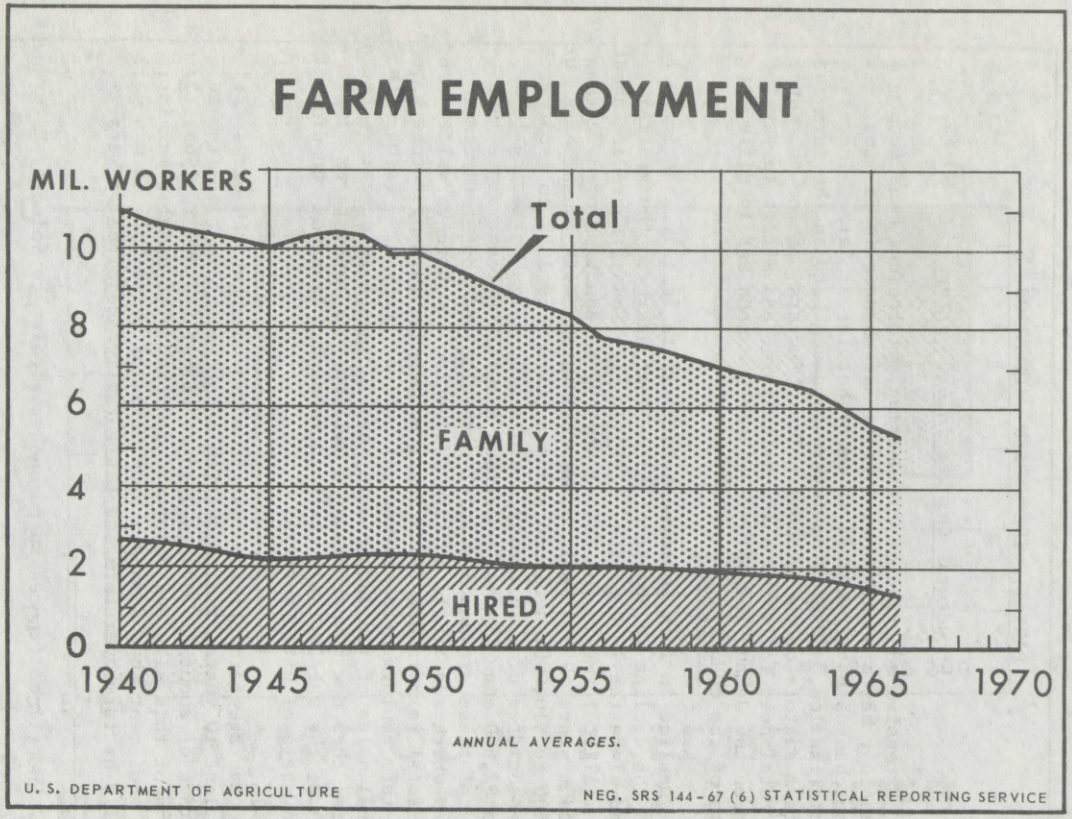
FARM EMPLOYMENT
MIL. WORKERS
Total
FAMILY
HIRED
10
8
6
4
2
0
1940
1945
1950
1955
1960
1965
1970
ANNUAL AVERAGES.
U. S. DEPARTMENT OF AGRICULTURE
NEG. SRS 144-67 (6) STATISTICAL REPORTING SERVICE

Figure 1

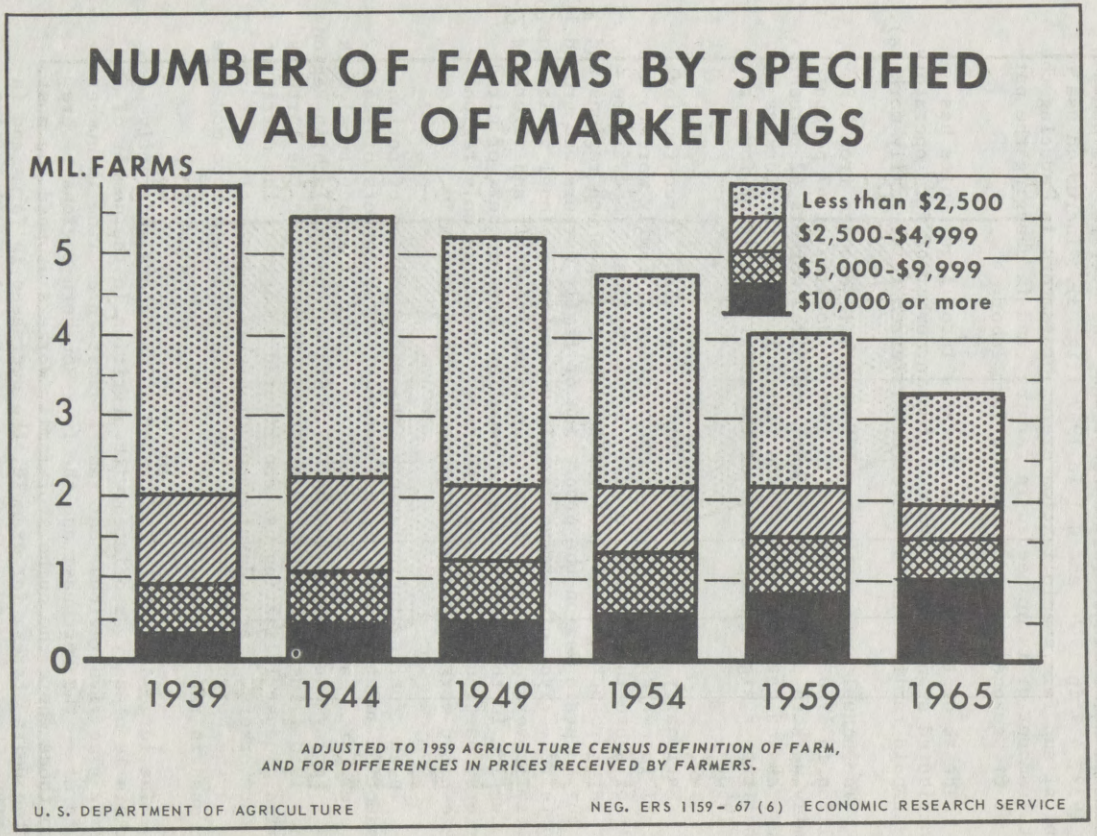
NUMBER OF FARMS BY SPECIFIED VALUE OF MARKETINGS
MIL. FARMS
5
4
3
2
1
0
Less than $2,500
$2,500-$4,999
$5,000-$9,999
$10,000 or more
1939
1944
1949
1954
1959
1965
ADJUSTED TO 1959 AGRICULTURE CENSUS DEFINITION OF FARM, AND FOR DIFFERENCES IN PRICES RECEIVED BY FARMERS.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 1159 - 67 (6) ECONOMIC RESEARCH SERVICE

Figure 2

Historically, farming in the United States has been an industry of diversified enterprises. However, a definite trend toward product specialization has accelerated in recent years. Most farmers have eliminated small home-use enterprises, such as the family cow or the small flock of chickens, and many have found it profitable to specialize in the commercial production of fewer products. Of 25 major farm enterprises, the average farm had 5.3 in 1939, 4.7 in 1949, and 4.1 in 1959 (fig. 3). Increased use of capital and farm specialization are major factors in reducing the total amount of labor needed in farming, and in changing the patterns of seasonal requirements for farm labor.

The absorption of many small farms into larger units has contributed significantly to the drop in number of farm operators and unpaid family workers (hereafter referred to as family workers).

The annual average number of farmworkers dropped from 9.9 million in 1950 to 5.2 million in 1966, a decline of 47 percent. Family workers declined 49 percent, and hired workers 42 percent. Thus, as indicated in table 1 and figure 1, hired farmworkers now constitute a higher proportion of the total farm labor force than in 1950.

Nationally, family workers constituted about three-fourths of all farmworkers in 1966. The percentage of family workers was near or above this figure in half of the regions. (See figure 4 for farm production regions.) In the three deep-south regions and in the Mountain Region the proportion of family workers was around two-thirds. Type of farming largely determines regional variations in family versus hired workers. The intensive fruit and vegetable production in the Pacific Region requires large numbers of hired workers, particularly seasonal workers. It is the only region where hired workers outnumber those of the farm family.

In the four southern regions, the mechanization of cotton production and the rapid disappearance of large numbers of small cropper farms have greatly reduced the number of agricultural workers. Employment changes in the Delta States and Appalachian Region since 1950 illustrate these adjustments (fig. 5). In the Northeast Region, industrialization has contributed greatly to the attrition of farmworkers. Early development of highly commercialized farming in the North Central States has contributed to a more moderate decrease in farmworkers.

The large decline in the number of operators and family workers is closely associated with attrition in the number of farms. The five regions that rank highest in decline in number of farms -- the Northeast and the four southern regions -- are also those where the numbers of family workers dropped the most. In the Delta States, for example, the decreases in farms and in family workers were 58 and 66 percent, respectively, from 1950 to 1966.

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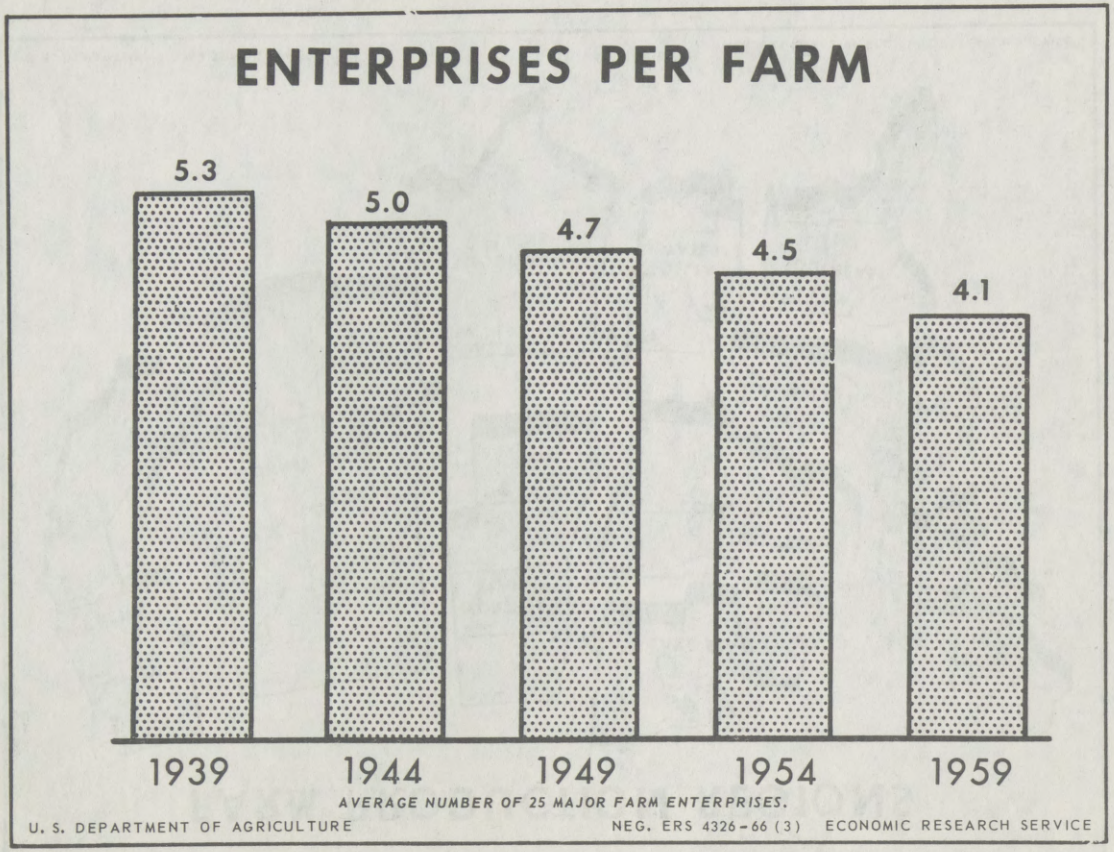

Figure 3

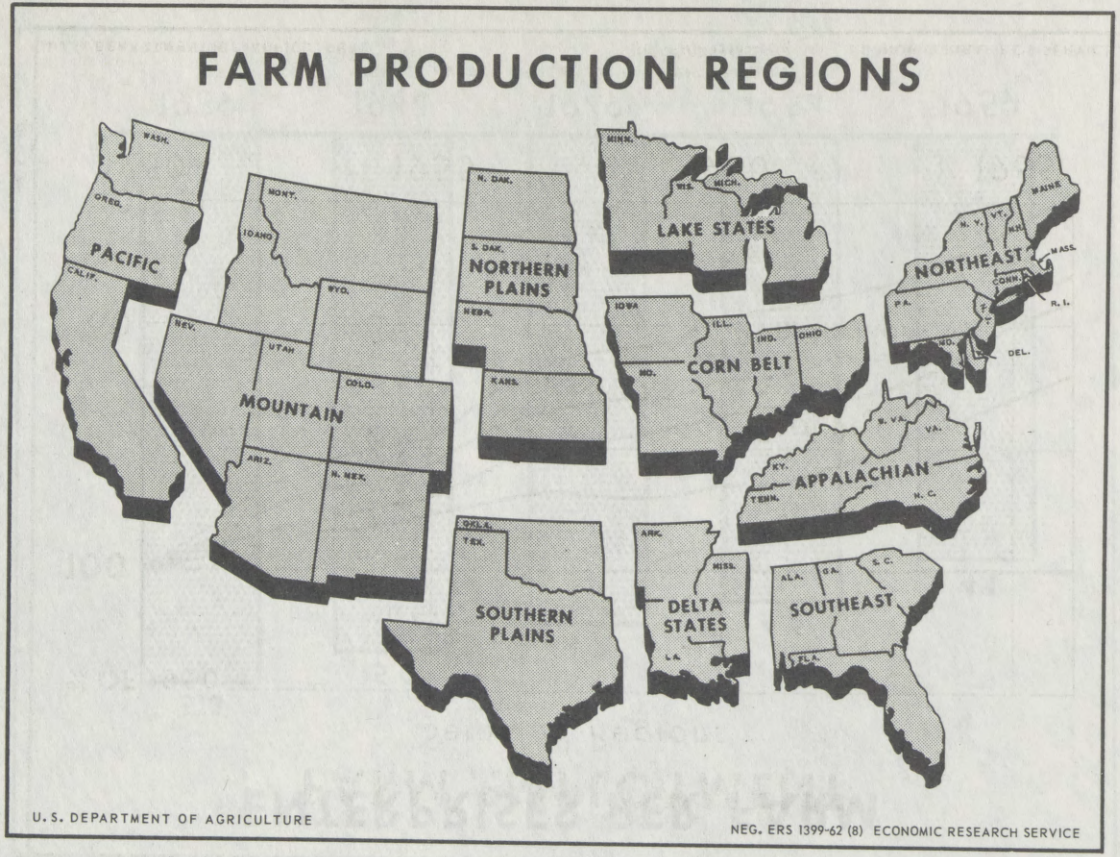
FARM PRODUCTION REGIONS
PACIFIC
WASH.
OREG.
CALIF.
MOUNTAIN
MONT.
IDAHO
WYO.
NEV.
UTAH
COLO.
ARIZ.
N. MEX.
NORTHERN PLAINS
N. DAK.
S. DAK.
NEBR.
KANS.
LAKE STATES
MINN.
WIS.
MICH.
CORN BELT
IOWA
ILL.
IND.
OHIO
MO.
NORTHEAST
MAINE
N. Y.
VT.
N.H.
MASS.
CONN.
R. I.
PA.
N.J.
MD.
DEL.
APPALACHIAN
W. VA.
VA.
KY.
TENN.
N. C.
SOUTHERN PLAINS
OKLA.
TEX.
DELTA STATES
ARK.
MISS.
LA.
SOUTHEAST
ALA.
GA.
S. C.
FLA.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 1399-62 (8) ECONOMIC RESEARCH SERVICE

Figure 4

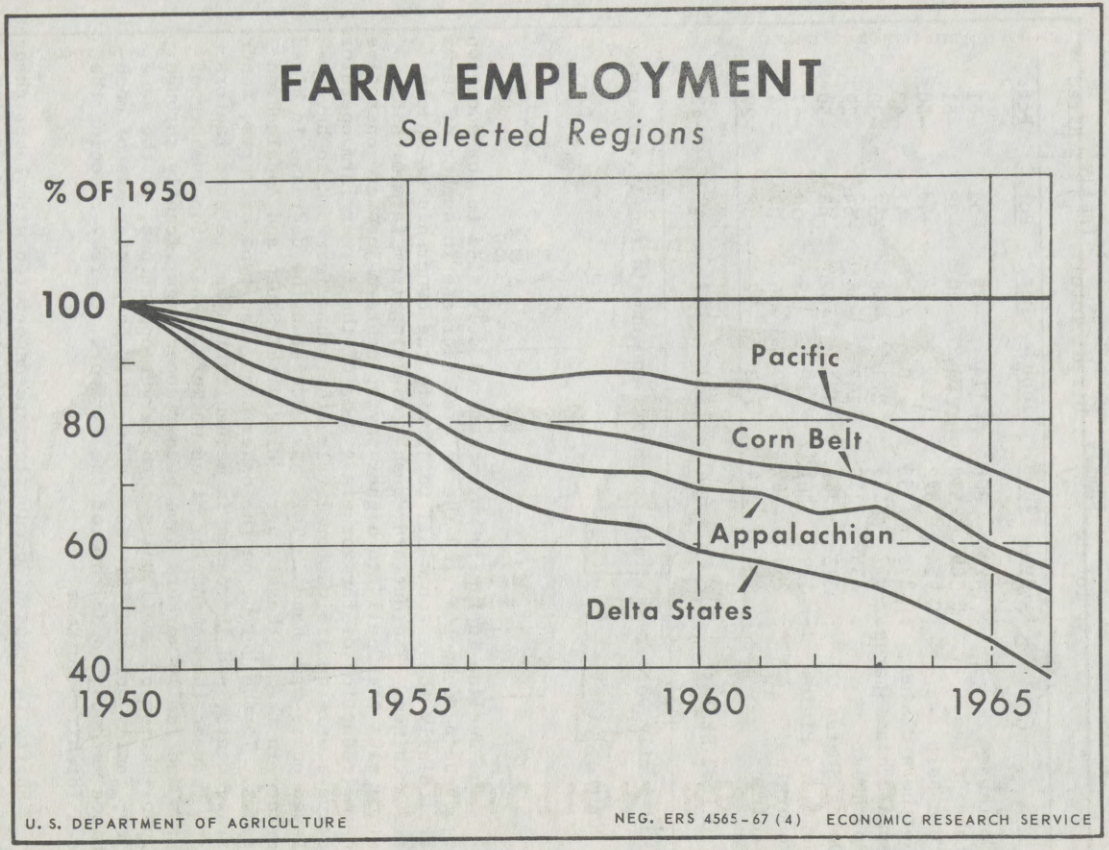
FARM EMPLOYMENT
Selected Regions
% OF 1950
100
80
60
40
1950
1955
1960
1965
Pacific
Corn Belt
Appalachian
Delta States
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4565-67 (4) ECONOMIC RESEARCH SERVICE

Figure 5

Table 1.--Farm employment: Type of worker and region in 1966, and percentage change, 1950-66

Region	1966			Percentage change 1950-66		
	Total	Family 1/	Hired	Total	Family 1/	Hired
	Thou.	Thou.	Thou.	Pct.	Pct.	Pct.
Northeast	422	308	114	-55	-52	-61
Lake States	589	518	71	-40	-38	-51
Corn Belt	954	822	132	-44	-43	-50
Northern Plains	393	333	60	-42	-41	-43
Appalachian States	877	656	221	-48	-52	-30
Southeast	435	273	162	-56	-64	-29
Delta States	393	262	131	-62	-66	-50
Southern Plains	429	301	128	-49	-50	-47
Mountain	266	167	99	-36	-37	-34
Pacific	456	214	242	-32	-38	-27
United States	5,214	3,854	1,360	-47	-49	-42

1/ Family workers include operators and unpaid family workers.

Source: (36).

The decline in family workers is closely tied to the adoption of advanced technology and the related decrease in number of farms, particularly those too small to justify the ownership of modern farm machines. The outward "push" resulting from farm mechanization plus the "pull" to higher paying nonfarm jobs are operative in the reduction of farmworkers. Some of the former farm operators, however, were qualified for little other than farmwork so have stayed on as wage hands. This has moderated the decrease in hired workers in the Southeast, particularly the South and Appalachian States. In the North, on the other hand, the type of farms, tenure arrangements, and increases in mechanization and related factors have reduced the demand for hired workers. While the numbers of farms and family workers have been reduced significantly through consolidation of small units into larger operations, at the same time, family workers have been able, through greater use of mechanized methods, to do more of the farmwork, thereby reducing the need for hired workers.

Shifts in areas of production are associated with labor changes. Over the decades, the innumerable regional shifts in production of crops and livestock have affected the numbers of farmworkers. The relation between these shifts and changes in farm employment is not clear-cut, however, because of differences among the regions in yields, levels of mechanization, and other farm practices (table 2).

Table 2.--Farm production: Regional distribution of U.S. production, 1950 and 1966

Region	Farm output		Livestock and products		Crops	
	1950	1966	1950	1966	1950	1966
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Northeast	9.1	6.8	13.0	11.0	7.3	5.5
Lake States	10.9	9.9	13.4	11.3	9.6	9.0
Corn Belt	23.8	23.2	29.4	23.4	22.4	24.0
Northern Plains	11.8	12.1	9.7	11.1	12.9	12.1
Appalachian States	8.7	7.7	7.7	7.5	9.9	8.5
Southeast	6.1	7.6	4.2	7.8	7.1	7.8
Delta States	5.0	5.8	3.3	5.1	5.7	6.0
Southern Plains	8.2	8.7	7.1	7.7	7.7	8.0
Mountain	6.5	7.0	5.5	6.9	6.6	6.5
Pacific	9.9	11.2	6.7	8.2	10.8	12.6
United States	100.0	100.0	100.0	100.0	100.0	100.0

Source: Data computed for use in preparation of U.S. Dept. Agr. Statis. Bul. 233 (32).

From 1950 to 1966, there was some shift of farm production from the northern regions into the southern and western regions (table 2). This general pattern applies to both total livestock and total crop production. In some instances, however, shifts in specific enterprises are more significant in explaining regional changes in farm labor.

Cotton production, for example, has moved from the eastern to the western sections of the Cotton Belt. In 1939, about 6 percent of the cotton was produced in California, Arizona, and New Mexico, compared with 16 percent in 1950, and 20 percent in 1966. This increased share of cotton production has been important in retarding the reduction in farm employment in these States.

The production of potatoes has also shifted to the West, retarding the decrease in farmworkers. The combined Mountain and Pacific regional share of potato production climbed from about 35 percent in 1950 to almost 50 percent in 1966.

Expanded Farm Production and Increasing Net Farm Income

Farm output in 1966 was 13 percent above the 1957-59 average, but was 2 percent less than in 1965. This high farm production resulted from the combination of a record level of livestock production, and crop production that was exceeded only in 1965. Contributing to the large 1966 crop production were high outputs of

the high labor-using vegetables, fruits, and tree-nuts. Vegetables equalled the record of 10 percent above 1957-59 set in 1961 and 1965. The 1966-67 crop of citrus fruits was 24 percent above 1965-66. Production of other fruits continued on a high level but was under 1965. Although losses due to labor shortages were reported for some specialty crops in selected areas, particularly in 1965, production figures for the last 2 years indicate that on a national basis, labor shortages were not serious.

Realized net farm income for all farmers combined reached a high point shortly after World War II, trended downward during the 1950's, and has moved up again in recent years. With an unusually large gain of more than $2 billion over the previous year, farm income reached $16.3 billion in 1966 (35). However, it is anticipated that in 1967, realized net farm income will be down 5 percent or more (34).

The upward trend in aggregate income, along with the drop in number of low-income farms, has contributed to a material rise in income per farm. The gain has been particularly large since 1959, when net income was $2,773 per farm. It reached $5,024 per farm in 1966, but is expected to decrease in 1967. The drop will be less than for the aggregate because of the expected continued decline in number of farms. Income of farmers from all off-farm sources also has increased, from $2,071 per farm-operator family in 1959 to $2,587 in 1965 (table 3).

An examination of income by size of farm (as indicated by value of sales) indicates many aspects of farm income that may be concealed by aggregates and averages. Such an analysis for 1965 3/ shows that the 1 million farms with value of sales of $10,000 or more accounted for the bulk of cash receipts and realized net income. These farms comprised 30 percent of all farms, and accounted for 83 percent of cash receipts and 69 percent of realized net income.

Most of the income on the larger farms came from farm sources. On farms with $10,000 or more in sales, over $8 out of every $10 total income constituted farm earnings, while on farms with less than $2,500 sales, $7.50 out of every $10 total income came from off-farm sources.

Changes in Farm Costs and the Effect on Consumer Prices

Prices of most farm inputs have risen rapidly since 1950 (fig. 6). The sharpest increase has been in land values, followed by wage rates. As a consequence of these changes, farmers have tended to reduce the use of labor and to increase the use of machinery and fertilizer.

3/ Income by size of farm in 1966 is not available.

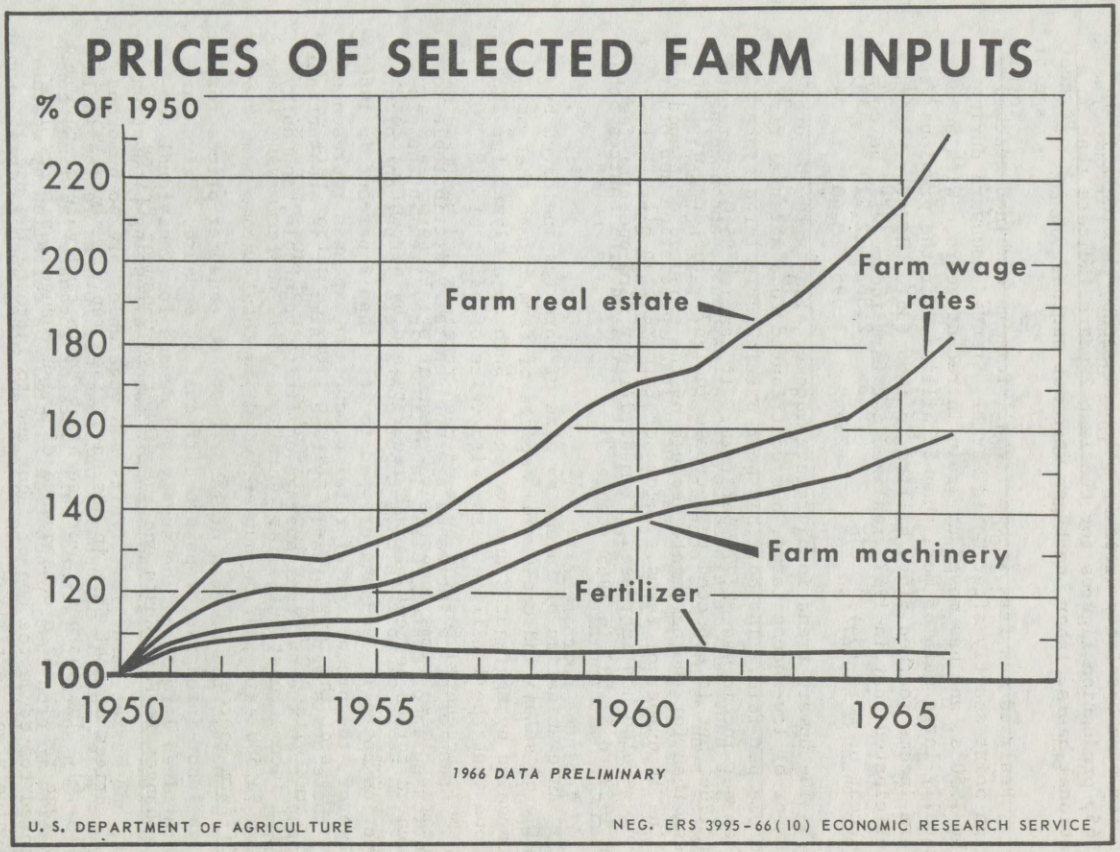
PRICES OF SELECTED FARM INPUTS
% OF 1950
220
200
180
160
140
120
100
1950
1955
1960
1965
Farm real estate
Farm wage rates
Farm machinery
Fertilizer
1966 DATA PRELIMINARY
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 3995-66(10) ECONOMIC RESEARCH SERVICE

Figure 6

Table 3.--Income per farm-operator family: Realized gross, net, and off-farm income, by value of sales classes, United States, 1965

Value of sales per farm	Number of farms	Realized farm income		Off-farm income 3/	
		Gross 1/	Net 2/	Amount	Percentage of total
	Thou.	Dol.	Dol.	Dol.	Pct.
$20,000 and over	499	54,767	13,547	2,246	14
10,000 to 19,999	519	15,971	5,952	1,590	21
5,000 to 9,999	498	8,809	3,741	1,904	34
2,500 to 4,999	410	4,968	2,383	2,220	48
Less than $2,500 4/	1,448	2,049	1,095	3,402	76
All farms	3,374	13,319	4,210	2,587	38

1/ Includes cash receipts, Government payments, and nonmoney income such as products consumed directly in farm households.
2/ Gross less farm expenses, including depreciation and other capital consumption and interest on farm mortgage debt.
3/ Income of farm-operator families received from sources other than the farm operated.
4/ Includes noncommercial farms.

Source: (35).

Consumer price increases are not generally attributable to increased labor costs. Hired labor is a minor item in the production costs of most farms. Labor costs were 16 percent of production costs in 1949 and dropped to less than 9 percent in 1966. However, the proportion of total production expenses represented by these costs varies greatly by type of farm; it is substantially higher than the national average on fruit, vegetable, and dairy farms, for example.

However, the effects of labor costs on consumer prices for high labor-intensive crops are difficult to measure. Prices are determined largely by the supply and demand for individual commodities. The natural and economic forces affecting production of, and market needs for, fruits and vegetables are so numerous and complex that it is usually not possible to measure the influence of a specific factor. While lack of adequate labor may contribute to crop loss, production also may be curtailed by weather, market prospects, prevailing prices, and other such factors. Labor shortages may also give rise to increased production costs -- for labor or labor-saving machinery and equipment. Although reductions in total output of individual crops or increases in production costs can result in higher prices, such cause-effect relationships are obscured by variations in quality, in supplies of other crops, or -- for perishable, short-season commodities -- in timing of harvest operations.

The relative economic importance of labor shortages for selected crops in 1965 are evaluated below. Commodities dealt with are those most affected by the termination of the Bracero Program -- asparagus, lettuce, cucumbers for pickling, tomatoes for fresh market and processing, strawberries, and lemons.

Asparagus.--Production and acreage were down; yields were above average. About 4 percent of the crop was not harvested and prices to growers reached a record high; labor supply problems were largely responsible. Prices to consumers were higher for both canned and frozen items.

Lettuce.--Production and acreage of the winter crop were up and prices were down. At other seasons, higher yields offset less acreage. Spring prices to consumers were higher, resulting largely from weather disruptions; summer prices were stable.

Cucumbers for pickling.--Substantial reductions in acreage occurred in Michigan, Wisconsin, and Colorado because of widely expressed fear of labor shortages. Acreages were up in most other States. Fifteen percent of Michigan acreage was not harvested, primarily because of adverse weather. Retail prices for pickles were up slightly.

Tomatoes for fresh market.--Retail prices were up, reflecting high prices during spring and fall. Spring output was up and prices averaged considerably above the previous year. Fall production was down. Weather affected late fall crops in Florida and Texas. Acreage and production of early fall tomatoes were down in California.

Tomatoes for processing.--Acreage was down in California, but up in the East and Midwest. Total 1965 production was down. Total supplies were a tenth smaller than the previous year, but fears of shortages of canned tomatoes and tomato products led to price increases at least double those which would have been expected on the basis of the smaller supply.

Strawberries.--Production and acreage were down, in part because of labor problems, although poor weather was also a factor. About 25 million pounds were not marketed. Prices to the grower and retail prices were up.

Lemons.--Yields and acreage continued a downward trend. Rains and cool weather delayed harvest, and late maturity relieved labor problems. Growers experienced some difficulties in harvesting, and some fruit stayed on trees longer than desirable. Grower prices and retail prices were somewhat higher in 1965 than in 1964.

As an overall appraisal, labor shortages did not curtail the output of either lemons or lettuce. Some losses were reported or indicated for asparagus, cucumbers for pickling, tomatoes for fresh market, and strawberries. Prices for these crops were above

the levels for the previous year -- ranging from slightly higher for cucumbers for pickling to materially higher for asparagus. The quantity of tomatoes harvested for processing may not have been affected by the labor situation, but the labor situation was one of several factors influencing the cutback in California acreage and the substantial increase in prices for processed tomato products. Additional information on these crops is contained in Part III.

PART II. SOURCES OF FARM LABOR DEMAND-SUPPLY IMBALANCES

From the farmer's viewpoint, the domestic supply of labor has seldom been adequate in terms of either numbers or skills. In the past, the hired farmwork force in the United States, particularly the seasonal force, has been drawn from nonfarm or marginal labor, or otherwise disadvantaged groups. Economic Research Service surveys of the hired farmwork force show that seasonal workers are drawn increasingly from among (1) women and students, (2) ethnic or racial minorities, or (3) groups with low educational and skill levels.

The problem of an adequate supply of hired farmworkers is not due to a lack of manpower; the potential supply of workers in the Nation is more than sufficient. For example, in the United States as a whole, there are 177 rural young men reaching working age (20 years) during 1960-70 for every 100 older men who will die or retire (fig. 7). The problem is that most rural people needing jobs do not go into farmwork; they either move to cities to take jobs or seek work, or commute to nonagricultural jobs in town.

The factors that make farm labor unattractive to people include the seasonality of most farm jobs, low wages, the lack of standard social protections and benefits, and the very low social status accorded farmwork.

Seasonality of Demand for Farm Labor

In specialized commercial agriculture, the need for labor is highly seasonal. There are optimum times for plowing, planting, irrigating, spraying, and harvesting. Some crops require large numbers of workers for a short harvest period but relatively few workers during the remainder of the year. The operators of such producing units are faced with the problem of obtaining a supply of labor that will be available for peak labor periods only (10). The seasonal farmworkers have the problem of making a living during the slack seasons.

In 1966, 79 percent or more of all hired farmworkers were employed on a seasonal basis, many of them for very short periods. Approximately one-eighth of the hired farm workers were migratory workers who moved from one area to another to engage in harvest work or other seasonal operations. Approximately half were women, youths, or other persons who were only seasonally in the labor market. Others were chiefly employed in nonfarm jobs, but did some seasonal farmwork. The chief activity of persons who did at least 25 days of farm wage work during 1947-66 is shown in figure 8 (3, 4, 13).

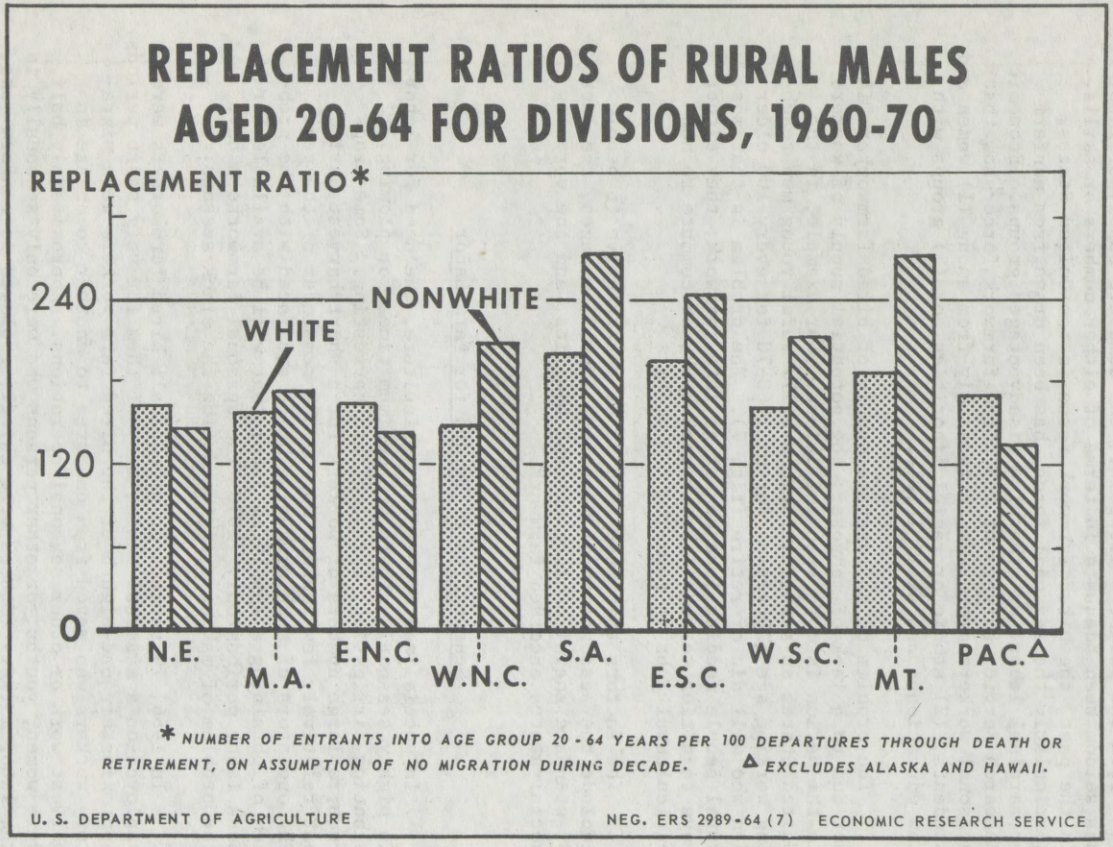
REPLACEMENT RATIOS OF RURAL MALES AGED 20-64 FOR DIVISIONS, 1960-70
REPLACEMENT RATIO*
240
120
0
WHITE
NONWHITE
N.E.
M.A.
E.N.C.
W.N.C.
S.A.
E.S.C.
W.S.C.
MT.
PAC.△
* NUMBER OF ENTRANTS INTO AGE GROUP 20 - 64 YEARS PER 100 DEPARTURES THROUGH DEATH OR RETIREMENT, ON ASSUMPTION OF NO MIGRATION DURING DECADE.
△ EXCLUDES ALASKA AND HAWAII.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 2989-64 (7) ECONOMIC RESEARCH SERVICE

Figure 7

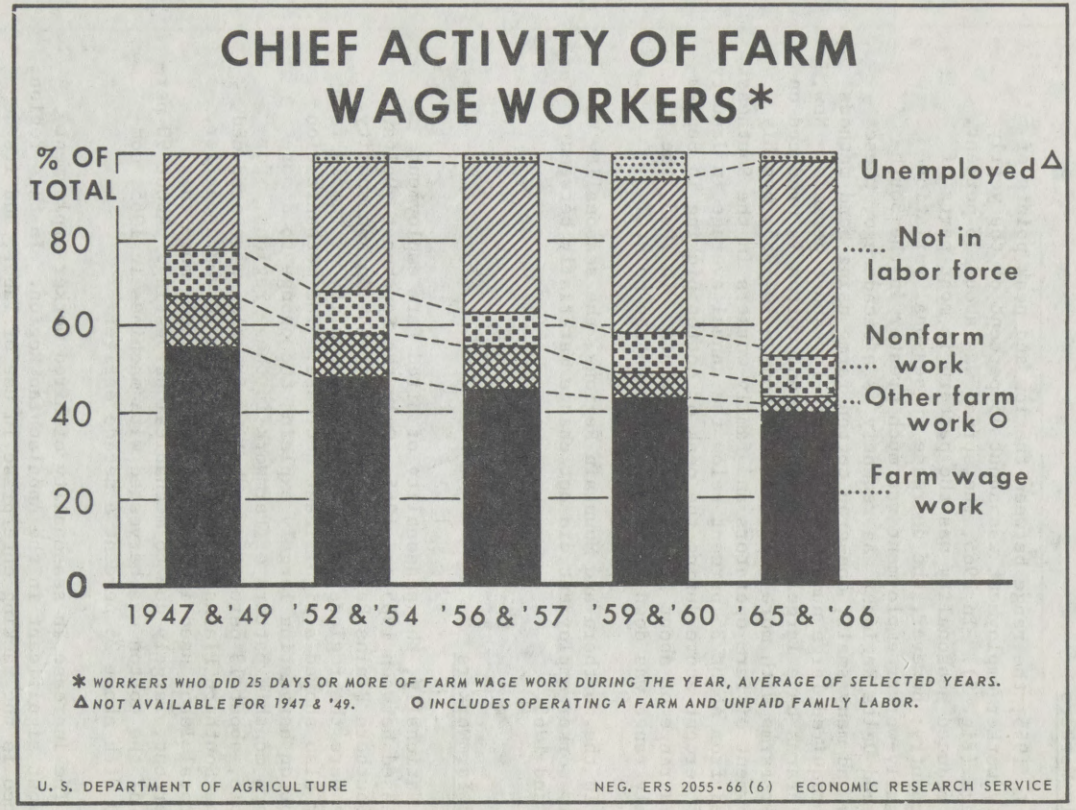
CHIEF ACTIVITY OF FARM WAGE WORKERS*
% OF TOTAL
80
60
40
20
0
1947 &'49
'52 &'54
'56 &'57
'59 &'60
'65 & '66
Unemployed △
Not in labor force
Nonfarm work
Other farm work ○
Farm wage work
* WORKERS WHO DID 25 DAYS OR MORE OF FARM WAGE WORK DURING THE YEAR, AVERAGE OF SELECTED YEARS.
△ NOT AVAILABLE FOR 1947 & '49.
○ INCLUDES OPERATING A FARM AND UNPAID FAMILY LABOR.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 2055-66 (6) ECONOMIC RESEARCH SERVICE

Figure 8

The national pattern of seasonal demand for farm labor indicates that the month-to-month variation in employment is greater for hired workers than for family workers, and the difference between the two groups is increasing.

Family Workers

In 1955, the range between the low and peak points of family worker employment was about 45 percent of the yearly average (fig. 9). In 1965, the spread was about 33 percent. This reduced seasonality was the pattern in most parts of the country; however, the decrease in seasonal variation of family-worker employment was much greater in the Southeast and Delta Regions. As recently as a decade ago, these areas had many small, one-crop cotton farms using hand methods that required large numbers of workers for short periods. Now, these farms have largely disappeared, and cotton is produced on larger farms with more mechanized methods. In 1955, monthly employment of farm operators and family workers in the Southeast varied from about 35 percent below the annual average in January to 65 percent above during the peak of cotton picking in September, a range of about 100 percentage points. In 1965, the monthly range was down to about 65 percentage points.

In the northern and Mountain Regions, the seasonality of family worker employment did not change materially between 1955 and 1965.

Hired Farmworkers

Nationally, the seasonality of hired farm employment increased between 1955 and 1965. Only the Southeast, Delta, and Southern Plains Regions showed a decrease in seasonality. These were the regions in which the seasonality of family farm labor also showed a significant decrease. The mechanization of cotton harvesting largely explains the change to a more uniform monthly pattern of farmwork in these regions. For example, about 13 percent more bales of cotton were produced in the Southern Plains Region in 1965 than 10 years earlier, but total labor used in cotton production fell more than 50 percent, largely due to mechanical harvesting. About 90 percent of the cotton was harvested with machines in 1965, compared with about 25 percent a decade earlier.

The increase in seasonality of hired worker employment was most significant in the Appalachian Region. In this region, tobacco is the ranking enterprise in use of labor, and its demands for labor are highly seasonal. Despite a drop in production of tobacco, a higher proportion of the farm labor in the region was devoted to it last year than 10 years ago, owing to the disappearance of many small tobacco farms and the shift of production to larger farms where a higher percentage of hired labor was used.

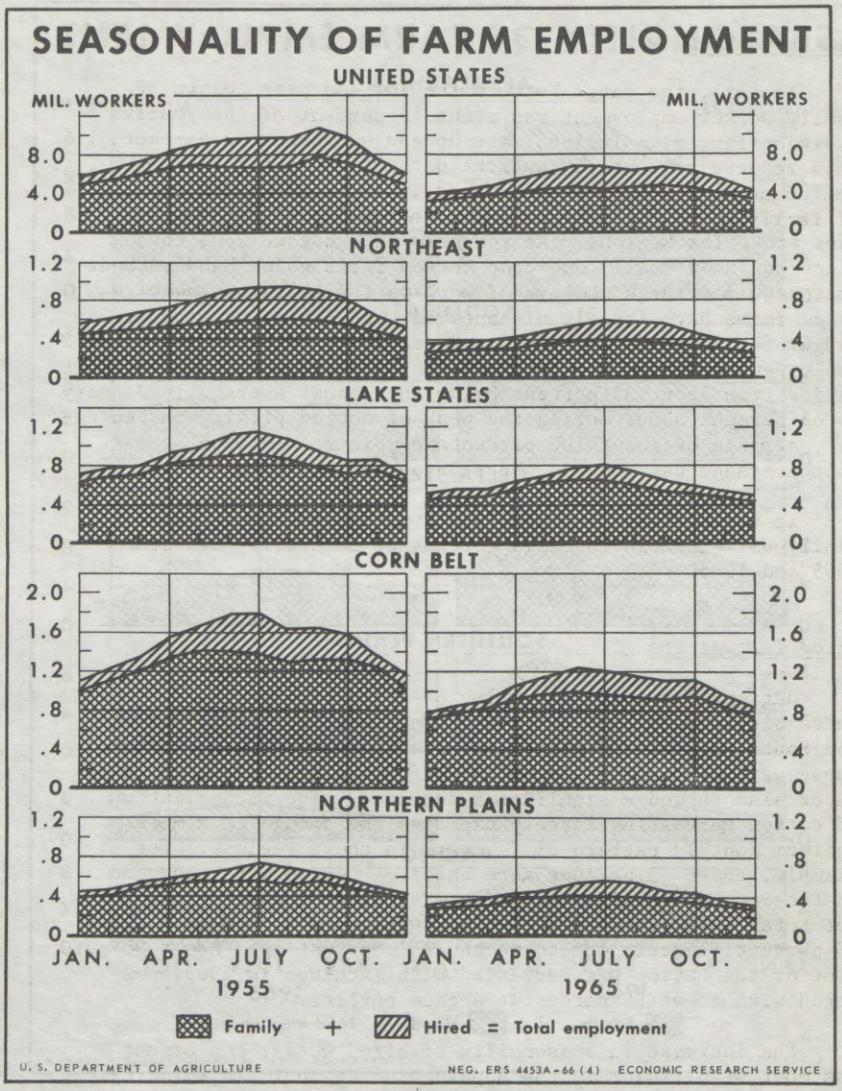
SEASONALITY OF FARM EMPLOYMENT
UNITED STATES
MIL. WORKERS
MIL. WORKERS
8.0
4.0
0
NORTHEAST
1.2
.8
.4
0
LAKE STATES
CORN BELT
2.0
1.6
1.2
NORTHERN PLAINS
JAN. APR. JULY OCT. JAN. APR. JULY OCT.
1955
1965
Family + Hired = Total employment
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4453A-66 (4) ECONOMIC RESEARCH SERVICE

Figure 9

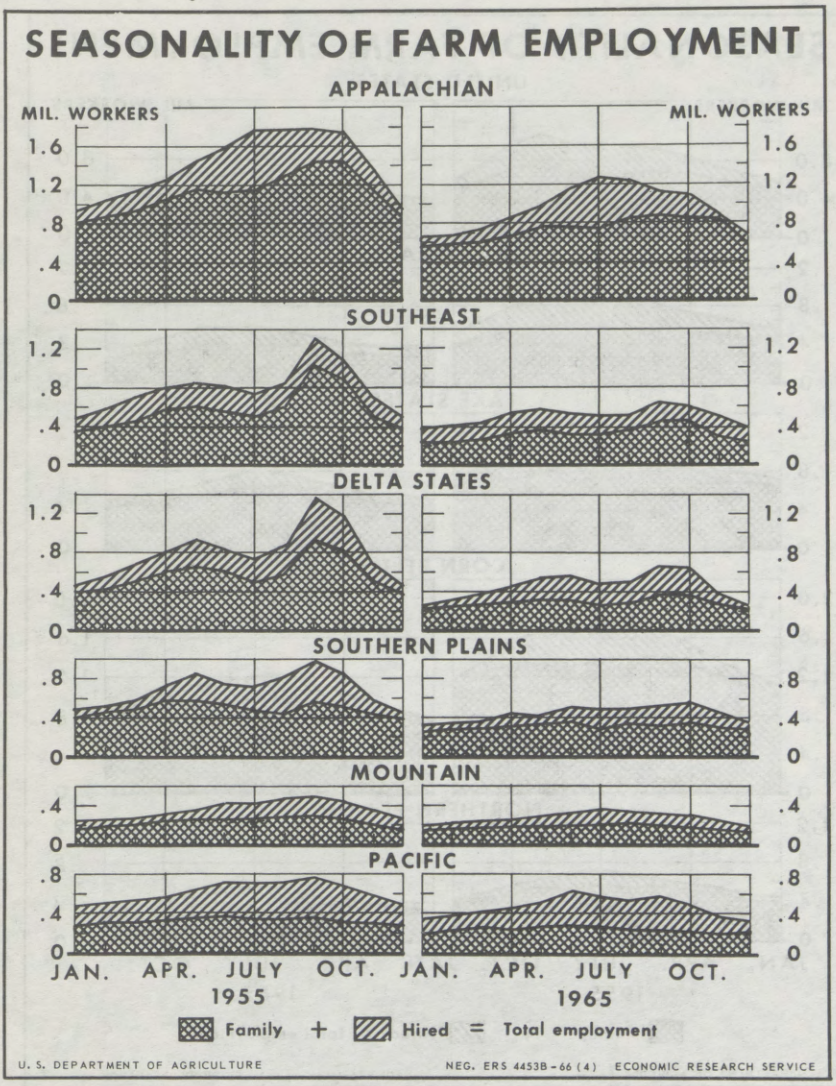
SEASONALITY OF FARM EMPLOYMENT
APPALACHIAN
MIL. WORKERS
MIL. WORKERS
1.6
1.2
.8
.4
0
SOUTHEAST
DELTA STATES
SOUTHERN PLAINS
MOUNTAIN
PACIFIC
JAN. APR. JULY OCT. JAN. APR. JULY OCT.
1955
1965
Family + Hired = Total employment
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4453B-66 (4) ECONOMIC RESEARCH SERVICE

Figure 9

Demand for seasonal farmworkers (23) is also illustrated by the number of people who do farm wage work during a year and their employment patterns (fig. 10). In 1966, when the annual average number of hired workers on farms was 1.4 million, approximately 2.8 million people did some work on farms for cash wages. As indicated below, 41 percent of the workers averaged only 9 days of employment (table 4). Farmwork was performed by casual and seasonal workers principally during peak work periods in the summer and fall.

Table 4.--Seasonal employment patterns of hired farmworkers, by number of days worked, 1966

Hired farmworkers	Number	Percentage distribution	Average days of farm wage work	Proportion of total man-days of hired work
	Thou.	Pct.	No.	Pct.
Casual workers:				
under 25 days	1,130	41	9	4
Seasonal workers:				
25-74 days	717	26	44	13
75-149 days	339	12	103	15
Regular workers:				
150-249 days	211	8	195	18
Year-round workers:				
250 days and over	367	13	319	50
Total	2,763	100	85	100

Source: (13).

In the aggregate, hired farmworkers did about 235 million man-days of farm wage work in 1966. Regular and year-round workers who comprised about one-fifth of the hired farmwork force in 1966 accounted for two-thirds of all the man-days of hired farmwork. In contrast, 15 years ago regular workers did over three-fourths of the days of hired farmwork. The number of casual and seasonal workers, now mostly women and young people, has increased greatly. The individual labor input of these workers is rather small, but in the aggregate it now accounts for about a third of the hired work, whereas it accounted for about one-fourth 15 years ago (fig. 11).

The difficulty of obtaining seasonal workers is associated with the large outmigration from farms during the last several decades. The supply of extra workers living on farms has been greatly reduced, and, to a large extent, hired workers must be

77-282 O - 67 - pt. 4 - 3

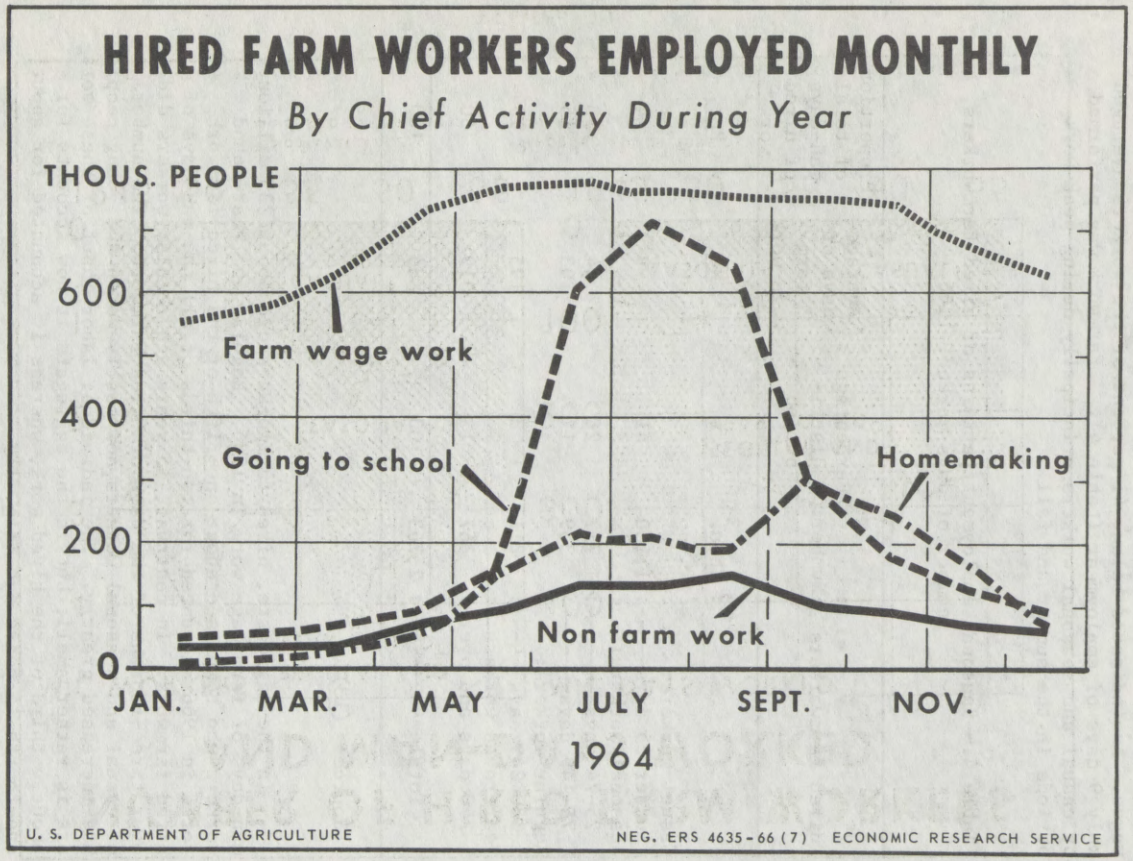
HIRED FARM WORKERS EMPLOYED MONTHLY
By Chief Activity During Year
THOUS. PEOPLE
600
400
200
0
Farm wage work
Going to school
Homemaking
Non farm work
JAN.
MAR.
MAY
JULY
SEPT.
NOV.
1964
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4635-66 (7) ECONOMIC RESEARCH SERVICE

Figure 10

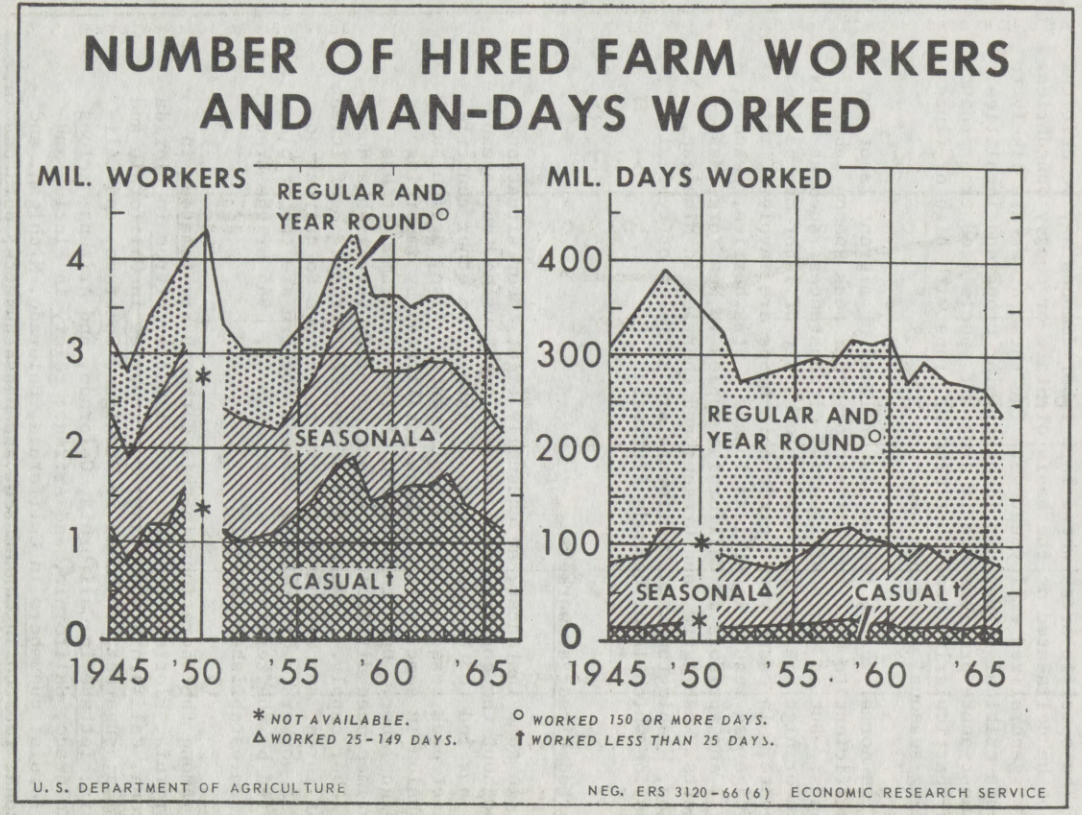
NUMBER OF HIRED FARM WORKERS AND MAN-DAYS WORKED
MIL. WORKERS
REGULAR AND YEAR ROUND○
SEASONAL△
CASUAL†
4
3
2
1
0
1945 '50 '55 '60 '65
MIL. DAYS WORKED
400
300
200
100
0
REGULAR AND YEAR ROUND○
SEASONAL△
CASUAL†
1945 '50 '55 '60 '65
* NOT AVAILABLE.
△ WORKED 25-149 DAYS.
○ WORKED 150 OR MORE DAYS.
† WORKED LESS THAN 25 DAYS.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 3120-66 (6) ECONOMIC RESEARCH SERVICE

Figure 11

obtained from the nonfarm rural areas, and from towns and cities. Only about 30 percent of the 2.8 million hired farmworkers of 1966 lived on farms in December of that year, although some of the nonfarm-resident workers may have lived on farms at some time during the year. In 1948-49, two-thirds of the persons who did some farm wage work customarily lived on farms (fig. 12).

The specific areas where farm labor demands may be critical cannot be delineated on the basis of State or county boundaries. Hence, generalized employment data for these areas are likely to obscure critical situations in particular crops and localities. The most acute problems are in areas of specialized crop production, particularly those that produce crops with high or fluctuating seasonal labor demands.

In normal years, the supply of local or migrant labor may be sufficient to meet the harvest or other peak season labor demands. But in years of abnormal circumstances, such as early frost or high yields, the available supply of labor may be inadequate. In cases where perishable crops are involved, this shortage can result in serious losses. Strawberries, peaches, pears, and apricots in California; apples in New York, Massachusetts, Washington, and Oregon; and cherries in Michigan, Oregon, Washington, and California are examples of typical crops for which labor demands fluctuate.

Imported Hired Farmworkers

In some instances, an unusually tight labor situation throughout the country, such as developed during the Korean War, has led to the importation of labor from other countries to meet peak seasonal labor requirements. Also, agricultural expansion in some areas has been facilitated by importing foreign labor. Upon termination of such programs, it has sometimes been difficult to establish or re-establish a domestic labor supply. Growers are often left without a sufficient labor force, and without effective techniques to attract domestic workers. Of greatest present concern are the problems created by the termination on December 31, 1964 of the Bracero Program established in 1951.

Among the operations in this category are tomatoes in California, Florida, Indiana, and Illinois; citrus in Florida, Arizona, California and Texas; strawberries in California and Florida; sugarbeet thinning in Michigan, Colorado, and California; lettuce in California, Colorado, and Arizona; melons in Colorado, California, and Arizona; celery in Florida and California; cucumbers in California, Colorado, Michigan, and Arizona; tobacco in Connecticut and Massachusetts; potatoes in Maine, New York, Florida; apples in Virginia and West Virginia; cotton (chopping) in Texas and Arkansas; and brussels sprouts in California.

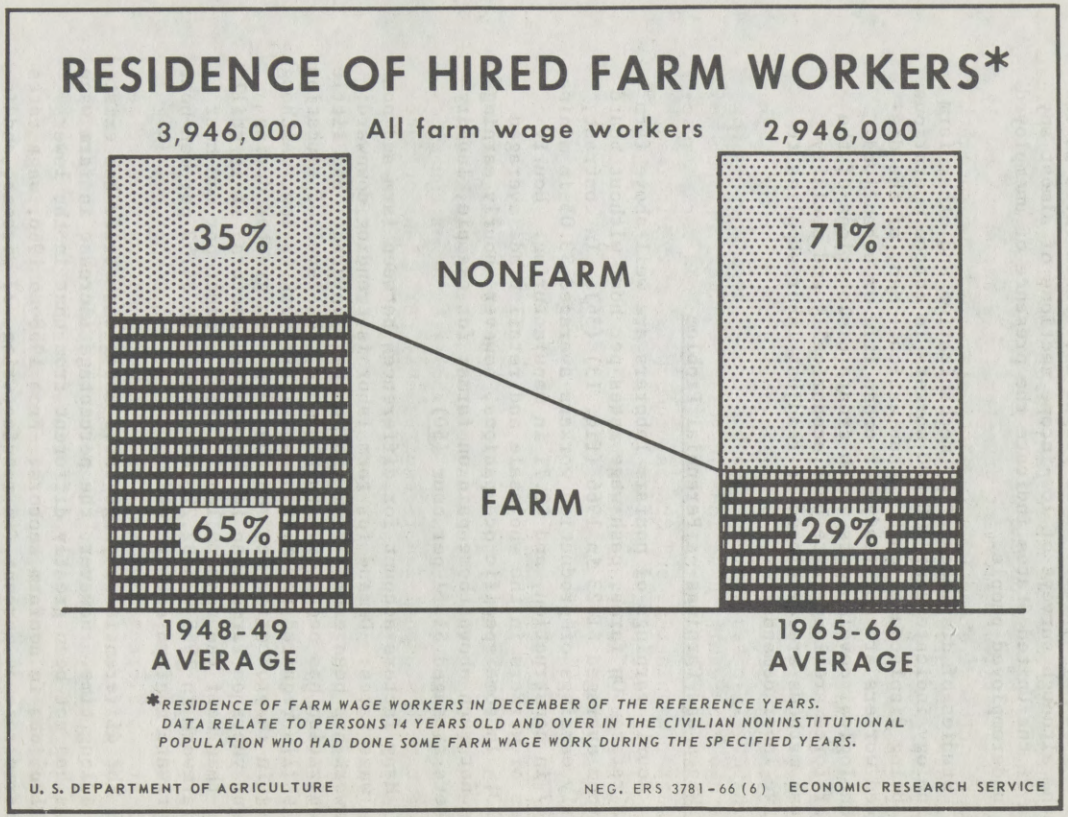
RESIDENCE OF HIRED FARM WORKERS*
3,946,000
All farm wage workers
2,946,000
35%
NONFARM
71%
FARM
65%
29%
1948-49 AVERAGE
1965-66 AVERAGE
*RESIDENCE OF FARM WAGE WORKERS IN DECEMBER OF THE REFERENCE YEARS. DATA RELATE TO PERSONS 14 YEARS OLD AND OVER IN THE CIVILIAN NONINSTITUTIONAL POPULATION WHO HAD DONE SOME FARM WAGE WORK DURING THE SPECIFIED YEARS.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 3781-66 (6) ECONOMIC RESEARCH SERVICE

Figure 12

Other Factors Affecting the Farm Labor Supply

Recent surveys in the rural low-income areas of the United States reveal the existence of large numbers of small farmers with inadequate incomes, casual and seasonal farmworkers who are underemployed, and women and youths with a need to supplement the family income. These people are concentrated in the South, although surveys of low-income sections of almost any area of the United States indicate the presence of unemployed and underemployed people.

Studies of displacement by mechanization and other farm technology indicate that 300,000 workers in cotton operations are being displaced through mechanization. Many of the displaced workers are not ready for urban life or urban jobs. Technological developments which create dislocations of the labor force are inadequate both economically and socially unless methods are developed to readjust labor supplies to active labor demands.

Low Wages and Earnings--a Perennial Problem

Hourly earnings of nonfarm laborers are well above farm wage rates. On farms, cash wage rates per hour without board or room averaged $1.23 in 1966 (fig. 13) (36). In contrast, hourly earnings of production workers averaged $3.05 in mining, $3.87 in construction, and $2.71 in manufacturing. Hourly wages of workers in the wholesale and retail trade averaged $2.13. In some specific occupations, however, hourly earnings were not much above those paid on farms; for example, laundry workers averaged $1.51 per hour (50).

Many factors account for differences between farm and nonfarm wage rates: Demand for farm labor is trending downward; farmwork has been exempt from minimum wage coverage; and little unionization has occurred. Furthermore, the level of education and skills required for most seasonal farmwork is low. Although the gain in production per man-hour has been greater during recent years on farms than in the nonfarm sectors, it is still less than half the nonfarm level. Real product per man-hour of farmwork in 1965 was $2.22, compared with $4.53 per man-hour in private nonfarm activities.

The differential in wage rates among industries has existed for a long time. However, the percentage increase in farm wage rates has not been greatly different from that in the lower skilled jobs in nonfarm sectors. From 1958 to 1966, wage rates on farms rose 34 percent, in manufacturing, 33 percent, and in laundries, 29 percent.

The same factors that cause variations in wage rates among industries create differences among geographic areas. In the Pacific Region (Washington, Oregon, and California), farm wage rates have long been higher than in other parts of the country

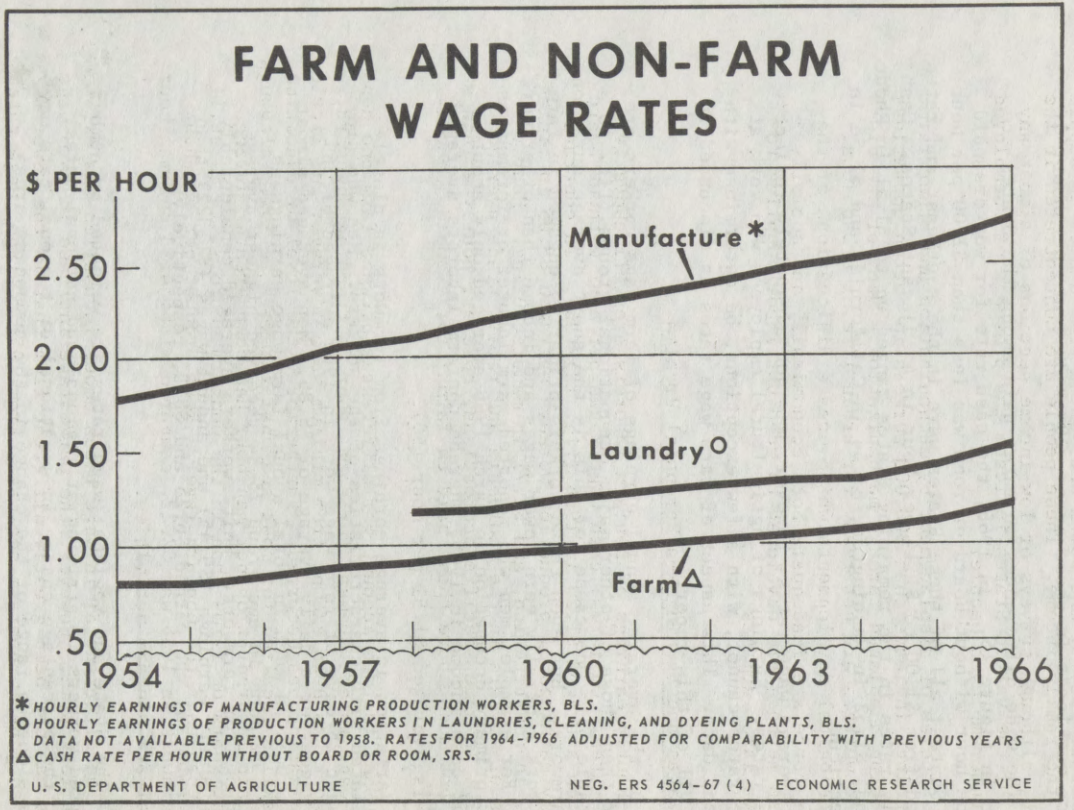
FARM AND NON-FARM
WAGE RATES
$ PER HOUR
2.50
2.00
1.50
1.00
.50
1954
1957
1960
1963
1966
Manufacture *
Laundry O
Farm Δ
* HOURLY EARNINGS OF MANUFACTURING PRODUCTION WORKERS, BLS.
O HOURLY EARNINGS OF PRODUCTION WORKERS I N LAUNDRIES, CLEANING, AND DYEING PLANTS, BLS.
DATA NOT AVAILABLE PREVIOUS TO 1958. RATES FOR 1964-1966 ADJUSTED FOR COMPARABILITY WITH PREVIOUS YEARS
Δ CASH RATE PER HOUR WITHOUT BOARD OR ROOM, SRS.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4564-67 (4) ECONOMIC RESEARCH SERVICE

Figure 13

(fig. 14). Wage rates increased 45 cents per hour in this region from 1954 to 1966, a greater rise than in the rest of the United States. The three southern regions continued to lag with rises of 35 or 36 cents per hour. Although farm wage rates in the north central areas continued above the U. S. average, the increase was least in these areas--29 or 30 cents per hour. 4/

The wide differences in rates paid among the States are shown in figure 15. In 1966, the cash rate for workers paid by the hour without board or room was less than $1.00 per hour in 9 States; all of these States were in the southeast and rates ranged from $1.00 to $1.14 per hour in 4 adjacent States. Cash hourly rates in the remaining States ranged up to $1.51 in Rhode Island, $1.52 in Washington, $1.54 in California, and $1.56 in Connecticut.

Average wage rates, however, may not adequately reflect piece rates. Earnings of agricultural employees who work at piece rates cannot, with a few exceptions, be determined with current data. This aspect of farm wage rates is discussed in Part VII of this report.

On the average, annual earnings of farm wage workers are lower than those of other major occupational groups (fig. 16 and table 5). One cause for this is the short average duration of farmwork. But even those workers primarily engaged in farm wage work generally earn lower wages and income than other workers. For example, men who reported farm laborer or foreman as their primary occupation in March 1966 averaged only about $1,452 cash income in 1965, whereas nonfarm laborers averaged $3,343.

Variation in average earnings from farmwork is closely associated with characteristics of the workers. Men who did at least 25 days of farm wage work in 1966 averaged $1,369 cash wages, or a daily average of $8.85. Men averaged almost three times as much in total annual farm wage earnings as women. Persons in age group 25-34 received highest average earnings from farmwork. White workers averaged considerably higher daily earnings ($9.45) and annual wages ($1,322) than did nonwhites, who earned $6.25 and $838, respectively.

4/ The State and regional wage rates are weighted by number of hired workers in arriving at regional and national rates. Thus, the percentage change in a national or regional rate may be outside the range of the change in the component areas.

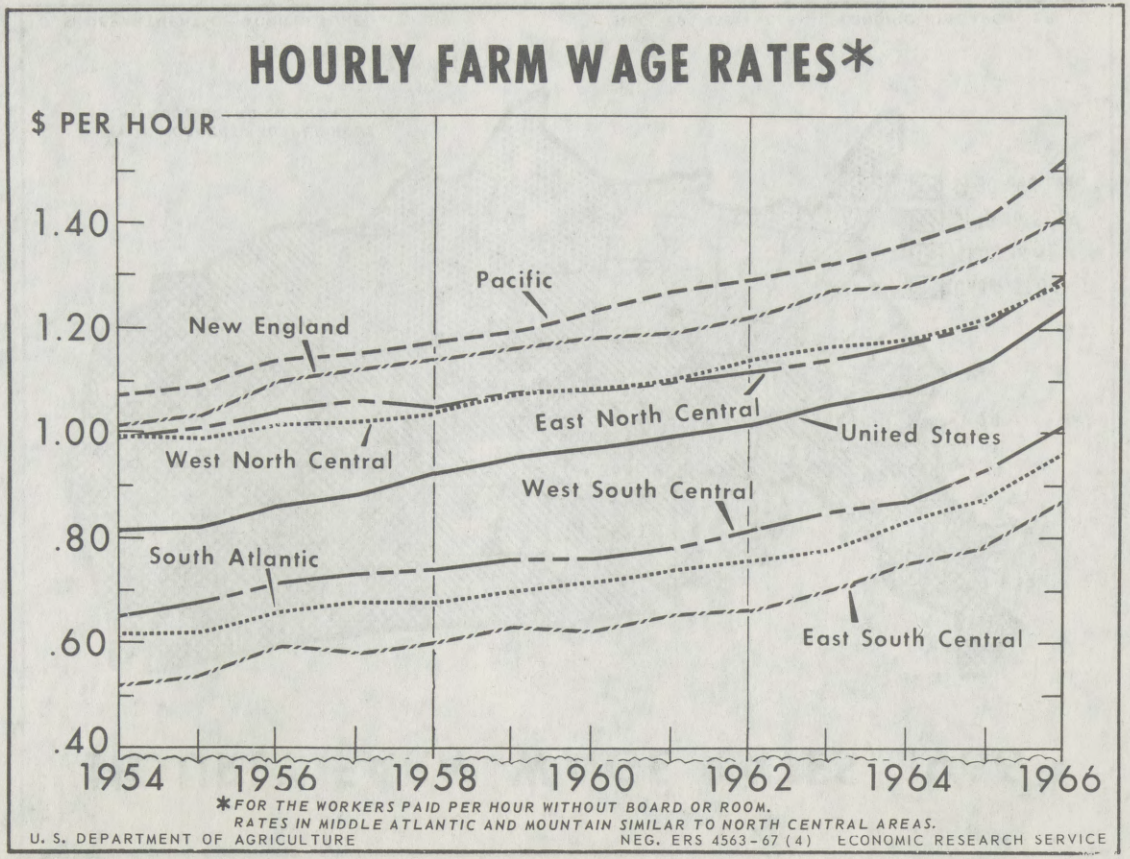
HOURLY FARM WAGE RATES*
$ PER HOUR
1.40
1.20
1.00
.80
.60
.40
1954
1956
1958
1960
1962
1964
1966
Pacific
New England
East North Central
United States
West North Central
West South Central
South Atlantic
East South Central
*FOR THE WORKERS PAID PER HOUR WITHOUT BOARD OR ROOM.
RATES IN MIDDLE ATLANTIC AND MOUNTAIN SIMILAR TO NORTH CENTRAL AREAS.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4563-67 (4) ECONOMIC RESEARCH SERVICE

Figure 14

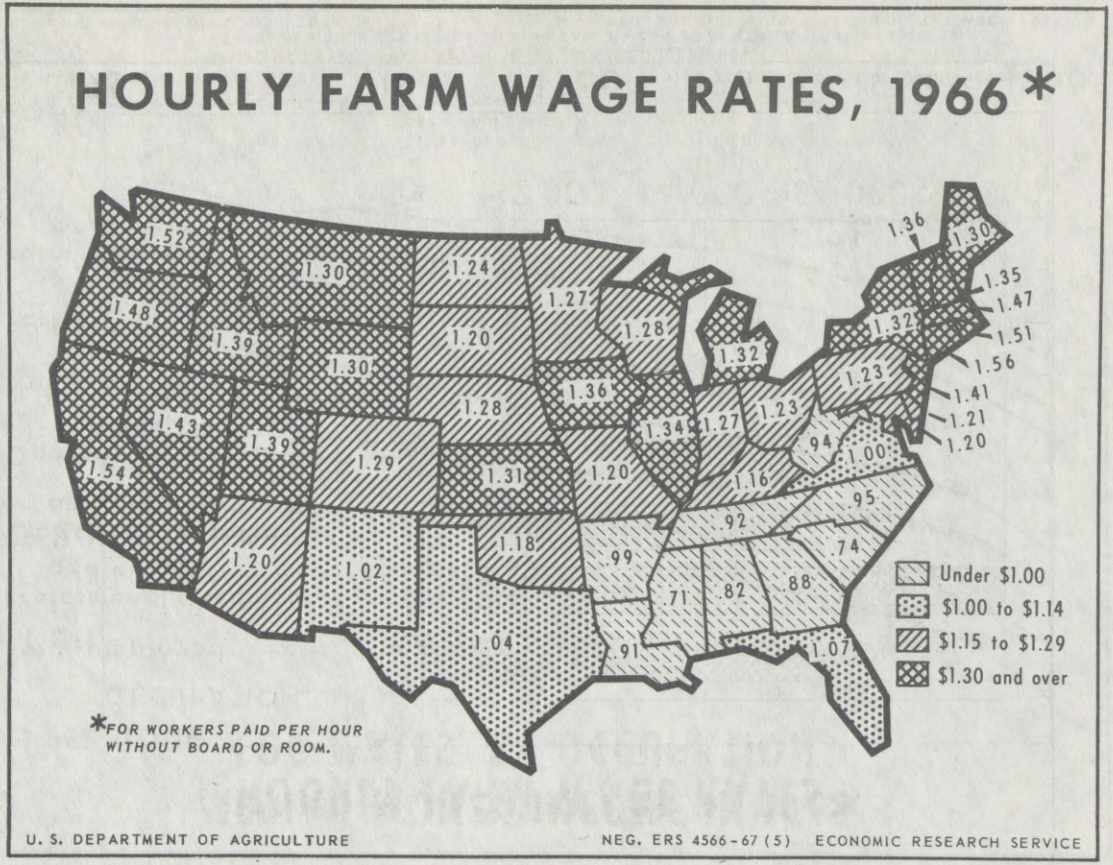
HOURLY FARM WAGE RATES, 1966*
1.52
1.30
1.24
1.27
1.48
1.39
1.20
1.28
1.30
1.32
1.36
1.23
1.43
1.39
1.28
1.34
1.27
1.23
1.54
1.29
1.31
1.20
.94
1.00
1.16
.95
.92
1.20
1.02
1.18
.99
.74
.71
.82
.88
1.04
.91
1.07
1.36
1.30
1.35
1.47
1.32
1.51
1.56
1.41
1.21
1.20
Under $1.00
$1.00 to $1.14
$1.15 to $1.29
$1.30 and over
*FOR WORKERS PAID PER HOUR WITHOUT BOARD OR ROOM.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4566-67 (5) ECONOMIC RESEARCH SERVICE

Figure 15

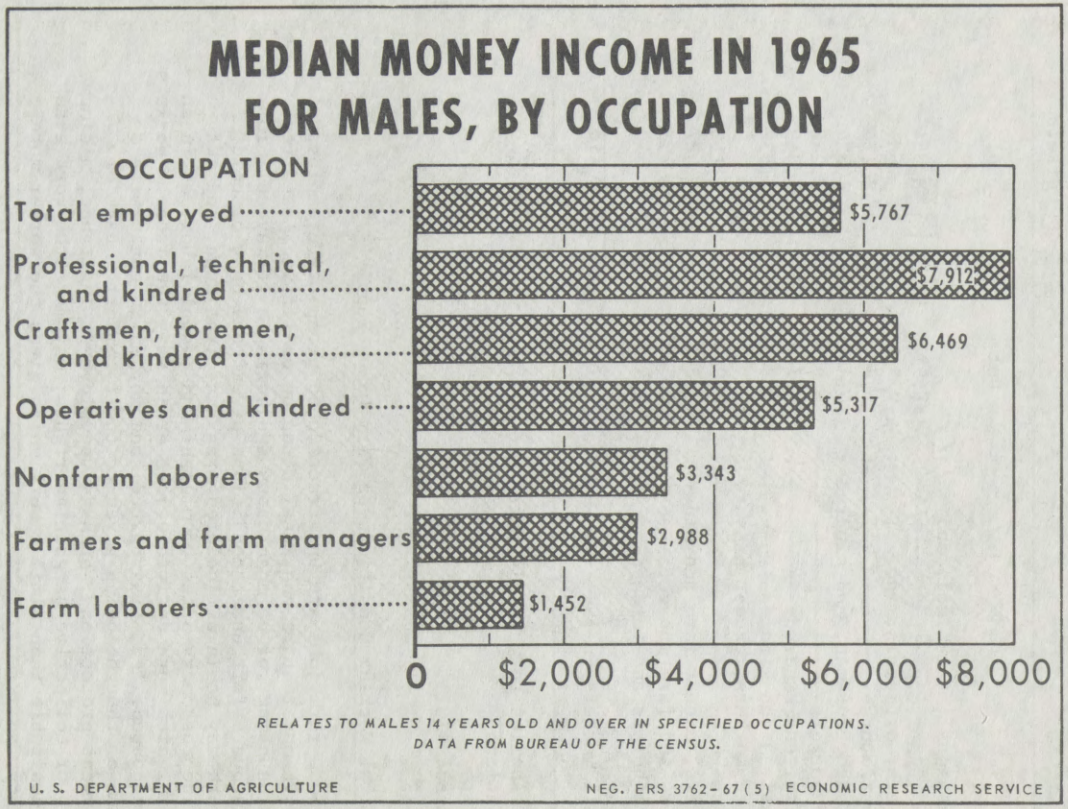
MEDIAN MONEY INCOME IN 1965
FOR MALES, BY OCCUPATION
OCCUPATION
Total employed
Professional, technical, and kindred
Craftsmen, foremen, and kindred
Operatives and kindred
Nonfarm laborers
Farmers and farm managers
Farm laborers
$5,767
$7,912
$6,469
$5,317
$3,343
$2,988
$1,452
0
$2,000
$4,000
$6,000
$8,000
RELATES TO MALES 14 YEARS OLD AND OVER IN SPECIFIED OCCUPATIONS.
DATA FROM BUREAU OF THE CENSUS.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 3762-67(5) ECONOMIC RESEARCH SERVICE

Figure 16

Table 5.--Median income: Total money income for employed male workers in selected occupation groups, March 1966 1/

Occupation	All workers	Year-round full-time workers
	Dol.	Dol.
Professional, technical, and kindred	7,912	8,354
Managers, officials, and proprietors	7,857	8,155
Craftsmen, foreman, and kindred	6,469	6,824
Sales workers	5,958	7,246
Clerical and kindred	5,746	6,349
Operatives and kindred	5,317	5,832
Service workers, except private house	4,068	5,113
Laborers, except farm and mine	3,343	4,487
Farmers and farm managers	2,988	3,293
Farm laborers and foremen	1,452	2,530
All workers	5,767	6,519

1/ Applies to males 14 years old and over in specified occupations.

Source: (31).

Effect of Working Conditions on Farm Labor Supply

Some farm jobs are unattractive to prospective employees. Farmwork may require continual stooping or lifting, be dirty and exhausting, or be monotonous and boring. It may call for continuous effort under conditions of extreme heat or cold. The work may be in an isolated area away from town, and away from the customary paths of migrant and casual labor, or in an area in which more desirable jobs drain away the labor. Workers may be housed, fed, transported, and worked in gangs with a minimum of thought being given to their comfort. Lack of employment protections, such as unemployment insurance, minimum wages, or collective bargaining rights, may make the work even less desirable than similar work which gives the worker more security.

Effect of Low Status of Farmwork on Farm Labor Supply

The American tradition of trying to move upward in the economic and social scale has caused much movement out of hired farmwork and small-scale subsistence farming. Groups from which large numbers of farmworkers have come are leaving rural areas at a rapid rate. For example, the number of nonwhite rural people 18 to 29 years old--the prime farm labor age--declined by 25 percent from 1950 to 1960 because many Negroes and Indians left rural areas in the South for life in the cities.

Upward mobility has also involved movement into jobs that are easier and better paid. At times it has involved movement up the agricultural ladder from hired man to owner-operator.

Use of imported labor increases the exodus of domestic workers because workers desiring to maintain or improve their social and economic status usually avoid this kind of work. An entire operation or area may become dominated by foreign labor, except for the technical and supervisory jobs. Discontinuation of imported foreign labor does not necessarily imply that the status of such work will automatically rise.

PART III. SITUATION IN CRITICAL AREAS

Previous discussion has centered around the general farm labor demand and supply situation. The purpose of this section is to give further insight into the 1965-66 situation through selected case materials from States with high seasonal farm labor supply and demand requirements.

California

Factors which have recently affected the farm labor situation in California include (1) termination of the importation of Bracero labor to perform the less desirable farm operations; (2) rapid expansion of employment in industrial, commercial, service, and defense activities (14), and movement of workers out of the farm labor force to those activities, to the Armed Forces, and to manpower training courses (9); (3) mechanization of the cotton harvest and resulting dislocations in the labor force (the displaced workers have generally avoided work formerly performed by foreign labor); and (4) development of machinery to harvest the canning tomato crop, which will reduce the need for hand pickers but will increase the demand for sorters on the harvesting machines.

The most urgent labor supply need in the State in 1965 was to fill the labor shortages in jobs formerly held by Braceros. The jobs involved were among the most difficult and undesirable, and carried a low social status as well.

Recruitment of domestic workers was hampered by lack of housing for family units. Braceros had lived in barracks, facilities which could not readily be converted into family housing. The first recruitment efforts were to obtain single males to fit the housing supply; however, many of these workers were floaters. Out-of-State recruitment efforts were almost a complete failure. The machinery to carry out such an operation was inadequate. Workers did not respond quickly to pleas that they go to distant and strange work areas. Some who came did not wish to stay in the type of work offered.

Efforts toward recruiting workers from residents of the production areas were relatively successful. School youth were especially helpful in areas where they were carefully trained. Training courses for farm foremen and farmworkers were developed in an effort to retain the available workers. Trends toward mechanization and labor simplification were stimulated. Mechanization of the tomato, cucumber, and brussels sprouts harvests reached a high stage of development. Technical advances were also made in the harvesting of melons, lettuce, and dates.

Losses due to lack of labor occurred in the asparagus, strawberry, and brussels sprouts harvests. Minor losses also occurred in market tomatoes, dates, and cantaloups. These shortages were local and were related to difficulty of the harvesting work, lack of producer contact with the labor force, and similar factors. Available workers in some crops were not used because they were considered too slow to merit $1.40-an-hour--the minimum established by the Department of Labor as the wage that growers must offer domestic laborers in order to qualify for imported labor. Mechanization has not been adapted to asparagus and strawberry production and growers are still far from developing a dependable labor force.

The outstanding successes of the 1965 season included the rapid adoption of the tomato harvester and the development of training courses for the supervisors of farm labor. The latter were designed to cultivate person-to-person relationships between workers and supervisors, insure greater attention to workers' needs, and help to upgrade farm jobs.

Resources for providing a supply of labor for the critical crops have not been exhausted. Underemployed seasonal farmworkers are still numerous in the cotton areas. The State's population is increasing by an average of 1,000 new entrants per day, and the unemployment rate among them is high. The unemployment rate is also high among youth and members of minority groups. Members of these groups, however, will be difficult to attract and retain in farm employment unless earnings and working conditions are improved, employment is made more continuous, and the social status of the work and the workers is upgraded.

Texas

Texas supplies some seasonal farm labor to 30 or more States. New demands are now being made on this labor supply because of termination of the Bracero program, and expansion of labor demands for defense and other nonfarm activities. The adequacy of the labor supply to meet additional demands is uncertain.

The major factors involved in the labor situation in Texas include (1) the existence of a pool of 100,000 or more seasonal workers in south Texas who have established patterns of migration during the spring and summer months to agricultural areas in other States; (2) termination of the importation of labor which could greatly increase the demand for workers from this labor pool; and (3) the fact that defense contractors and other employers in need of labor regard south Texas as a labor-surplus area and conduct intensive recruitment drives there to obtain workers. These drives cut into the labor supply available for agriculture.

In 1965, Texas growers extended special guarantees as to earnings and length of employment in order to hold their workers. In the fall, recruiters from other States were unable to obtain all the workers they needed.

Labor surpluses and labor shortages exist side by side in Texas. Labor requirements are being reduced by mechanization of cotton chopping and harvesting. Rapid mechanization is also anticipated for the cucumber harvest. Yet, shortages of irrigators, ranch hands, cotton stompers, and workers in okra, broomcorn, and melons are still expected. The latter jobs are at the bottom of the occupational scale because they are considered undesirable positions socially and are poorly paid. It may take several years to bring them up to levels where domestic workers will enter them easily.

The major gain in the 1965 season was the increased use of youths, housewives, and other local labor to meet harvest labor needs. School age youths were particularly helpful in the melon and cucumber harvests, which had formerly been performed by Bracero labor.

Competition by out-of-State recruiters for the labor supply is expected to increase, and will thus cut into the number of workers available to Texas growers. Competition for labor is expected to (1) improve the economic position of farmworkers, and (2) create labor shortages in those crops and operations that fail to make comparable offers of wages and working conditions.

Florida

Producers of fruits, vegetables, and sugarcane in Florida are trying to expand their production in a highly competitive market. They are concerned that labor shortages and increasing labor costs may hamper them in this effort. The jobs which are particularly involved are those which had previously been performed largely by offshore labor. These jobs are difficult and also have a low social status (24).

The supply of labor available for these jobs is being strongly affected by two trends: (1) Industrialization, the defense effort, and retraining programs are rapidly absorbing the workers generally available for this type of work; and (2) Negroes, who constitute 95 percent of the labor force, are becoming more selective in regard to type of work, wage rates, working conditions, and housing.

On the other hand, mechanization of cotton, bean, and potato operations in Florida, in the Southeast, and along the Atlantic Coast is releasing labor for other activities. The net effect of this displacement has not been clearly ascertained. It could mean more or fewer workers for Florida agricultural operations, depending on where the displaced workers go.

The displacement will also affect the supply of labor available to agricultural producers in the eastern States.

Recruitment efforts in 1965 were quite disappointing, and growers have become concerned that in the future there might be an absolute shortage of people willing to do the less desirable jobs. Employment Service officials are more optimistic and point out that contacts with domestic workers had lapsed when offshore workers were available, and that it may take a few years to re-establish them.

Mechanization is likely to lead to some reduction in labor requirements, particularly if sugarcane harvesters become operational. This reduction, however, is not likely to be great enough to offset increases in labor demands occasioned by expanded production.

The tight labor situation is improving the economic status of farmworkers to a limited extent. Growers are raising workers' wage rates and improving their housing, and are organizing their operations to provide greater continuity of employment. While increased wage rates have improved the competitive position of Florida growers in relation to labor users in other States, the wage gap has not been closed; migratory workers along the Atlantic Coast still find a wage advantage in the northern States.

Rapid expansion in the production of fruit and vegetable crops may result in reduced prices and in still higher wage rates. Careful planning is underway by grower associations to avoid being caught in a cost-price squeeze.

New York

Seasonal farm labor problems in New York State stemmed from several interrelated factors in 1965. Aside from the unpredictable effect of weather, the same factors are expected to influence the farm labor situation in the foreseeable future. These factors were: (1) Adoption of the snap bean harvester, which created unemployment among seasonal workers in midsummer between harvest of such early crops as strawberries and cherries and such late crops as apples and potatoes; (2) abnormal weather which caused some overlap in harvesting and created unusual demands for workers; (3) increased nonfarm employment opportunities; (4) regulation of activities of farm labor crew leaders, which apparently reduced the number of crews coming in from other States; (5) an above-normal need for hand labor in sugar beets resulting from a combination of increased acreages and weather unfavorable to use of chemical weed controls; and (6) New York's geographic position of the northern end of the Atlantic Coast migratory labor stream.

Average wage rates paid to farm labor increased only slightly in New York between 1964 and 1965. Workers paid on an hourly basis, without room and board averaged $1.23 in 1964 and $1.25

in 1965. New York ranked 17th from the top among States in average farm wage rates paid.

As in most other States, one of the primary problems of farmworkers is adequate housing. Housing for year-round farmworkers has been substantially improved in recent years, but most housing for migratory workers is below standard.

No major technological advances are foreseen that will reduce labor requirements in the immediate future. Reductions in requirements for seasonal labor do not appear likely until strawberries and apples can be harvested mechanically. A few mechanical apple harvesters are being used on an experimental basis.

No major changes are anticipated in acreages of labor-intensive crops although more specialization in crop production, with accompanying mechanization of harvesting, may be expected. There is continuing concern about availability of seasonal agricultural workers. Recruitment problems in New York in 1965 point up the need for new and more intensive types of recruitment efforts.

Michigan

Seasonal farm labor problems in Michigan are the product of a complex set of interrelated forces, ranging from uncertainties of the weather to institutional inadequacies, which will continue to influence the farm labor situation in the years ahead, though progress can be expected from concerted efforts presently being made to alleviate them. The major problems are listed below: (1) Termination of P.L. 82-78 has disrupted the usual seasonal work pattern in the Michigan cucumber industry, which had come to depend almost entirely on the use of Mexican Nationals (Braceros) for harvesting this crop. The pickling cucumber acreage was reduced about 7,000 acres (29 percent) in 1965 compared with 1964 but the 1966 acreage rose 10 percent over 1965. (2) Unusual weather delayed harvesting in 1965, causing overlap of harvest time for some crops and hence problems of labor demand. (3) A high level of industrial employment has increased nonfarm employment opportunities, creating a tight seasonal farm labor market during peak labor demand periods. (4) Both State and Federal farm labor legislation has created conditions of uncertainty among farmers and crew leaders, with an adverse impact on the recruiting process. (5) Mechanization continues to lessen time required to harvest some crops, creating problems of work continuity in the flow of the farm labor force from crop to crop. (6) Efforts to introduce more youths into the seasonal farm labor force have been only moderately successful. (7) A shortage of experienced year-round farm labor to meet the demand continues to exist.

Average wage rates paid to farm labor increased by 6 percent in Michigan between 1964 and 1965. Hourly wage rates, without board or room, averaged $1.13 in 1964 and $1.20 in 1965. Adequate housing for migratory labor continues to be a problem, although both voluntary and legislative efforts in Michigan are being made to improve housing facilities.

Harvesting aids are being developed and adopted at about the same rate as the decline in availability of farm labor. No major technological advances are expected in the immediate future, but mechanical harvesting will increase for many crops. Within a few years the entire pickling cucumber harvest will probably be mechanized.

It is becoming more evident that recruitment efforts need to encompass planning to maximize the length of work season and work time for migrant laborers. This requires closer coordination among recruiting agencies, farmers, and crew leaders.

Two late spring frosts and cold weather had significant effects on the 1966 harvest. According to late 1966 estimates of the Crop Reporting Board of the USDA Statistical Reporting Service, the damage to some fruits and berries was substantial. For example, the tart and sweet cherry crop, for which much seasonal labor is required, was down about one-half and one-third, respectively, from the 1965 crop. Peaches were also hit hard. Apples and pears escaped serious damage, but asparagus, strawberry, and blackberry harvests were all down considerably from 1965. Even with this reduced production, the seasonal labor situation in Michigan was very tight during much of the 1966 season. Wage rates were somewhat higher than last year.

PART IV. EMPLOYMENT IN FARM-RELATED INDUSTRIES

Two groups of businesses combine forces with farms to supply U.S. food and fiber to both domestic and foreign consumers. These businesses include (1) firms involved in manufacturing and distributing equipment and supplies used in farm production, and (2) processing and marketing establishments that receive the farm products and convert them to the form, place, and time needed for consumption. Because many of these firms work on products unrelated to farming or are multiproduct firms, the proportion of their employment attributable or related to farming cannot be determined precisely.

In 1950, 11.5 million workers were employed in farm-related industries: 1.4 million workers were in farm-supplies industries -- providing tractors, fertilizer, and other production items to farmers -- and 10.1 million were involved in marketing farm products (table 6).

Since 1950, needs of an expanding and affluent population have enhanced the demand for greater quantities of more highly processed farm-originated products. But in contrast to farmworkers, the number of farm-related workers has increased, totaling around 12.1 million in 1964, according to the latest available data.

Table 6.--Employment: Farm-related industries, 1950 and 1964

Industries	Number of workers		Change, 1950 to 1964	
	1950	1964	Number	Percentage
	Mil.	Mil.	Mil.	Pct.
Farm production equipment and supplies	1.4	1.4	0	0
Processing and marketing farm products	10.1	10.7	+0.6	+6
Total	11.5	12.1	+0.6	+5

Source: Appendix table 1.

Between 1950 and 1964, productivity in the farm-related industries did not rise as sharply as in farming. Nevertheless, by increasing productivity, farms and farm-related businesses as a whole were able -- with fewer workers -- to provide abundant, high-quality, and convenient farm-originated products to an expanding number of customers.

Farm-Supply Workers

The estimated total number of workers engaged in supplying production inputs and services to farmers did not change from 1950 to 1964, despite a 38-percent increase in farmer use of these inputs. The increase was offset by gains in production per worker in these concerns.

Approximately 300,000 workers in 1964 engaged in the final manufacture of equipment and supplies used in farm production (Appendix table 1). This number was about 100,000 smaller than in 1950. Such workers produced a variety of items. Building material firms employed the largest number of workers in this group of industries. Next in prominence were fabricators of farm machinery and equipment, processors of feed, and firms involved in preparing and mixing fertilizer and lime.

The drop in employment in final manufacture was offset by a rise of about 100,000 workers engaged in farm-supplies businesses (up from 1 million in 1950 to 1.1 million in 1964). It is estimated that in 1965 around half of the workers in farm supplies businesses were engaged in merchandizing tractors and equipment, agricultural chemicals, and other production items used by farmers. The other half were engaged primarily in farm services. These services ranged from hand sharpening of small tools to spreading seed, fertilizer, and pesticides with airplanes. Farmers have increasingly tended to purchase services (custom work, for example), rather than invest in the often costly, specialized, and complicated equipment necessary to perform the operations. But some farmers purchase these machines for their own use and, in addition, work for other farmers on a custom basis (25). This complicates the problem of evaluating the impact of changes in the farm sector on the employment of nonfarm workers who contribute to farm production.

Workers Processing and Distributing Farm Products

The number of workers engaged in processing and distributing farm-originated products rose from 10.1 million in 1950 to 10.7 million in 1964. The many changes in place and kind of employment of marketing and processing workers have not been completely catalogued. While some of the current jobs or functions of marketing workers were formerly done by farmworkers, most of the added processing and related tasks were taken over from housewives.

Civilian expenditures for farm-originated foods rose from $41.5 billion in 1950 to $69.8 billion in 1964. The total marketing bill for these foods increased from $23.9 billion to $47.3 billion during that period. Nearly half of the increase in marketing costs resulted from a greater volume of food handled. Added services accounted for about 5 percent of the increase. Because of advances in productivity, the increase in employment was not as

large as the cost of additional services and quantity of food handled. Indeed, in retail stores the number of workers decreased. Most of the increase in food-marketing employment was in eating places away from home.

The number of workers engaged in manufacturing and marketing nonfood products from the farm rose from 5.2 to 5.3 million during 1950-64. Workers included in this category are those employed in manufacturing, wholesaling, and retailing of apparel and other textile products, leather articles, tobacco products, and alcoholic beverages.

PART V. EXPECTED DEVELOPMENTS AND CHANGES

A combination of several interrelated forces operated during recent years to reduce the number of farmworkers. These forces are expected to continue into the future, and to further reduce the need for labor in farming. The technological revolution in farming has affected the structure of farming, and the changing structure has in turn affected the adoption of technology. Overall, farms have increased in size and specialization of enterprises, use of machines and other technology, and dependence on the nonfarm economy for inputs. Farms have grown larger partly because a worker with modern machines can handle more acreage and output than formerly, and partly because more assets are required per farm to adopt modern technologies such as new machines.

The growth in productivity of farm labor is illustrated by the gain in number of persons that one farmworker can supply with farm products (fig. 17). In 1966, each of the 5.2 million farmworkers, on the average, provided enough food, fiber, and other farm products to supply himself and almost 39 other consumers. The 1965-66 gain in the farmworker-consumer ratio was nearly 50 percent greater than the average of the last decade. This gain in persons supplied per farmworker has resulted from greater application of modern technology both on and off the farm, including the transfer of jobs from farmworkers to nonfarm workers. Most of the consumers were domestic residents, but about 15 percent were citizens of foreign countries who were supplied through U.S. exports from the United States.

The prospective influence of additional technology on farm labor may be measured through its effect on (1) farm production, and (2) adoption of labor-saving mechanization and methods.

Projected Farm Production

The Department of Agriculture in 1965, projected that farm output in 1980 would be 31 percent over the level of that year (7).

On the basis of average growth of about 1.5 percent per year, population is projected to reach 245 million persons in 1980 (29). Projections of GNP reflect a continued growth rate of about 4 percent per year.

It is assumed that diets will be upgraded to include a greater proportion of beef, poultry, fruits, and vegetables. Exports are projected to increase more rapidly than total output. The projections imply a program to stabilize farm prices and income. If all cropland currently diverted from production under various programs were brought under cultivation, crop output would be greater than the projected production. Finally, the projections assume no extended war or depression.

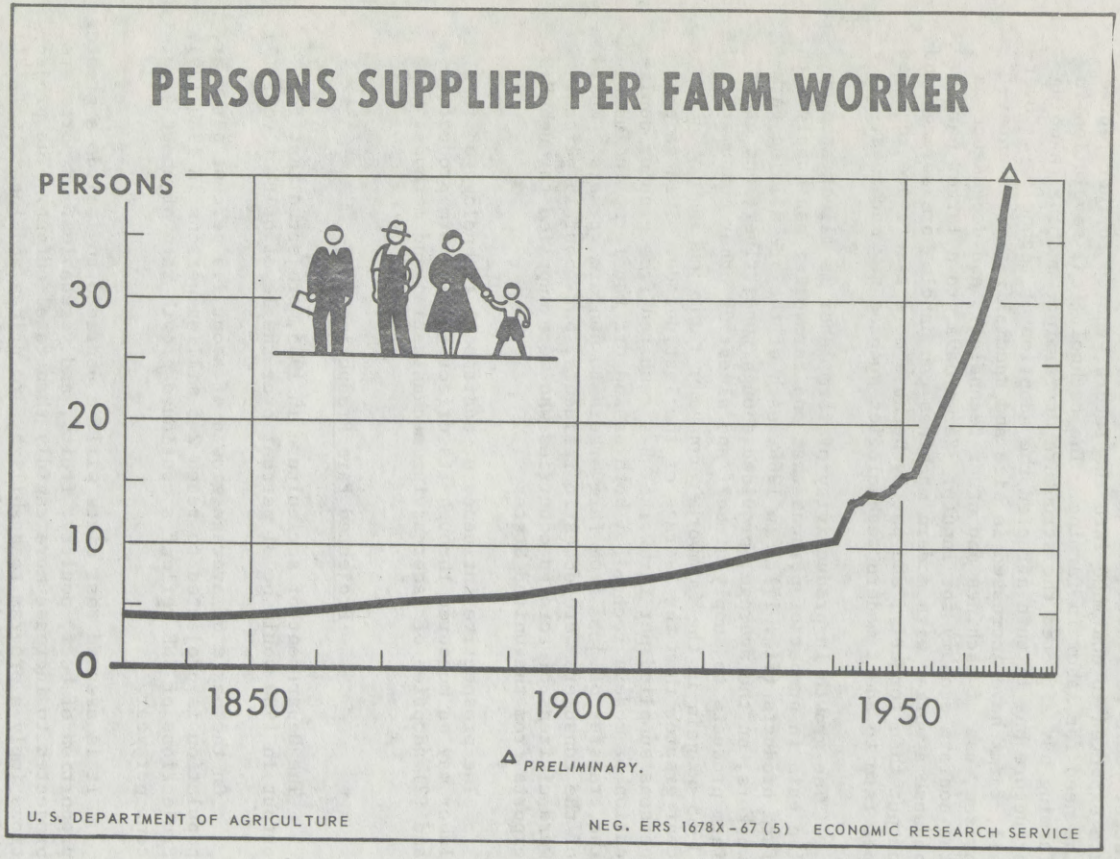
PERSONS SUPPLIED PER FARM WORKER
PERSONS
30
20
10
0
1850
1900
1950
△ PRELIMINARY.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 1678X-67 (5) ECONOMIC RESEARCH SERVICE

Figure 17

Crop output -- projected on the basis of demand assumptions, crop prices, and technology -- would increase by about 1.9 percent per year over the next 15 years, or 32 percent for the whole period 1965 to 1980 (table 7).

Table 7.--Farm production: Index numbers for selected years and projections for 1980 (1957-59 = 100)

Product	Av. 1949-51	Av. 1959-61	1965	Projected 1980	Percentage change 1965-80
					Pct.
Farm output	87	105	115	151	31
Livestock and livestock products	88	104	111	147	32
Crops	91	106	117	155	32

Source: Appendix table 2.

Figure 18 shows projections of total farm output in 1980 and of production of selected crops that use large numbers of workers. Production of cotton is projected to be 17 percent higher in 1980 than in 1965 (Appendix table 2). Fruit and vegetable production is projected to rise more rapidly, increasing 23 and 20 percent, respectively, during the same period. Largest production gains are expected for feed grains (44 percent); and oil crops, chiefly soybeans (45 percent). Most of the additional production will come from higher yields since the projected cropland harvested is about the same as in 1959-61.

Production of livestock products, responding to projected increases in demand, would rise slightly faster than population. Largest output increases are expected for beef and poultry. Production of hogs, milk, and eggs is projected to rise, but at a rate slower than population growth.

The substitution of machines and other production inputs for labor and land is one of the most dynamic features of the changes made in American farming in the last few decades. The process has not been simple. Adoption of mechanized and automated methods of farm production and other technology has resulted from the continual interplay of economic, physical, and social forces.

Some farm operations were mechanized more easily than others. Also, farm operators have accepted some technological changes more readily than others. This uneven rate of acceptance and use of innovations will continue, but eventual changes to more efficient methods of production are inevitable.

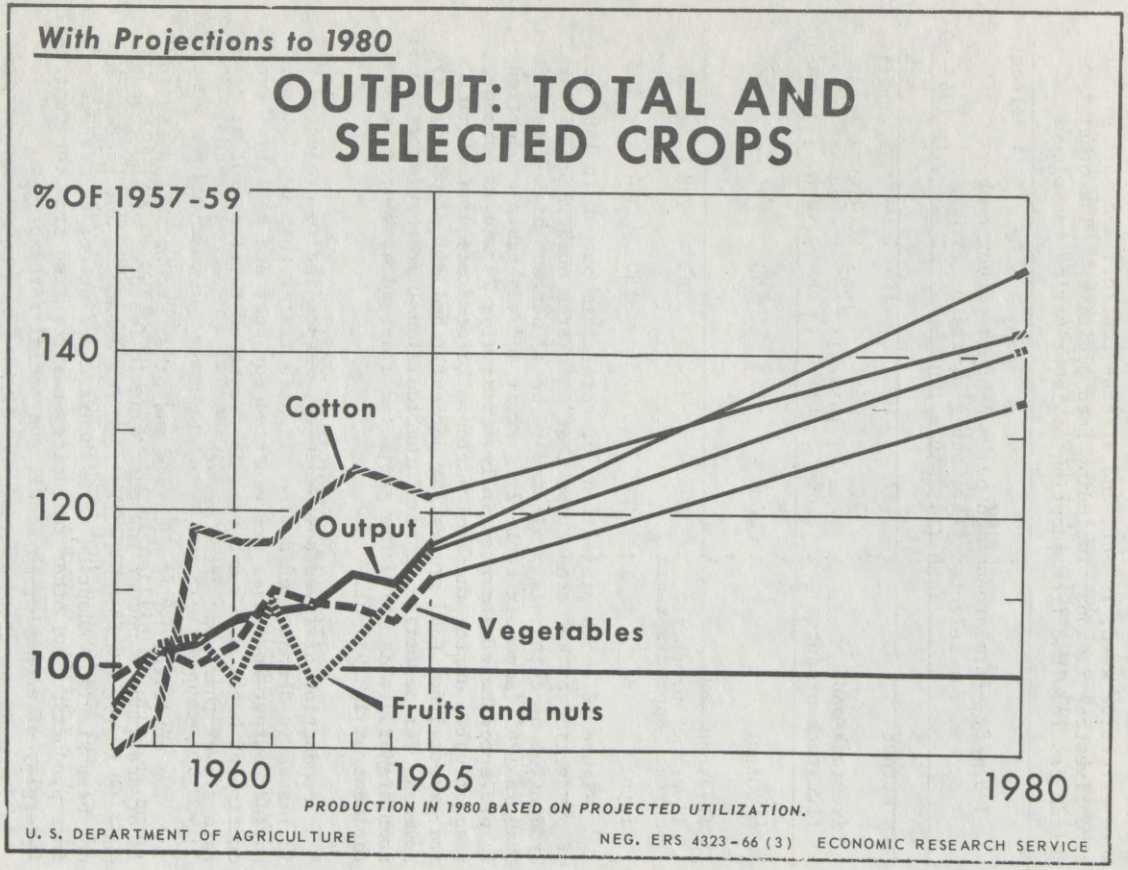
With Projections to 1980
OUTPUT: TOTAL AND SELECTED CROPS
% OF 1957-59
140
120
100
Cotton
Output
Vegetables
Fruits and nuts
1960
1965
1980
PRODUCTION IN 1980 BASED ON PROJECTED UTILIZATION.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4323-66 (3) ECONOMIC RESEARCH SERVICE

Figure 18

In 1965, the index of farm output per man-hour stood at 153 percent of the 1957-59 average. It is projected to reach 296 percent of the same base in 1980 (table 8 and fig. 19). About a third of the recent rise in farm output per man-hour is attributable to factors that have increased production, such as greater use of higher yielding hybrids and varieties of plants and animals; more effective weed, insect, and disease control; and more productive livestock rations, including feed additives. The other two-thirds has resulted from adoption of labor-saving techniques.

Table 8.--Farm production per man-hour: Index numbers for selected years and projections for 1980 (1957-59 = 100)

Product	Av. 1949-51	Av. 1959-61	1965	Projected 1980	Percentage change 1965-80
					Pct.
Farm output	60	114	153	296	93
Livestock and livestock products	69	114	154	288	87
Crops	60	113	150	304	103

Source: Appendix table 3.

The projected increase in farm output and the much greater increase in farm output per unit of labor indicate that about a third less labor will be used in 1980 than in 1965 (table 9). 5/ However, the reduction in use of labor attributable to adoption of machines will not be uniform among the farm enterprises or areas of the country.

Projected Labor Requirements

Livestock Production

Projections of continued improvement in labor productivity for livestock, coupled with projected increases in production, show that 2.2 billion man-hours of labor will be needed for livestock in 1980, compared with 3.1 billion in 1965. In other words, livestock production will require 30 percent less labor. The rate of mechanization and adoption of new technology in the livestock industry is likely to continue unevenly.

5/ Projections of production are divided by projections of production per unit of labor to obtain projections of labor input. A major advantage of projecting production per unit of labor is that it reflects the net effect of all factors affecting either farm production or labor input.

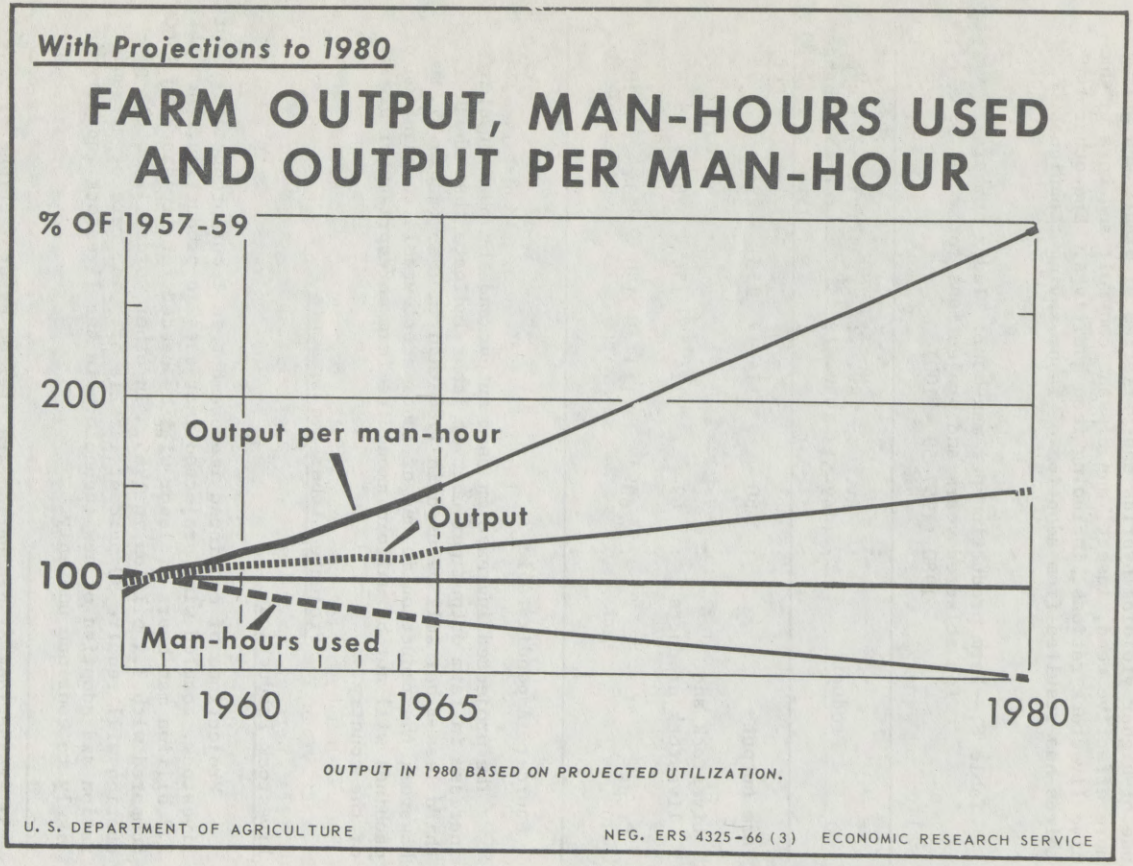
With Projections to 1980
FARM OUTPUT, MAN-HOURS USED AND OUTPUT PER MAN-HOUR
% OF 1957-59
200
100
Output per man-hour
Output
Man-hours used
1960
1965
1980
OUTPUT IN 1980 BASED ON PROJECTED UTILIZATION.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4325-66 (3) ECONOMIC RESEARCH SERVICE

Figure 19

Table 9.--Labor used for farmwork: Man-hours for all farmwork, livestock, and crops, selected years and projections for 1980

Enterprise or product	Av. 1949-51	Av. 1959-61	1965	Projected 1980	Percentage change 1965-80
	Mil.	Mil.	Mil.	Mil.	Pct.
All farmwork	15,520	9,866	7,976	5,467	-31
Livestock and livestock products	5,501	3,889	3,066	2,162	-29
Crops	7,317	4,588	3,798	2,500	-34

Source: Appendix table 4.

Production of broilers and turkeys, once a minor enterprise, has attained commercial status on many farms. Mechanical and automated methods of feeding and caring for poultry are now common practices. By 1980, production of poultry products per man-hour is projected to reach at least 2.3 times the 1965 level (Appendix table 3).

Milk cows traditionally have required more labor time than any other kind of livestock. But in recent years, widespread use of labor-saving equipment, larger herds, and handling of milk in bulk and with pipeline installations have drastically reduced labor requirements. In addition, improved breeding and more productive feeds and feeding methods have resulted in more milk per animal. Consequently, labor requirements per 100 pounds of milk produced declined 36 percent from 1950 to 1959. In terms of milk production per man-hour, time spent on milk cows was 60 percent more productive in 1965 than in 1957-59. If this trend continues, about 46 percent fewer hours of labor will be required for milk production, even with the increased production required in 1980 (Appendix table 4).

Improvement in production of meat animals per man-hour of labor has lagged behind that in other livestock production. Many producers of cattle, hogs, and sheep use tractor-mounted forks and scoops for feeding and for cleaning sheds and lots; but much handwork is still done. Modern feeding systems, such as self-fed and automatically-timed feed grinders and mixers and pheumatic feed distributors, usually involve considerable investment in new or remodeled buildings, power units, and equipment. With labor available, it has not been economical to invest in labor-saving systems. However, production of meat animals per man-hour is projected to reach 64 percent above the 1965 level in 1980. Such an improvement will mean an 11-percent reduction in man-hours required for meat production in 1980.

Crop Production

Future labor requirements for crops cannot be predicted with as much accuracy as for livestock. Development of hybrids and new varieties is more advanced and production is dependent on more factors than are involved in livestock. Even so, projections show that crop production will require about 34 percent less labor in 1980 than in 1965.

The growth of labor productivity in producing feed grains is projected to be greater than for any other group of crops. Corn yields are expected to average over 100 bushels per acre in 1980. This increased production per acre, and wider use of machines, such as the field picker-sheller, are expected to push production per man-hour to considerably above the 1965 figure. Comparable gains are projected for other feed grains. This means that in 1980 labor used in producing them will be about half that required in 1965, despite the marked increase in production.

Traditionally, cotton has required more labor than any other single crop. In 1965, about 6 percent of all farmwork in the United States was devoted to cotton production. However, labor requirements per acre are being reduced. Preharvest work averaged 22.5 man-hours per acre in 1959, and 20.7 man-hours in 1965. The reduction in labor for harvesting cotton has been even more pronounced, chiefly because of the change to mechanical harvesting (fig. 20). Between 1959 and 1965, changes in the method of picking cotton reduced labor from 40 to 15 man-hours per acre, despite the increase in yield from 461 pounds to 526 pounds of lint per acre.

In 1965, production, harvesting, curing, and marketing tobacco required about 12 percent of all work on crops in the Nation and 54 percent of that in the Appalachian Region, even though the crop accounted for only 5 and 42 percent, respectively, of total production. The rise in production of tobacco per unit of labor was less during the last several years than for any other crop, except fruits. This small gain was due chiefly to higher yields rather than to mechanization or other labor-saving techniques. Tobacco is expected to continue to resist conversion to machine methods, but some productivity gains are anticipated mainly because of increased yield. The crop is projected to total about 2,300 pounds per acre in 1980, compared with about 1,900 pounds in 1965.

The gain in fruit production per man-hour during recent years was less than for any other group of crops. Most fruits are still harvested by hand; less than 1 percent of total production was harvested with machines in 1965. Productivity of labor used for fruits is projected to continue to lag behind most other crops.

Citrus fruit is now picked by hand, but in Florida, the tree-shaker catching-frame method shows promise for harvesting grapefruit and oranges for processing. Mobile ladders and picking platforms are used to some extent to aid hand pickers in harvesting fresh fruit. Hedge pruning for low set of fruit and use of pallet boxes and forklifts for handling the fruit seem feasible.

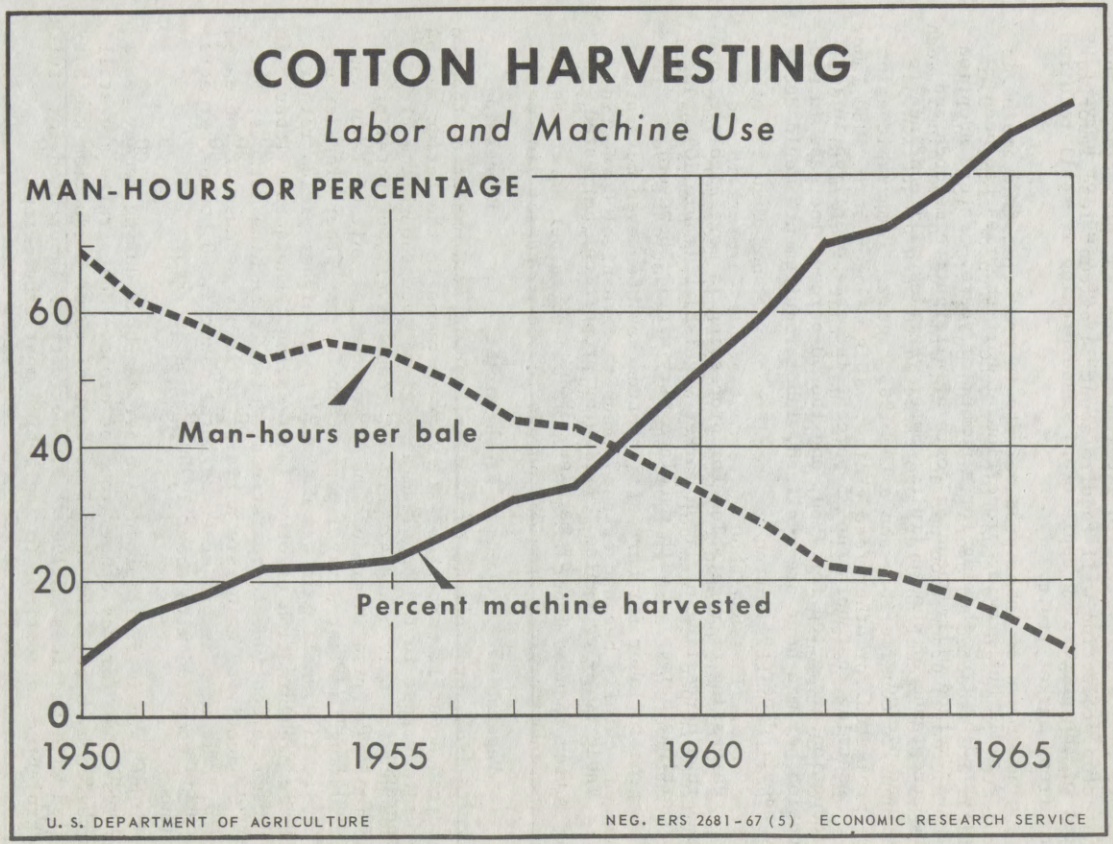
COTTON HARVESTING
Labor and Machine Use
MAN-HOURS OR PERCENTAGE
60
40
20
0
Man-hours per bale
Percent machine harvested
1950
1955
1960
1965
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 2681-67 (5) ECONOMIC RESEARCH SERVICE

Figure 20

Mechanization of the strawberry harvest now appears feasible.

Various kinds of grape harvesters are available, but costly cultural changes in the vineyard are needed to make them practicable.

The tree-shaking method is expected to be used for harvesting most of the processing apple crop. Hand picking is still required for fresh market fruit.

A small but growing proportion of tart cherries has been harvested by tree shaking for a number of years. Future adoption of this method will depend on costs of alternative methods and the acceptance of shaken fruit. Sweet cherries will continue to be hand picked.

Assuming that both the 25-percent increase over 1965 in fruit production projected for 1980, and the 50-percent increase in production per man-hour are realized, labor requirements would decrease by about 20 percent.

Harvesting of vegetables for processing is more highly mechanized than harvesting of fresh market vegetables (table 10). The proportions harvested with machines vary widely, however.

Table 10.--Vegetables: Estimated proportions harvested by machine, 1965

Vegetables	Fresh market	Processing
	Pct.	Pct.
Asparagus	0	1/
Beans, snap	5	70
Beans, green lima	5	90
Beets	1/	95
Brussels sprouts	1/	1/
Cabbage	1/	20
Carrots	90	90
Corn, sweet	5	90
Cucumbers	0	1/
Onions	25	25
Peas, green	1/	100
Spinach	80	95
Tomatoes	0	15
All	8	40

1/ Less than 5 percent.

Harvest of asparagus has been difficult to mechanize. Non-selective cutters are being used to a small extent in white asparagus. Selective, photo-electric eye machines are a few years away.

Harvesters have virtually replaced hand labor in picking snap and green lima bush beans. Acreages of pole beans, which are not particularly adaptable to mechanical harvest, are likely to decline.

Mechanical harvesters of cucumbers for pickling are being used in some areas. Costs appear to about equal hand picking. While more research and developmental work on the machines is needed, early adoption on a broad scale is expected.

Mechanization of harvest of tomatoes for fresh market is not yet possible, but it is predicted that in 5 years the technology will be available.

The arduous stoop-labor task of hand harvesting tomatoes for processing will soon be alleviated by mechanization. Determinate varieties have been developed that are adaptable to once-over machine harvesting. 6/ The mechanical method reduces costs about 40 percent below hand-picking costs (17). However, women are willing to work as sorters on the machines, but usually will not accept hand-picking jobs. In California, about 34,000 acres or 29 percent of the crop, was machine harvested in 1965. It is estimated that about 120,000 acres were machine harvested in 1966, and practically the entire crop will be harvested by this method in 1967.

In some areas, celery is harvested with "muletrains" which are really packing-sheds on wheels with conveyor belts that extend over several rows onto which workers place the cut bunches. Other vegetables also are or have been harvested with these behemoths, including sweet corn for fresh market and lettuce. For the latter crop, a mechanical selective harvester is still in the research and development stage.

Chemical control of weeds, insects, and diseases in potatoes is widely accepted. Sixty percent of the crop was mechanically harvested in 1965, and the proportion is expected to increase. Since the stony and hilly soils in the East will continue to inhibit mechanical harvesting; there will probably be a continued shift of acreage to the West.

6/ Determinate varieties are those on which nearly all the fruit ripens at one time.

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Farm Employment Projections for 1980 7/

If projections of farm output, farm production per unit of labor, and other indicated relationships materialize, average farm employment in 1980 would be about 3.6 million workers. This would constitute a 36-percent decrease from 1965. There would be an average of about 1 million hired workers, or about a third less than the 1965 annual average. The number of farm operators and unpaid family workers may decline to an annual average of about 2.6 million in 1980 from 4.1 million in 1965.

Decreases in farm employment are likely to occur in all regions, especially the Northeast Region and the three southern Regions, which are expected to experience declines varying from two-fifths to almost one-half. Most of the decline will come from continuation of large reductions in farm operator and family labor in the southern areas. The proportionate decline in hired workers in the South would generally be less than in other parts of the country.

As in 1965, farm employment in 1980 is expected to be highest in the Corn Belt, Lake States, and Appalachian Region. Farmwork in the Mountain States will continue to require the smallest number of workers.

The overall need for farm labor will be less in the years ahead, but workers with higher skills will be needed. Such jobs as the operation and maintenance of increasingly complex farm machines, and the proper application of agricultural chemicals with increasingly narrower tolerances, will require additional technical knowledge and judgment.

As measured over broad areas, the seasonality of employment of operators and family workers will continue to decline, while that of hired workers will continue to increase slightly.

7/ These projections are revisions of those in the chapter on Farmworkers in the Manpower Report of the President, March 1966 (52). The revisions are based on more recent and complete background data.

PART VI. FOREIGN ECONOMIC ASPECTS

Expiration on December 31, 1964, of P.L. 82-78, the law under which seasonal agricultural workers from Mexico (Braceros) were admitted, during the years 1951-64, had rather immediate effects upon the United States-Mexican payments balance. It may also have given an impetus to United States investment in the production abroad of some of the crops on which most foreign labor had been employed in the United States (table 11). Such

Table 11.--Foreign seasonal labor: Man-months utilized in leading crops, 1964 and 1965

Crop	Man-months		Percentage of all seasonal labor		Percentage used for specific crops	
	1964	1965	1964	1965	1964	1965
	Thou.	Thou.	Pct.	Pct.	Pct.	Pct.
Tomatoes	90.5	21.7	26.2	7.0	14.3	19.9
Citrus	69.1	14.2	21.6	4.1	10.9	13.0
Lettuce	67.8	.2	55.3	.2	10.7	.2
Cotton	65.2	---	3.7	---	10.3	---
Sugarcane	49.6	44.8	46.9	48.1	7.8	41.0
Strawberries	42.5	6.2	13.8	2.6	6.7	5.7
Sugar beets	31.9	---	19.9	---	5.0	---
Cucumbers	28.9	.2	27.4	.2	4.6	.2
Melons	18.4	---	28.4	---	2.9	---
Tobacco	14.9	6.2	1.9	6.2	2.4	5.7
Celery	14.4	2.7	32.4	6.9	2.3	2.5
Asparagus	11.5	1.2	19.2	2.4	1.8	1.1
Selected crops	504.7	97.4	12.1	2.8	79.6	89.3
All other	129.2	11.7	3.0	.3	20.4	10.7
Total	633.9	109.1	7.5	1.4	100.0	100.0

Source: Appendix table 5.

effects, however, can not be conclusively analyzed as early as 2 years after the event. Moreover, basic data in this field are not available. Thus, only the foreign production of certain competitive fruits and vegetables, rather than any American investment underlying such production, can be studied.

Since Mexico is by far the most important country of origin for United States imports of fruits and vegetables, the study of production trends abroad was limited to Mexico.

Bracero Earnings Offset Mexican Imports from the United States

The Bank of Mexico estimated that Braceros sent or brought home $31 million in 1963, and $29 million in 1964 (2, 8). American sources estimated the amount considerably higher. A dollar outflow of up to $60 million appears possible. The higher of the 2 American estimates, implying a still higher dollar outflow, may have made insufficient allowance for the fact that Braceros took home United States goods, as well as money (5). However, the termination of a program under which even $30 million a year flowed from the United States to Mexico is of some consequence in the context of United States-Mexican economic relations.

In 1964, and again in 1965, United States exports to Mexico amounted to about $1.1 billion and in 1966 to nearly $1.2 billion, compared with an average of $827 million from 1961 through 1963 with little annual deviation. Imports increased much less--from a 1961-63 annual average of $570 million to a 1964-65 average of $640 million and to $750 million in 1966 (table 12).

Thus, the annual United States trade balance with Mexico averaged $448 million during 1964-66, a significant increase over the $257 million dollar average which had been maintained from 1961 through 1963 with little annual deviation. Mexico tends to pay for the excess of United States exports to Mexico over United States imports from Mexico by entertaining United States tourists. United States tourists' expenditures in Mexico since 1960 have exceeded the trade balance. These expenditures have grown steadily since 1960 and reached $575 million in 1966. This United States payment liability, in turn, was partially offset by the expenditures of Mexican tourists in the United States. United States receipts from Mexican visitors traveling in the United States almost doubled from $226 million in 1960 to $436 million in 1966. The travel balance, however, has remained remarkedly constant with little year-to-year variation from the 1960-66 average of $152 million in favor of Mexico.

The combined trade and travel balance with Mexico is positive for the United States. From $220 million in 1960, it declined to an average level of only $100 million in favor of the United States during 1961-63 but jumped to an average level of $303 million during 1964-66.

Table 12.--Trade and travel balances: United States-Mexico, 1960-66

Year	Trade			Travel			Trade and travel balance combined
	U.S. exports 1/	U.S. imports 2/	Balance	Expenditures of U.S. travelers in Mexico	Receipts from Mexican travelers in U.S.	Balance	
	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.
1966	1,179	750	429	575	436	-139	290
1965	1,105	638	467	540	390	-150	317
1964	1,092	643	449	490	342	-148	301
1963	861	594	267	472	313	-159	108
1962	805	578	227	449	296	-153	74
1961	815	538	277	420	262	-158	119
1960	820	443	377	383	226	-157	220

1/ U.S. exports of domestic and foreign merchandise.
2/ U.S. general imports (valued at the Mexican export level).

Sources: (15, 26, 27, 28, 30).

If monetary savings Braceros take to Mexico are estimated between $30 million and $60 million a year, and corresponding amounts are deducted from the combined trade and travel balance, the result is substantially below $100 million for 1961, 1962, and 1963. By contrast, for 1964, the combined trade, travel, and Bracero balance was at least $241 million ($301 million minus $60 million) in favor of the United States; and for 1965, using the Mexican estimate of Braceros' take-home earnings of $12 million, this balance was $305 million in favor of the United States (1, 2).

Monetary and Investment Aspects

Mexico's balance of goods and services with all countries has deteriorated in recent years, although there was some improvement from 1964 to 1965, as shown by the following:

Year	Mil. dol.
1961	78
1962	211
1963	-25
1964	-174
1965	-128

Sources: (1, 2, 8, 48).

Mexico's gold reserves and short-term dollar holdings, as reported by banks in the United States, amounted to $861 million at the end of 1965, down $43 million from a year earlier, but up $53 million from the end of 1963 (55).

The extent to which the United States has contributed to the solution of Mexico's international payment problems is hard to judge from United States balance-of-payment statistics, since the interpretation of monetary and credit flows is complicated by the fact that the United States not only tends to lend to and invest in Mexico, but also performs banking services. Lending and investing tend to result in United States claims on Mexico; the performance of banking services includes receiving and holding funds for safe-keeping. Thus, the performance of banking services may generate United States liabilities to Mexico. From 1963 to 1964, the net short-term liability vis-a-vis Mexico (liabilities minus claims) reported by banks in the United States declined from $204 million to $91 million, in 1965 it further declined to $29 million, and in 1966 there was a net claim on Mexico of $135 million. This indicates increased American short-term lending in Mexico. Long-term movements of capital reported by banks in the United States amounted to a substantial increase in net claims (claims minus liabilities) from $311 million in 1963 to $486 million in 1964; but, during 1965 net long-term claims declined to $445 million, a somewhat surprising change; they declined further to $399 million in 1966 (55).

United States investment in Mexico has increased. United States firms and their affiliates report rising plant and equipment expenditures financed in the form of a capital outflow from the United States for direct investment in Mexico. Such expenditures were shown as $75 million in 1963, $126 million in 1964, $154 million in 1965, and $161 million in 1966 (18, 19).

Unfortunately, available data are not sufficiently specific to yield information on United States investment in the Mexican fruit and vegetable industry. There is some indication that investment has taken place at a heavier rate during the last few years than some time back; but no quantification of this has been possible, nor any differentiation between the year 1965 and the immediately preceding years.

Perhaps of special significance to United States-Mexican financial relations was the approval in June 1965 by the Agency for International Development (AID) of a request by the Government of Mexico for a $20 million loan to the Agricultural Guarantee Fund (Fondo de Garantia para la Agricultura, Ganaderia y Avicultura) of the Bank of Mexico for rediscounting agricultural loans. A similar loan of $20 million was made in 1962; but by mid-1965, these earlier funds were fully committed.

In September 1965, the International Bank for Reconstruction and Development granted a $25 million loan for the benefit of Mexican agriculture, also to be administered by "Fondo" (12).

Thus the bi-national financial implications of ending the Bracero Program were submerged in the total stream of adjustments in trade, tourism, investments, and short-term financing. Nevertheless, in the short run Mexico has lost and the United States has gained annual dollar earnings, estimated between $30 to $60 million--depending upon what assumptions are made about Bracero purchases in the United States.

Foreign Trade and Production Trends of Bracero Using Crops

From 1956 to 1966, total United States agricultural exports increased by nearly two-thirds, from $4.2 billion to $6.9 billion, while total United States agricultural imports increased only 12 percent. ($4.0 billion in 1956 and $4.5 billion in 1966) (37, 41). During the same period, imports of leading labor-intensive crops--tomatoes, strawberries, cucumbers, cantaloups, and watermelons--increased almost fivefold. Such imports amounted to $21 million in 1956 and to $100 million in 1966, an average annual increase of almost $8 million. From 1964 to 1965 these imports increased by $7 million, but from 1965 to 1966 they increased by $34 million (table 13 and figure 21).

Other leading labor-intensive crops, excluded from this aggregation, are: Cotton and sugar beets, the production of which has been substantially mechanized; sugarcane, the production of which is mechanized in Hawaii and Louisiana but still requires handcutting in Florida; asparagus, celery, and lettuce, three crops with negligible imports; tobacco, and citrus. The fresh fruit equivalent of citrus and principal citrus product imports rose from an annual average of 68 million pounds during 1956-62 to about four times that amount during the 2 poor crop years, 1963 and 1964, but dropped sharply thereafter (table 14).

Exports of the leading labor-intensive crops--tomatoes, strawberries, asparagus, lettuce, celery, cucumbers, watermelons, and cantaloups--increased from $49 million in 1956 to $60 million in 1964 and to $61 million in 1966. The fresh fruit equivalent of citrus and principal citrus product exports dropped from 1.8 billion pounds in 1956 to 1.2 billion pounds during each of the 2 poor crop years, 1963 and 1964, but recovered to 1.4 billion pounds in 1965 and 1.5 billion pounds in 1966.

Table 13.--Imports and exports: Labor-intensive crops or products, 1956-66

Year	Imports 1/		Exports
	Total	From Mexico	
	Mil. dol.	Mil. dol.	Mil. dol.
1966	100.4	81.1	61.0
1965	65.9	49.9	60.5
1964	59.0	42.9	59.9
1963	47.8	33.0	55.9
1962	44.0	28.6	53.4
1961	39.4	21.6	49.8
1960	46.0	30.6	47.3
1959	35.6	25.9	45.1
1958	36.1	24.3	50.0
1957	20.5	11.8	52.3
1956	20.7	10.8	48.6

1/ Asparagus, celery, and lettuce imports excluded as negligible (aggregate value $0.2 million in 1965).

Source: Appendix tables 6, 7, and 8.

Table 14.--Imports and exports: Principal citruc products, 1956-66

Year	Exports 1/	Imports 2/
	Mil. lb.	Mil. lb.
1966	1,483	99
1965	1,371	136
1964	1,190	293
1963	1,238	261
1962	1,557	71
1961	1,550	62
1960	1,422	102
1959	1,461	70
1958	1,355	57
1957	1,720	34
1956	1,786	81

1/ Oranges and tangerines, grapefruits, lemons, and limes plus fresh fruit equivalent of orange juice and grapefruit juice.

2/ Oranges plus fresh fruit equivalent of orange juice and lemon juice.

Source: (28).

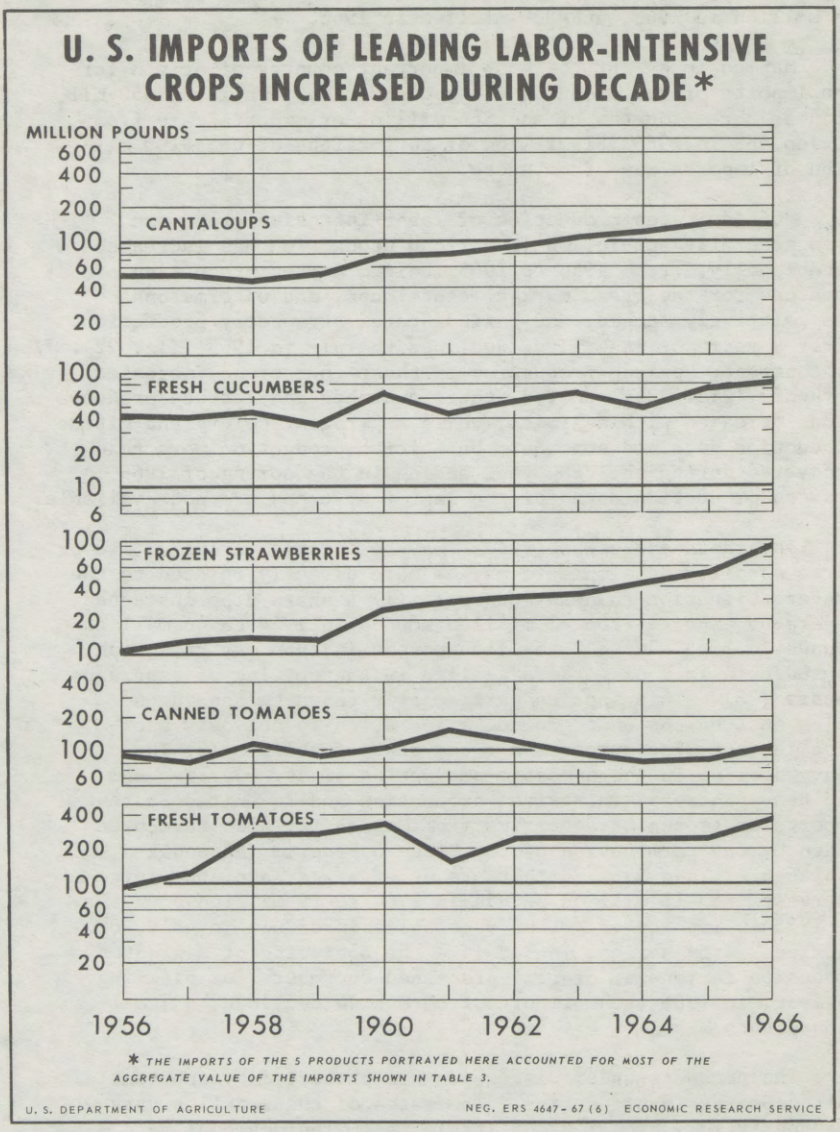
U. S. IMPORTS OF LEADING LABOR-INTENSIVE CROPS INCREASED DURING DECADE*
MILLION POUNDS
600
400
200
100
60
40
20
CANTALOUPS
100
60
40
20
10
6
FRESH CUCUMBERS
100
60
40
20
10
FROZEN STRAWBERRIES
400
200
100
60
CANNED TOMATOES
400
200
100
60
40
20
FRESH TOMATOES
1956
1958
1960
1962
1964
1966
* THE IMPORTS OF THE 5 PRODUCTS PORTRAYED HERE ACCOUNTED FOR MOST OF THE AGGREGATE VALUE OF THE IMPORTS SHOWN IN TABLE 3.
U. S. DEPARTMENT OF AGRICULTURE
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Figure 21

In 1956, the United States exported $28 million more of these products, other than citrus, than it imported. Since then, the relationship between imports and exports has changed drastically; the net import position was $1 million in 1964, $5 million in 1965, and $39 million in 1966.

Mexico is by far the most important country of origin for the imports of the products under discussion. In 1965, $50 million or three-fourths of the $66 million of imports came from Mexico and in 1966 $81 million or four-fifths of the $100 million of imports came from there.

United States production of labor-intensive crops has been generally stable, while Mexican production has increased phenomenally. From 1956 to 1965, United States production of tomatoes for the fresh market, cantaloups, and watermelons was relatively stable, and United States strawberry production, after 9 years of stability, declined sharply in 1965 (fig. 22). 7/ By contrast, Mexican production of these four crops increased markedly (fig. 23). United States cucumber and lettuce production increased within limits, while asparagus, celery and citrus production declined somewhat; but citrus production more than recovered during the crop year ending in the spring of 1966. Mexican production data for the last four crops are not available.

Asparagus and strawberries, may be "problem crops". Two or three specific developments may be more directly related to the Bracero situation than any others: (1) A sharp drop in canned asparagus exports from 62 million pounds in 1964 to 46 million pounds in 1965 and to 29 million pounds in 1966 may have been caused by a lack of workers skilled in the cutting of asparagus spears (28). This applies particularly to white asparagus which must be cut underground, a job which is not only back-breaking but also requires a great deal of skill. (2) The heavy decline in the domestic production of strawberries and the heavy increase in Mexican production and in United States imports of frozen strawberries from Mexico may also have been aided by the termination of the Bracero Program (Appendix tables 6, 7, and 9). Furthermore as of a year ago, the large increase from 11 million pounds in 1964 to 19 million pounds in 1965 in imports of "other vegetables in brine, in salt, or pickled," from Mexico, looked like the beginning of a great expansion in imports of semi-processed cucumbers for pickling. However, in 1966 these imports from Mexico declined to 7 million pounds.

The products under discussion are protected by substantial United States import duties. The rates of these duties vary seasonally for several crops (table 15). The seasonal rate differentiation protects United States growers during their principal production and marketing season, and gives a break to consumers during the domestic off-season.

7/ Also see Appendix table 9.

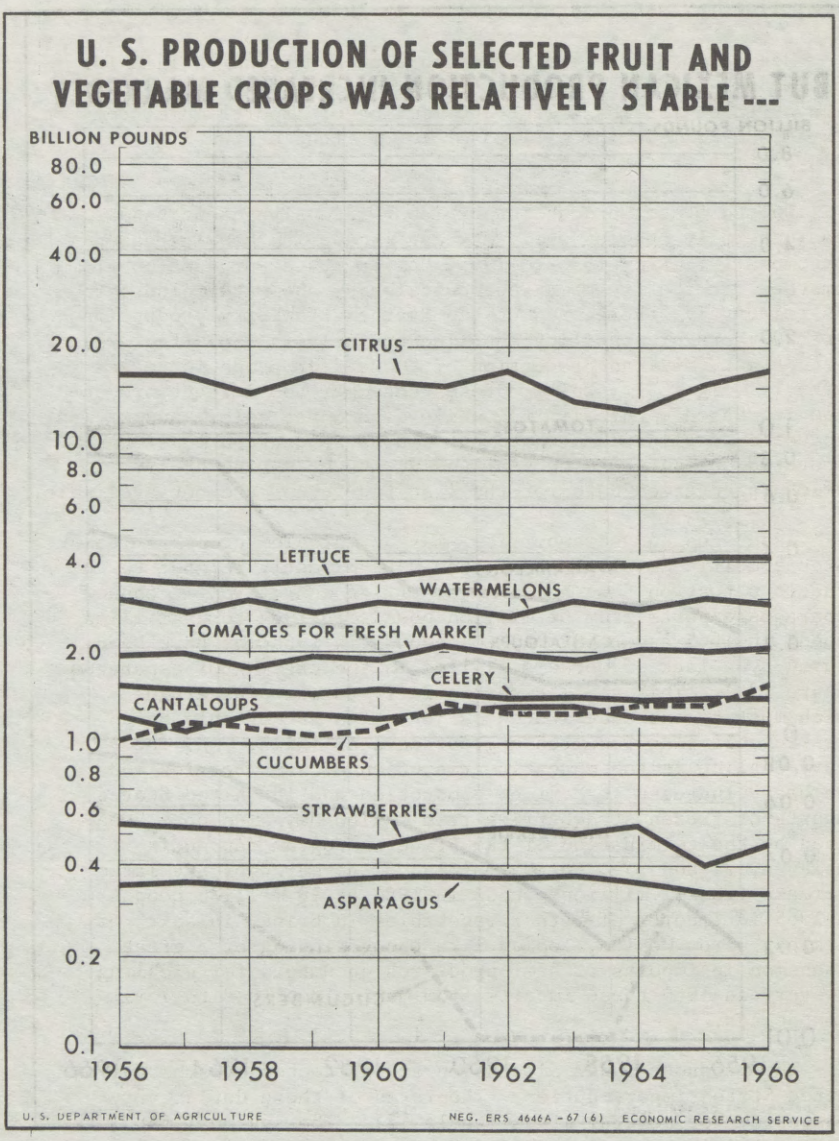
U. S. PRODUCTION OF SELECTED FRUIT AND VEGETABLE CROPS WAS RELATIVELY STABLE ---
BILLION POUNDS
80.0
60.0
40.0
20.0
10.0
8.0
6.0
4.0
2.0
1.0
0.8
0.6
0.4
0.2
0.1
CITRUS
LETTUCE
WATERMELONS
TOMATOES FOR FRESH MARKET
CELERY
CANTALOUPS
CUCUMBERS
STRAWBERRIES
ASPARAGUS
1956
1958
1960
1962
1964
1966
U. S. DEPARTMENT OF AGRICULTURE
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Figure 22

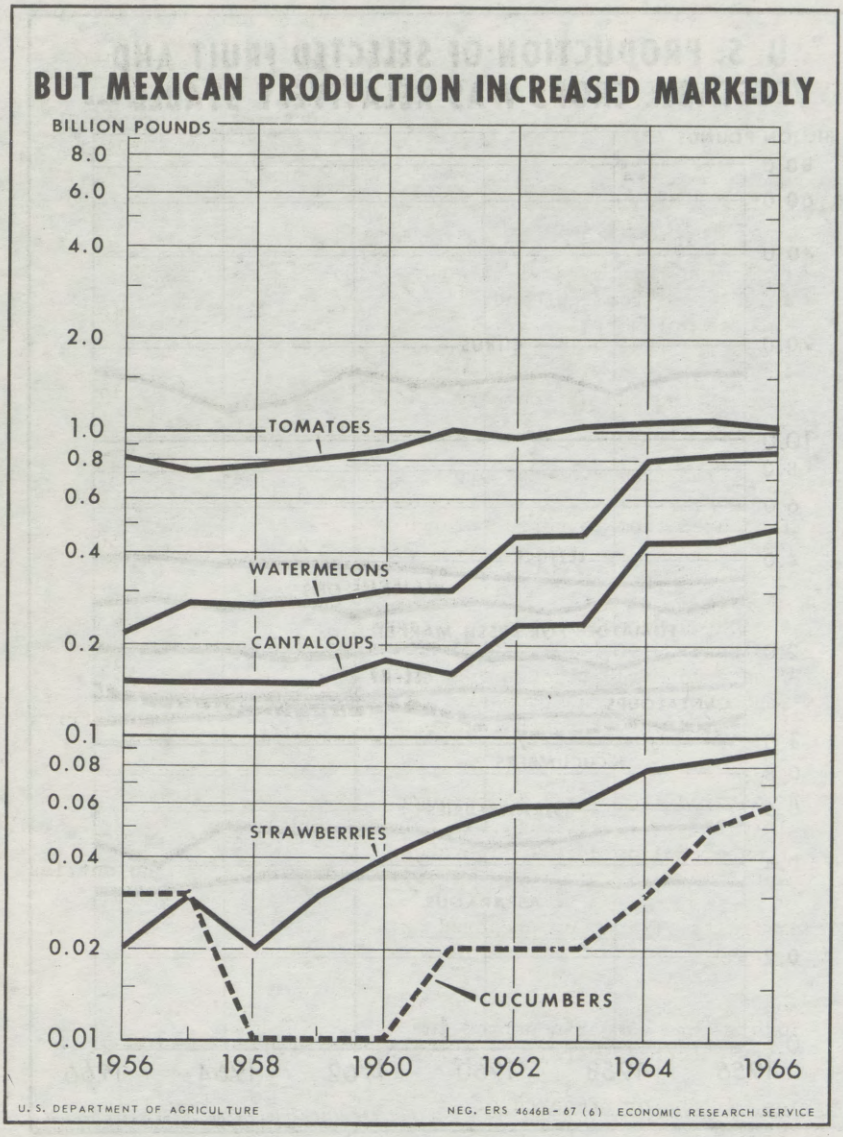
BUT MEXICAN PRODUCTION INCREASED MARKEDLY
BILLION POUNDS
8.0
6.0
4.0
2.0
1.0
0.8
0.6
0.4
0.2
0.1
0.08
0.06
0.04
0.02
0.01
TOMATOES
WATERMELONS
CANTALOUPS
STRAWBERRIES
CUCUMBERS
1956
1958
1960
1962
1964
1966
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4646B-67 (6) ECONOMIC RESEARCH SERVICE

Figure 23

Table 15.--Import duties: Rates for selected products, 1965

Crop	Rate of duty	Calculated rate of duty relative to Mexican imports 1965
	Cents per lb.	Percent of value
Vegetables, fresh, chilled, or frozen		
Tomatoes:		
If entered from March 1 through July 14 or from September 1 through November 14	2.1	19
If entered from July 15 through August 31 or from November 15 through the end of February	1.5	14
Lettuce:		
If entered from June through October	0.85	no entries
If entered from November through May	2.0	50
Cucumbers:		
If entered December through February	2.2	30
If entered March through June or September through November	3.0	44
If entered July through August	1.5	no entries
Celery:		
If entered from April 15 through July 31	0.5	3
If entered from August 1 through April 14	1.0	no entries
Citrus fruits, fresh, or prepared or preserved		
Oranges:		
(Other than mandarin packed in airtight containers)	1.0	21
Berries, fresh, or prepared or preserved		
Strawberries, fresh or in brine:		
If entered between June 15 and September 15	0.5	no entries
If entered between September 16 and June 14	0.75	5

-Continued

Table 15.--Import duties: Rates for selected products, 1965--Continued

Crop	Ad valorem duties
	Pct.
Strawberries, frozen	14
Melons, fresh, or prepared or preserved	
Cantaloups:	
If entered from August 1 through September 15	20
If entered at any other time	35
Watermelons:	20
Other Melons:	
If entered from December through May	17.5
If entered at any other time	35
Melons, prepared or preserved	35
Asparagus, fresh (Classified as "Vegetables, fresh, chilled, or frozen, other")	25
Cucumbers, in brine or pickled (Classified as "Vegetables, packed in salt, in brine, or pickled, other")	12

Sources: (28, 54).

PART VII. FARM LABOR PROGRAMS, POLICIES, AND RESEARCH NEEDS

The Senate Committee on Appropriations of the 89th Congress, 1st session, recognized the existence of "...a large void in the economic and statistical data upon which our farm labor policies are based," and said, "this should be corrected at the earliest possible date." The Department of Agriculture agrees with the Committee, and would add that the time is at hand for the development of more comprehensive farm manpower policies and programs than we now have.

Current Programs

Current programs include recruitment efforts undertaken by the Department of Labor through its Federal and State Employment Services. Those primarily aimed at young people were Project Growth (in 1965) and the Youth in Summer Agricultural Employment Program. Intensive efforts also have been made to recruit more American Indians for farmwork, and recruitment of Puerto Rican workers has been expanded. Some progress has been made in employment of local workers by providing transportation (new or expanded day-hauls) and by providing longer-term employment. This involves the cooperation of growers in facilitating transfer of workers from completed activities to crop areas needing labor. In 1965, to meet the problems associated with termination of P.L. 82-78, mobile teams of Employment Service officials contacted employers to determine their labor needs and to develop job orders. These teams then developed and coordinated area programs to locate potential supplies of workers, to provide them with information on available farm jobs, and to facilitate hiring and transportation arrangements.

Under the Annual Worker Plan, the Federal-State Employment Service helps to assign migratory agricultural crews to employers in an orderly way. Efforts are made to arrange successive job referrals for the migrants to minimize periods of joblessness. Changes in schedules are also arranged when unforeseen delays occur because of changes in timing of crop activities, the weather, the size of crews, etc.

Individual growers and associations of growers or their representatives also do extensive recruiting in their own States and in other States to obtain needed workers.

One of the important lessons from the 1965 recruitment efforts has been that workers cannot be moved about the country to meet whatever labor demands may occur. Even though they respond voluntarily to recruitment efforts, workers often do not adjust readily to new surroundings and types of work.

Policy and Research Needs

In his book, Employment, Unemployment, and Public Policy, Seymour Wolfbein discussed the elements of an overall active manpower policy (56). These elements are directly pertinent, or can be adapted, for the formulation of a statement on manpower policy focusing specifically on hired farmworkers. It is recognized that much consultation is needed with Members of Congress, Federal and State agencies, research people at the universities and elsewhere, and representative farm operators and farmworkers to formulate such a statement. It is also expected that the National Advisory Commission on Food and Fiber, which is making an extensive study of agricultural problems and policies, will have views on the problems of hired farm labor.

General policies for dealing with specific agricultural problems are discussed below, and examples are given of research and data needs for development of more definitive programs.

It should be noted that most of the additional statistics needed to satisfy these research and data needs can be obtained without setting up new systems for collecting data. They can be gathered by existing facilities, or be gleaned from program data of various agencies within the Department of Agriculture, the Social Security Administration, the Bureau of the Census, or other agencies. Also, the additional data required for policy formulation will be useful for many other purposes.

Manpower Information

Policy

Detailed information should be available on the demands for agricultural workers for responsible decision making by both growers and workers. The anticipated supply of workers from usual sources should be known well enough in advance of labor needs so that other sources may be tapped if needed.

Detailed information should also be available to policy-makers so that alternative programs and policies may be appraised prior to their implementation.

Needed Research

Although the overall need for farm labor is declining, at the same time labor is becoming a more critical factor in certain types of farming. As the economy approaches full employment, farmers must compete in the general labor market for manpower at general labor market prices. With more concentrated and specialized agricultural production, labor becomes very critical during the planting and harvesting periods. With increasing use of machines and other complex

labor-saving and/or yield-increasing technologies, a higher quality of worker is needed to meet both year-round and seasonal labor requirements. The dramatic change in agricultural production in recent years necessitates a comprehensive study of the changes in the farm labor market and its interrelationships with other farm inputs.

Research is needed in several different, but closely allied, areas. Some of the research should yield immediate information bearing on questions or problems that are of critical concern. Long term research in depth is also needed so that policy and program agencies may be kept abreast of the current impact and future implications of changes occurring in the needs for and supply of agricultural labor in different types of farming and parts of the country.

One of the most pressing needs in the field of farm labor is for data for areas smaller than those provided by most current national surveys. In considering the following examples of specific types of information needed for policy purposes, and for other uses, the urgent need for data by States, and areas within States, should be kept in mind.

Currently, several agencies collect and publish data on numbers and characteristics of farmworkers. A description of these statistical series, their concepts, estimating procedures and methods, geographic detail, and frequency of publication, is too lengthy to include here, but it is recognized that all have limitations for current and future information purposes (21).

The lack of adequate data on farm labor requires a benchmark study that will furnish basic information by States and major production regions. Through a field survey, information should be obtained on structural changes in agriculture that affect employment; characteristics of farms and levels of mechanization; use of labor, by types and seasonal demand, including custom and contract work; sources of regular and supplemental workers; kinds of work to be done and skills required; rates of pay and nonmoney compensation; and general labor problems as viewed by producers. This study should encompass information from workers or potential farmworkers on their education, skills, earnings, views on farm employment, and other pertinent matters.

Such a survey would provide part of the background data for study and analysis of several related problems in the general area of farm labor. One such study should relate to methods for reducing the seasonality of farm labor needs. Currently, mechanization and other practices are disrupting seasonal work patterns, both by shortening work periods or by completely eliminating the need for workers for an operation that formerly fitted into a summer work pattern. Studies should be made on ways of working out new labor supply patterns, and alternative sources of employment for workers.

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In addition, improved data are needed, on a current and continuing basis, on farm employment and hours worked by farm operators, unpaid members of their families, and hired workers, to develop better information on labor input in agriculture. These data, coupled with information on farm wage rates, would provide better measurement of labor costs in relation to other farm production costs. Such data would indicate current and prospective capital-labor substitution which is likely to cause labor displacement or unemployment. Data are needed for farms of different types and sizes, in considerable geographic detail.

The use of unit requirements in farm labor and farm management research has a long history. Most data of this type have been collected by State Agricultural Experiment Stations. Currently, however, few resources are devoted to collection and analysis of such data, but because of rapid changes in farm production methods, more resources should be devoted to collection of this type of data. Data should be developed primarily for enterprises which require large numbers of workers and for new and prospective technology that results in labor displacement.

Currently, the USDA Statistical Reporting Service and USDL Bureau of Employment Security collect data on farm wage rates; however, there are significant weaknesses in the data. Urgently needed improvements can be accomplished by (1) making larger and more inclusive sample surveys; (2) obtaining wage rate information from respondent farms rather than on a locality basis; (3) including piece-rates, as well as time rates; (4) obtaining data on characteristics of farms, such as type, size, or economic class, labor utilization class, and color and tenure of the operator; (5) including characteristics of workers such as age, color, sex, length of employment, and migrancy; (6) obtaining data on perquisites or fringe benefits; and (7) collecting data on total expenditures for labor. Additional resources for collecting farm labor data were provided by the Agricultural Appropriations for Fiscal Year 1967. With these funds the Statistical Reporting Service is initiating a program to improve the data available concerning farm employment and wage rates.

Constructive action designed to raise farm wage rates must be based on accurate and unbiased data in regard to the earnings of piece-rate workers, as well as other workers, ability of farmers to pay higher wages, and other related factors.

To determine yields for piece-rate work per hour requires information on total earnings and hours worked and on the piece rates themselves. Farm operators ordinarily do not keep records which show the wage payments to piece-rate employees and the total hours they worked.

There are several important exceptions, however. Farm groups that have started voluntarily to maintain such records include:

(1) Citrus growers in Florida: A guaranteed hourly wage of at least $1.50 in 1965 called for conversion of piece-rate earnings into hourly averages on a bimonthly basis.

(2) Citrus growers in California: Piece rates calculated to yield an average of $1.75 per hour, necessitate records showing both hours and piece-rate earnings per worker.

(3) Associations which formerly handled imported workers: (Some of these have become labor management associations.) Their operations are not uniform, but they keep records as to the time and output of the workers they furnish to their members.

Some employers of farm labor are required by law to maintain records which show wages paid and hours worked. They include growers qualified to use imported labor, employers of imported labor in some States, crew leaders registered under the Federal Crew Leader Registration Act who pay their own workers, crew leaders liable for Social Security payments for workers, and labor contractors in California.

It is possible that research workers could piece together the foregoing materials to meet data needs for specific crops or areas. Generally, however, broader coverage will be needed. Such data were collected for the wage stabilization programs during World War II by the U.S. Department of Agriculture by means of sample surveys in the major piece-rate areas of the United States and published in a series of 21 reports. Data from these surveys are now too old to be directly useful.

The Economic Research Service, in cooperation with the Statistical Reporting Service, currently has underway an experimental study (which will be expanded and continued) of piece-rate workers based on special questions added to the 1966 and 1967 June Enumerative Survey. Since the earnings and hours data unavoidably relate to a week in May--when relatively few workers are employed in operations where piece rates are common--the results will be limited.

Information on piece rates, hours of work, and total earnings, however, is not adequate for determining the equitability of piece-rate earnings. Data on productivity of workers by age, sex, experience, skills, and other characteristics, under variable work conditions for specific areas and operations are also needed. Output per worker tends to increase with improvements in yields, field conditions, varieties produced, and production techniques.

To measure adequately the relationship between hourly earnings of piece-rate workers, data on earnings, hours, etc., may be required on any or all of the following: (1) Various types of workers--for example, adult males and females, youth, imported and domestic workers, city and rural workers; (2) workers with different degrees of experience, training, or skill--

for example, inexperienced asparagus cutters as compared with those who have had special training; (3) producing areas in various parts of the country--for example, cucumbers in Michigan, North Carolina, and Texas; (4) different crops as a whole or in specific areas--for example, strawberries as compared with tomatoes in Florida; (5) variable yield and field conditions--for example, high-yield fields as compared with marginal fields; (6) variations in rates and methods of payment--for example, $1.00 a crate as compared with $0.60 an hour plus $0.30 a crate for picking strawberries.

Both the Departments of Agriculture and Labor have field staffs which can conduct surveys to obtain such information.

Information should be obtained regularly on the employment and earnings of various classes of workers, including work on their own farms, on other farms, and nonfarm work; these data will provide the basis for up-to-date estimates of the extent of improvement, if any, in the income situation of these groups. These data will also facilitate estimates of the extent of underemployment among farmworkers in comparison with that among nonfarm workers of similar age, sex, color, education, and other relevant characteristics.

There is a serious lack of information on American investment in the growing and processing of labor-intensive fruits and vegetables abroad. The Office of Business Economics, Department of Commerce, publishes data on American direct investments abroad in enterprises manufacturing food products, by major World areas; these data do not permit conclusions, however, with respect to the labor-intensive crops discussed in this report. More specific statistical data collection from the principal U.S. investors in the growing and processing of such crops abroad is possible and would yield the desired information. Crop production in foreign countries is another area in which available statistics are inadequate. Data are often not available or are of questionable reliability.

Some of the decrease in farm labor has resulted from the transfer of jobs from farms to nonfarm firms which supply production inputs to farmers. The extent of this transfer, and the additional transfer that may be expected in the future, is not known. The size of the labor force engaged in processing, transporting, and marketing farm products needs to be determined more accurately. Interrelationships among these three groups of businesses should be investigated to determine how and to what extent favorable or unfavorable conditions in one affect the others, and to determine their relationships with agricultural production and labor changes.

Capital substitution for labor continues to be one of the major forces operating in today's agriculture. Projected mechanization and other technological practices will have impacts on the demand for workers, generally lessening the need for farmworkers. However, these changes will also increase the

need for a more dependable labor force with higher skills. Studies should place emphasis on keeping current an evaluation of various types of mechanization in different crop and livestock operations and associated effects on total and seasonal labor needs and patterns. Studies are needed immediately on the feasibility of further mechanization of harvesting citrus and other fruits, vegetables, sugarcane, and tobacco, and of work in dairy and other livestock enterprises.

Government programs and policies, both agricultural and general, have important influences on the supply and demand for farm labor, and on the working conditions of farmworkers. Programs provided for by legislative action require continuous study and evaluation to determine their impact on the producer and on workers; on consumer costs and consumption patterns; and on regional changes in production and employment associated with policies and programs.

Communication problems are an important deterrent to finding an adequate supply of farmworkers in many localities. Studies should be made to determine methods by which information concerning the availability of farmwork can reach workers who do not customarily contact formal information services.

Manpower Development

Policy

Workers should be given every opportunity consistent with individual desires and skills to develop their highest occupational potential within or outside agriculture. Basic education should be improved and special training programs provided to develop skills for higher levels of agricultural work as well as for nonagricultural work. Such programs should be tailored to meet special needs of workers displaced by mechanization, farm programs, and the like.

Needed Research

A study needs to be made of the role of education and training as a means of alleviating the employment and income problems of farmworkers, as well as other low-income groups. Basic studies are needed to determine attitudes, values, sources and types of motivation, and environmental factors affecting the interest and activities of youths and adults in learning or improving skills for both agricultural and nonagricultural work. The extent to which programs such as those under the Manpower Development and Training Act are being utilized to assist farmworkers needs to be studied, as does the effectiveness of the programs for improving the employability of workers.

Manpower Matching and Mobility

Policy

New measures need to be developed to provide workers with more stable employment and more adequate incomes. Attempts should be made to reduce, as much as possible, the need for migratory seasonal workers, and to regularize the employment of those needed. Through work-simplification and other procedures, jobs should be designed to fit the skills and capabilities of the work force available. Steps should be taken to ease the transition from agricultural labor for workers who are displaced for one reason or another.

Needed Research

An experimental research program is needed to develop systems, adapted to the agricultural conditions of specific areas, through which growers working together or with nonfarm employers can provide work over a substantial part of the year for their agricultural workers. A part of the program should be to investigate the extent to which more adequate income from fuller employment leads to a more competent and skilled labor force, and to reduced migrancy.

Along with the studies of technological development, there should be studies of alternative programs that may be initiated to assist workers who are displaced by machines. Labor mobility demonstration projects, with accompanying research to measure their effectiveness, are needed in agricultural areas as well as in nonfarm places.

Research is needed on the extent to which government assistance can be provided to help regularize employment, find new employment opportunities, etc., for those workers who need and want additional work.

Manpower Standards

Policy

Economic and social protections normally available to nonfarm workers should be extended to agricultural workers insofar as is feasible, both to improve the situation of the workers and as a means of insuring an adequate supply of workers to produce the food and fiber needed by the growing population.

Needed Research

The 1966 Manpower Report of the President indicated that:

"The national objective should be to achieve for farmworkers the kind of protection which has come to be accepted for nonfarm manpower. More specifically:

"1. Unemployment insurance should be extended to farm wage workers, beginning with those on larger farms...

"2. Further consideration should be given to ways of improving the protection of farmworkers under the Old Age, Survivors, and Disability Insurance program...

"3. Protection of farmworkers under State workman's compensation laws is another subject which should receive active consideration...

"4. Careful consideration should be given to the need for amending the Fair Labor Standards Act to provide minimum wage protection for farmworkers...

"5. Consideration should also be given to legislation for protecting the rights of farmworkers to form and join unions and to bargain collectively with their employers.

"6. The problems involved in public assistance for people who engage in seasonal farmwork also need intensive study..." (52).

Investigation needs to be made of the possible costs and benefits to farmers, workers, and the public if such legislation is enacted or coverage expanded.

General working conditions also have an influence on the satisfactory supply and performance of farm labor. Some farm operators have adopted personnel and management techniques to encourage and maintain a dependable source of high quality farm labor. Research should review the accomplishments in this area, in both farm and nonfarm employment, to establish some basic criteria for farm operators to use in improving working conditions and relationships with their workers.

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APPENDIX TABLES

Appendix table 1.--Employment: Farm-related industries, 1950 and 1964 1/

Farm-related industries	Workers		Change, 1950 to 1964	
	1950	1964	Workers	Percentage
	Mil.	Mil.	Mil.	Pct.
Total	11.5	12.1	0.6	5
Farm production equipment and supplies 2/	1.4	1.4	0	0
Final manufacture 3/	.4	.3	-.1	-25
Other 4/	1.0	1.1	.1	10
Processing and marketing farm products 5/	10.1	10.7	.6	6
Food	4.9	5.4	.5	10
Nonfood 6/	5.2	5.3	.1	2

1/ Estimates are of direct employment only; for example, workers engaged in producing machine tools used in tractor manufacturing plants are not included as farm supplies workers.

2/ Estimates for 1950 based chiefly on data in the input-output model summarized in (47). Extended to 1964, based on data regarding farm production inputs.

3/ Data for 1950 in (45). Estimates for 1964 extrapolated, based on changes in farm use of the items.

4/ Includes workers in wholesaling and distributing farm supplies and in farm service businesses.

5/ Unpublished estimates of workers engaged in marketing products originated on U.S. farms; prepared in Marketing Economics Division, ERS. For basis of estimates, see (44). However, the present table also includes workers engaged in marketing commodities exported and sold to the Armed Forces. In addition, the estimates are expressed as numbers of workers actually employed rather than as full-time equivalent workers.

6/ Wearing apparel and other textile products, leather articles, tobacco products, and alcoholic beverages.

Sources: (44, 45, 47).

Appendix table 2.--Farm production: Index numbers, selected years and projections for 1980
1957-59 = 100

Item	Averages		1965	Projected 1980	Percentage increase 1965-80
	1949-51	1959-61			
					Pct.
Farm output	87	105	115	151	31
Livestock and livestock products 1/	88	104	111	147	32
Meat animals 2/	89	105	110	160	45
Dairy products 3/	93	101	104	119	14
Poultry and eggs 4/	78	107	122	152	25
Crops 5/	91	106	117	155	32
Feed grains 6/	79	105	113	163	44
Hay and forage 7/	88	101	111	123	11
Food grains 8/	88	106	117	162	38
Vegetables 9/	93	104	112	134	20
Fruits and nuts 10/	99	104	115	141	23
Sugar crops 11/	81	108	139	153	10
Cotton 12/	112	117	122	143	17
Tobacco	122	112	110	148	35
Oil crops 13/	66	108	155	225	45

1/ Excludes horses and mules; includes clipped wool, mohair, honey, and beeswax. These items are not included in the separate groups of livestock and products shown. 2/ Cattle and calves, sheep and lambs, and hogs. 3/ Butter, butterfat, wholesale milk, retail milk, and milk consumed on farms. 4/ Chickens and eggs, commercial broilers, and turkeys. 5/ Includes farm gardens, hay seeds, pasture seeds and cover-crop seeds, and some miscellaneous crop production not included in separate groups of crops shown. 6/ Corn for grain, oats, barley, and sorghum grain. 7/ All hay, sorghum forage, corn silage, and for sorghum silage. 8/ All wheat, rye, buckwheat, and rice. 9/ Potatoes, sweetpotatoes, dry edible beans, dry field peas, truck crops for processing, and truck crops for fresh market. 10/ Fruits, berries, and tree nuts. 11/ Sugar beets, sugarcane for sugar and seed, sugarcane syrup, and maple syrup. 12/Cotton lint and cottonseed. 13/ Soybeans, peanuts picked and threshed, peanuts hogged, flaxseed, and tung nuts.

Sources: (7, 32).

Appendix table 3.--Farm production per man-hour: Index numbers, selected years and projections for 1980

1957-59 = 100

Enterprise or product	Averages		1965	Projected 1980	Percentage increase 1965-80
	1949-51	1959-61			
					Pct.
Farm output 1/	60	114	153	296	93
Livestock and livestock products 2/	69	114	154	288	87
Meat animals	84	107	129	211	64
Milk cows	68	115	160	342	114
Poultry	49	125	197	461	134
Crops 3/	60	113	150	304	103
Feed grains	48	127	205	562	174
Hay and forage	72	113	137	293	114
Food grain	49	118	134	324	142
Vegetables	68	111	132	205	55
Fruits and nuts	88	102	112	170	52
Sugar crops	53	111	132	223	69
Cotton	56	116	203	511	152
Tobacco	82	107	122	195	60
Oil crops	58	110	128	199	55

1/ Man-hours in ratio includes labor used on crops, livestock (including horses and mules), and overhead.

2/ For livestock in each group see Appendix table 2, footnotes 1 to 4.

3/ For crops in each group see Appendix table 2, footnotes 5 to 13.

Source: (11).

Appendix table 4.--Labor used for farmwork: Man-hours, selected years and projections for 1980

Enterprise or product	Averages		1965	Projected 1980	Percentage change 1965-80
	1949-51	1959-61			
	Mil. hrs.	Mil. hrs.	Mil. hrs.	Mil. hrs.	Pct.
All farmwork 1/	15,520	9,866	7,976	5,467	-31
Livestock and livestock products 2/	5,501	3,889	3,066	2,162	-29
Meat animals	1,452	1,349	1,167	1,042	-11
Milk cows	2,727	1,754	1,292	698	-46
Poultry	1,134	605	439	233	-47
Crops 3/	7,317	4,588	3,798	2,500	-34
Feed grains	1,484	747	498	263	-47
Hay and forage	693	509	463	238	-49
Food grain	362	184	178	102	-43
Vegetables	628	432	392	299	-24
Fruits and nuts	626	571	578	464	-20
Sugar crops	120	77	83	54	-35
Cotton	1,657	838	503	229	-54
Tobacco	776	551	474	400	-16
Oil crops	196	168	208	194	- 7

1/ Includes labor used on crops, livestock (including horses and mules), and overhead.

2/ For livestock in each group see Appendix table 2, footnotes 1 to 4.

3/ For crops in each group see Appendix table 2, footnotes 5 to 13.

Source: (11).

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Appendix table 5.--Farm employment: Seasonal and foreign, in labor-intensive crops, 1964-66

Crop	Man-months of seasonal hired labor											
	1964				1965				1966			
	Foreign and U.S.	Foreign			Foreign and U.S.	Foreign			Foreign and U.S.	Foreign		
		Total	Percentage of total	Distribution by crop		Total	Percentage of total	Distribution by crop		Total	Percentage of total	Distribution by crop
	Thou.	Thou.	Pct.	Pct.	Thou.	Thou.	Pct.	Pct.	Thou.	Thou.	Pct.	Pct.
All farmwork	8,463.1	633.9	7.5	100.0	8,079.0	109.1	1.4	100.0	7,466.2	60.8	0.8	100.0
All vegetables	1,845.7	265.0	14.3	42.0	1,819.4	32.9	1.8	30.2	1/	1/	1/	1/
Tomatoes	345.1	90.5	26.2	14.3	311.6	21.7	7.0	19.9	302.3	7.7	2.5	12.7
Cucumbers	105.5	28.9	27.4	4.6	103.9	.2	.2	.2	1/	1/	1/	1/
Lettuce	122.5	67.8	55.3	10.7	99.7	.2	.2	.2	1/	1/		
Potatoes	246.6	9.0	3.6	1.4	242.3	4.5	1.8	4.1	225.0	2.8	1.2	4.6
Beans	263.1	6.4	2.4	1.0	221.1	---	---	---	1/	1/	1/	1/
Asparagus	60.5	11.5	19.0	1.8	48.9	1.2	2.4	1.1	1/	1/	1/	1/
Celery	44.4	14.4	32.4	2.3	39.1	2.7	6.9	2.5	41.5	0	0	0
Other vegetables	667.0	36.5	5.6	5.9	752.8	2.4	.3	2.1	1/	1/	1/	1/
All fruits	1/	1/	1/	1/	1/	1/	1/	1/	1/	1/	1/	1/
Citrus	319.8	69.1	21.6	10.9	343.0	14.2	4.1	13.0	367.5	.6	.2	1.0
Strawberries	308.2	42.5	13.8	6.7	235.5	6.2	2.6	5.7	220.6	2.8	1.3	4.6
Melons	64.7	18.4	28.4	2.9	63.6	---	---	---	1/	1/	1/	1/
Grapes	171.0	5.9	3.4	.9	187.4	.7	.4	.6	190.5	.3	.2	.5
Apples	132.0	5.0	3.8	.8	132.0	2.7	2.0	2.5	119.4	2.6	2.2	4.3
Other fruits	1/	1/	1/	1/	1/	1/	1/	1/	1/	1/	1/	1/

Continued--

Appendix table 5.--Farm employment: Seasonal and foreign, in labor-intensive crops, 1964-66--Continued

Crop	Man-months of seasonal hired labor											
	1964				1965				1966			
	Foreign and U.S.	Foreign			Foreign and U.S.	Foreign			Foreign and U.S.	Foreign		
		Total	Percentage of total	Distribution by crop		Total	Percentage of total	Distribution by crop		Total	Percentage of total	Distribution by crop
	Thou.	Thou.	Pct.	Pct.	Thou.	Thou.	Pct.	Pct.	Thou.	Thou.	Pct.	Pct.
Cotton	1,769.4	65.2	3.7	10.3	1,217.3	---	---	---	1/	1/	1/	1/
Sugar Crops	266.3	81.5	30.6	12.8	236.8	44.8	18.9	41.1	1/	1/		
Cane	105.7	49.6	46.9	7.8	93.2	44.8	48.1	41.1	67.4	41.6	61.7	68.4
Beet	160.6	31.9	19.9	5.0	143.6	---	---	---	1/	1/	1/	1/
Tobacco	767.2	14.9	1.9	2.4	781.8	6.2	.8	5.7	674.9	0	0	0
All other 3/	2,809.5	66.5	2.4	10.5	3,062.0	1.5	2/	7.4	5,257.1	2.4 4/	.5	3.9

1/ Not available.
2/ Less than 0.05 percent.
3/ Includes labor used on livestock, hay, grain and all other crops, irrigation and ground preparation.
4/ Primarily dates and vegetables.

Sources: (50, 51).

Appendix table 6.--U. S. imports for consumption, all sources: Value and quantity of selected labor-intensive crops, 1956-66

Year	Tomatoes			Strawberries		Cucumbers, fresh	Cantaloups	Watermelons	Total
	Fresh	Paste and sauce	Canned	Frozen	Fresh				
Value:	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.
1966	52.3	7.5	9.5	15.8	2.4	5.5	6.0	1.4	100.4
1965	29.9	3.6	9.0	8.2	1.0	5.3	7.5	1.3	65.9
1964	27.7	2.2	9.7	5.9	.7	4.7	6.8	1.3	59.0
1963	20.9	2.8	9.4	4.5	.5	3.7	4.9	1.1	47.8
1962	17.6	4.7	9.3	4.1	.2	2.4	4.5	1.2	44.0
1961	13.0	4.5	11.0	3.7	.1	1.9	4.0	1.2	39.4
1960	23.9	1.2	8.5	3.2	.1	2.9	4.0	2.2	46.0
1959	19.9	1.0	7.3	1.7	1/	1.0	2.9	1.8	35.6
1958	20.6	1.0	8.4	1.7	1/	1.1	2.2	1.1	36.1
1957	8.2	.7	6.0	1.4	1/	1.1	2.3	.6	20.5
1956	6.7	1.3	6.7	1.6	1/	1.2	2.6	.6	20.7

Continued--

Appendix table 6.--U. S. imports for consumption, all sources: Value and quantity of selected labor-intensive crops, 1956-66--Continued

Year	Tomatoes			Strawberries		Cucumbers, fresh	Canta-loups	Water-melons	Total
	Fresh	Paste and sauce	Canned	Frozen	Fresh				
Quantity:	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
1966	360.6	50.0	103.3	85.7	13.1	71.4	137.8	61.7	---
1965	269.0	24.1	87.6	53.9	6.4	75.8	148.7	71.5	---
1964	249.2	13.2	81.5	40.8	5.2	51.4	131.7	57.5	---
1963	242.0	18.5	97.4	35.1	3.6	61.2	111.1	63.0	---
1962	236.2	35.7	128.3	32.3	1.0	59.0	98.0	49.6	---
1961	176.2	38.4	161.7	29.8	.7	44.3	79.6	45.1	---
1960	312.7	9.0	109.2	25.0	.7	66.1	79.4	72.0	---
1959	262.6	7.2	97.5	14.1	.2	35.1	56.5	58.0	---
1958	264.5	7.6	122.0	14.4	1/	45.1	44.0	43.5	---
1957	119.5	4.5	81.0	13.8	1/	42.0	50.2	24.5	---
1956	95.0	9.2	91.4	11.5	.1	43.6	51.9	37.7	---

1/ Less than 0.05.

Sources: (28, 37).

Appendix table 7.--U. S. imports for consumption from Mexico: Value and quantity of selected labor-intensive crops, 1956-66--Continued

Year	Tomatoes		Strawberries		Cucumbers, fresh	Cantaloups	Watermelons	Total
	Fresh	Paste, sauce and canned	Frozen	Fresh				
Quantity:	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
1966	358.7	7.1	82.8	11.7	48.1	136.5	61.5	---
1965	265.5	2.6	51.8	5.8	39.4	146.5	71.4	---
1964	246.1	1/	39.8	4.1	17.2	130.1	56.9	---
1963	240.0	1/	34.6	3.4	21.4	110.4	62.8	---
1962	233.2	5.0	32.3	.9	15.8	97.8	49.5	---
1961	156.1	3.7	29.8	.6	10.4	79.6	45.1	---
1960	251.8	.3	25.0	1/	8.7	79.3	76.1	---
1959	240.4	1/	14.1	1/	6.6	56.2	57.7	---
1958	226.2	1/	14.4	1/	3.0	43.6	43.2	---
1957	100.4	1/	13.7	1/	2.2	49.7	24.4	---
1956	69.0	2.7	11.2	1/	.8	51.9	36.9	---

1/ Nil or negligible.

Sources: (28, 37).

Appendix table 7.--U. S. imports for consumption from Mexico: Value and quantity of selected labor-intensive crops, 1956-66

Year	Tomatoes		Strawberries		Cucumbers, fresh	Cantaloups	Watermelons	Total
	Fresh	Paste, sauce, and canned	Frozen	Fresh				
Value:	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.
1966	52.0	1.0	15.3	2.0	3.6	5.9	1.3	81.1
1965	29.4	0.4	7.8	.8	2.8	7.4	1.3	49.9
1964	27.4	1/	5.7	.5	1.3	6.7	1.3	42.9
1963	20.7	1/	4.4	.4	1.5	4.9	1.1	33.0
1962	17.4	.4	4.1	.1	.9	4.5	1.2	28.6
1961	11.6	.3	3.7	.1	.7	4.0	1.2	21.6
1960	20.5	1/	3.2	1/	.7	4.0	2.2	30.6
1959	18.9	1/	1.7	1/	.6	2.9	1.8	25.9
1958	19.0	1/	1.7	1/	.3	2.2	1.1	24.3
1957	7.4	1/	1.4	1/	.2	2.3	.5	11.8
1956	5.6	.4	1.6	1/	.1	2.6	.5	10.8

Continued--

Appendix table 8.--U. S. exports: Value and quantity of selected domestic labor-intensive crops, 1956-66

Year	Tomatoes and products	Strawberries 1/ 2/	Asparagus 2/ 3/	Lettuce	Celery	Cucumbers 2/ 4/	Watermelons	Cantaloups	Total
Value:	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.
1966	19.3	3.6	10.7	11.9	6.7	3.9	2.9	2.0	61.0
1965	20.5	3.8	13.8	9.7	5.4	2.8	2.4	1.9	60.5
1964	20.1	4.3	16.6	8.3	4.7	2.4	2.3	1.2	59.9
1963	17.8	4.3	15.9	7.6	4.4	2.4	2.0	1.5	55.9
1962	15.4	4.4	14.8	7.9	5.1	2.7	1.8	1.3	53.4
1961	17.2	5.1	11.3	6.1	3.9	2.6	2.1	1.5	49.8
1960	16.8	4.3	10.5	6.4	3.8	2.5	1.6	1.4	47.3
1959	18.0	5.0	6.5	6.5	3.8	2.4	1.5	1.4	45.1
1958	19.0	5.0	9.9	6.1	5.1	2.6	1.1	1.2	50.0
1957	24.5	4.3	7.6	5.6	4.5	3.1	1.4	1.3	52.3
1956	22.4	4.8	6.8	5.9	4.1	2.4	1.1	1.1	48.6

Continued--

Appendix table 8.--U. S. exports: Value and quantity of selected domestic labor-intensive crops, 1956-66 -- Continued

Year	Tomatoes and products 5/	Strawberries 1/ 2/	Asparagus 2/ 3/	Lettuce	Celery	Cucumbers 2/ 4/	Watermelons	Cantaloups	Total
Quantity:	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
1966	228.6	15.7	35.7	219.0	120.3	51.7	103.5	32.7	---
1965	274.8	18.1	53.2	180.8	102.9	42.5	83.5	33.8	---
1964	277.2	21.9	67.8	175.9	86.9	34.7	67.7	25.4	---
1963	259.1	22.8	67.1	164.4	100.2	37.0	84.2	29.9	---
1962	203.5	23.8	68.7	163.4	82.2	36.2	64.3	30.2	---
1961	249.8	28.0	50.1	159.2	92.0	38.3	82.7	29.3	---
1960	264.6	21.3	56.0	145.9	92.3	37.0	83.6	28.2	---
1959	309.3	24.6	53.1	152.6	92.9	31.0	64.7	29.0	---
1958	344.8	27.2	34.5	144.7	88.3	36.6	64.1	27.6	---
1957	455.7	24.1	44.6	140.3	89.0	43.0	62.4	23.7	---
1956	406.2	22.3	37.5	128.3	88.1	28.2	61.2	25.7	---

1/ Sum of Canadian imports from the U.S. of fresh and frozen strawberries.
2/ Canadian dollars converted to U.S. dollars at average annual exchange rates.
3/ Sum of U.S. exports of canned asparagus and Canadian imports from the U.S. of fresh asparagus.
4/ Sum of Canadian imports from the U.S. of fresh cucumbers and U.S. exports of cucumber pickles.
5/ Fresh tomatoes and fresh tomato equivalent of products.

Sources: (6, 28).

Appendix table 9.--Farm production in the United States and Mexico: Selected labor-inteneive crops, 1956-66 1/

Year	Tomatoes		Strawberries		Cantaloups		Watermelons		Cucumbers		Asparagus	Citrus	Lettuce	Celery
	U.S. fresh market	Mexico	U.S.	Mexico	U.S.	Mexico	U.S.	Mexico	U.S.	Mexico	U.S.	U.S. 2/	U.S.	U.S.
Quantity:	Bil. lb.	Bil. lb.	Bil. lb.	Bil. lb.	Bil. lb.	Bil. lb.	Bil. lb.	Bil. lb.	Bil. lb.	Bil. lb.	Bil. lb.	Bil. lb.	Bil. lb.	Bil. lb.
1966	2.04	1.02 3/	0.47	0.09 3/	1.16	0.44 3/	2.90	0.85 3/	1.56	0.06	0.33	17.62	4.15	1.43
1965	2.06	1.08	.43	.08	1.19	.44	3.02	.84	1.36	.05	.33	15.27	4.10	1.42
1964	2.06	1.06	.55	.08	1.27	.43	2.77	.79	1.35	.03	.36	12.49	3.90	1.39
1963	1.91	1.02	.51	.06	1.37	.28	2.93	.47	1.42	.02	.38	13.12	3.91	1.42
1962	1.98	.96	.53	.06	1.34	.26	2.62	.45	1.24	.02	.37	17.20	3.71	1.41
1961	2.12	1.00	.51	.05	1.29	.16	2.90	.30	1.32	.02	.37	15.09	3.62	1.48
1960	1.91	.86	.47	.04	1.26	.18	2.96	.30	1.12	.01	.37	15.88	3.50	1.52
1959	1.96	.82	.48	.03	1.29	.15	2.69	.28	1.07	.01	.36	16.22	3.41	1.48
1958	1.79	.78	.53	.02	1.24	.15	3.02	.27	1.13	---	.35	14.09	3.40	1.43
1957	2.01	.75	.54	.03	1.11	.15	2.75	.27	1.19	.03	.36	16.56	3.44	1.51
1956	1.98	.82	.55	.02	1.23	.15	2.95	.22	1.04	.03	.35	16.35	3.53	1.54

1/ Cotton, sugar beets, and sugarcane omitted because of progress of mechanization. Mexican data not available for asparagus, citrus, and lettuce. U.S. production shown as "not marketed" by the Crop Reporting Board excluded.

2/ Data apply to the season ending in the spring of the year indicated; indicated production for the season ending in the spring of 1967, as of March 10, 1967, was 22.08 billion pounds.

3/ Preliminary estimates; those for tomatoes and strawberries likely to understate production in view of heavy increases in U.S. imports from Mexico.

Sources: (2, 33, 38, 39, 41, 42, 43, 46).