



Reusable Toweling For Wrapping Tree Seedlings

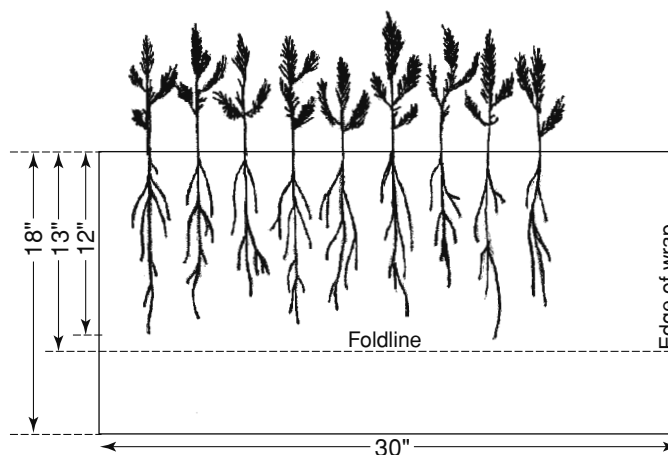
Brian Vachowski, Project Leader

Traditionally, sheets of burlap have been used for wrapping bareroot seedlings into a bundle or “jelly-roll” as they are taken from cold storage and repackaged to fit into tree planters’ bags. Depending on their size, 35 to 50 seedlings are wrapped into each roll (figure 1). Before wrapping, the burlap is soaked in water so it will remain wet until the seedlings are planted. After use, the burlap is hand-rinsed, dried, and reused, sometimes for several seasons.

Procedure for Wrapping Trees

STEP 1

- Wet the wrapping material thoroughly before beginning.
- Arrange the trees as shown to prevent the roots from tangling.
- Keep the wrap as ravel-free as possible to prevent entangling the threads and the roots.
- Keep the right edge of the wrap free of trees to ensure that it completely covers the outer trees in the roll.



STEP 2

- Place the groundline of each tree slightly below the edge of the wrap.
- Fold the wrap up over the roots at the foldline as shown.

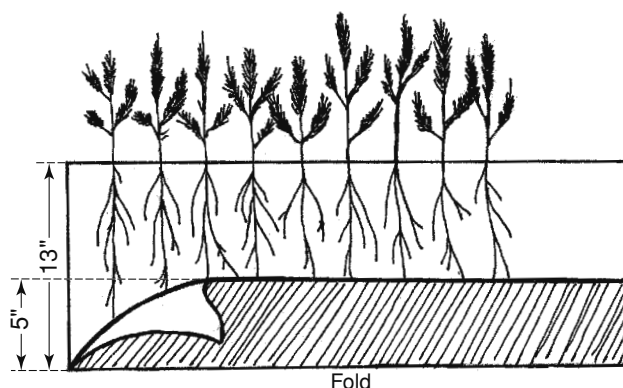


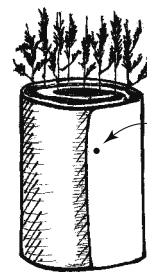
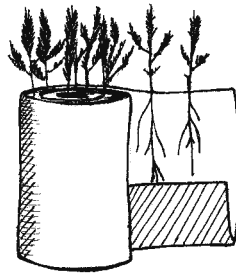
Figure 1—Diagram for wrapping tree seedlings adapted from the Silvicultural Practices Handbook (Forest Service Handbook 2409.17).



Procedure for Wrapping Trees *(continued)*

STEP 3

- Tightly roll the trees in the wrap, ensuring that all roots contact the wet wrap.
- Use a small nail to hold the end of the roll in place or tie the bundle with flagging or twine.
- The wrap that has been folded up over the roots wicks water from the bottom of the bag to keep the roots moist.



Use a small nail or plastic flagging to secure the end of the roll.

Note:

This example uses 18-inch-wide wrapping material. Field evaluators in the Northern Region preferred 19½-inch-wide material, not only because they had larger stock, but also to allow more burlap to be folded back over the roots.

Figure 1—Diagram for wrapping tree seedlings *(continued)*.

Although burlap is popular as a wrapping material in some parts of the country, rolls of polypropylene- or cellulose-based toweling are more popular in the Northern Rockies and parts of the Northwest. The toweling is cut to the proper length for the bareroot stock, wet thoroughly, and used like burlap to wrap the seedlings (figure 2). The toweling is lightweight, cleans up easily, holds moisture as well as burlap, and can be reused several times before being discarded. Burlap is heavier when wet, holds dirt, and is more difficult to rinse

out for reuse. Perhaps most important, burlap is thought to be more likely to harbor plant pathogens that can kill the seedlings.

When Kimberly-Clark Corp. decided that it would no longer produce Kimtex in the 19½-inch-wide rolls preferred for tree wrapping, the U.S. Department of Agriculture Forest Service, Missoula Technology and Development Center (MTDC) was asked to evaluate other suitable products that might be available at reasonable cost.



Figure 2—A roll of tree seedlings held together with plastic flagging.

Market Search and Evaluation

Northern Region National Forests evaluated several alternative fabrics. Cathey Hardin (Bitterroot National Forest) and Jeff Pennick (Idaho Panhandle National Forests) helped develop criteria used to evaluate the products and provided the most detailed evaluations.

A tree-wrapping fabric should have:

- Absorbency. The fabric needs to absorb and hold just enough water for several hours. Thicker fabrics hold too much water, making them heavier and a mess to carry. If the fabric dries out too fast, the seedlings will die.

- **Reusability.** For cost efficiency, the fabrics need to be reused at least three or four times before being discarded. Used toweling is usually hand rinsed in one or two tubs of water to remove much of the visible dirt. The toweling disintegrates if it is washed in a washing machine.
- **Stability.** The product should not tear when wet. The fabric's stretch and shrinkage should be within the limits required for it to be most effective as a seedling wrap.
- **Low cost.** The cost needs to be reasonable, about the same as the cost of the Kimtex fabric that is no longer available (about 21 cents per linear foot in 19½-inch-wide rolls).

We began our market search by contacting suppliers of reforestation products, fabric manufacturers (Kimberly-Clark, DuPont), fabric wholesalers, and specialty fabric Internet sites. The market for tree-wrapping fabric is too small for manufacturers to develop specialty products just for that market. We focused our search on products made for other purposes, such as cleaning or absorbing spills.

Manufacturers and suppliers sent us samples of their products. MTDC procured larger quantities of the most promising products for field evaluation. Table 1 shows the fabrics that were evaluated. Some fabrics were samples that were not readily available as an existing product.

Table 1— Fabrics evaluated for wrapping bundles of bareroot tree seedlings.

Fabric	Type of material	Evaluation findings
Blue 2-ounce Sontara Nos. 8830 and S-8830	DuPont Sontara	Very absorbent. Cost about 13 cents per linear foot plus shipping. Can be reused six to eight times. No difference between first quality (No. 8830) and second quality (No. S-8830). Cleaned up well. Overall preferred choice. Supplier available.
Nu-Towel Blue car wash sheets	DuPont Sontara	Very absorbent. Cost about 11 cents per linear foot plus shipping. Can be reused six to eight times. Cleaned up well. Precut 22- by 24-inch sheets are too small for some stock. Supplier available.
White 3.6-ounce Sontara (napkin sized)	DuPont Sontara	Most absorbent of the Sontara fabrics tested. Not available in the size needed for jelly-rolls.
Kimberly-Clark Teri-Plus scrim-reinforced wipes	Reinforced paper	Did not pass the durability test. Readily available.
Gray 100% polypropylene	Polypropylene	Did not pass the durability test. Not readily available.
White Sontara No. 8801	DuPont Sontara	Sample roll worked as well as the other Sontara fabrics, but it is not readily available.
Giant Aqua Blue car wash sheets (folded)	Unknown	Precut 18- by 28-inch sheets. Did not pass the durability test. Readily available product.
Kimberly-Clark WypAll X-60 (blue)	Kimberly-Clark	Marketed as suitable for wrapping seedlings. Cost is about 15 cents per linear foot plus shipping. 19.5 inches wide by 130 feet long. Did not pass the durability test. Readily available.
Sontara with poly backing (blue)	DuPont Sontara	Poly backing pulled away from the Sontara fabric when towels were reused. Did not pass the durability test. Some evidence of mold because the fabric did not dry completely. Not readily available.

Results

Spun-woven Sontara, manufactured by DuPont, worked best in our limited evaluations. Officials from DuPont told us that Sontara fabrics are used in more than 1,000 products, ranging from disposable car wash towels to medical gowns. There are many different product formulations of the Sontara spun-woven textiles. Absorbent and nonabsorbent fabrics are available. The Sontara fabrics that worked best for wrapping seedlings were the cellulose-based, absorbent type typically used in the cleaning industry and for car-wash towels.

Although we evaluated five different Sontara samples received from different suppliers, only two of the samples are available as reasonably priced products correctly sized for wrapping seedlings. One supplier, American Supply Corp., agreed to custom cut and stock 22-inch by 200-yard rolls of the material in anticipation of receiving orders from the Forest Service. Other vendors contacted by MTDC were unwilling to commit to stocking a unique product for tree wrapping because the demand was expected to be relatively small.

We discovered that the Nu-Towel Blue car-wash towels are made of a Sontara fabric that is essentially the same as the roll product offered by American Supply Corp. These towels are sold in car-wash vending machines, but also are available in precut, unfolded 22- by 24-inch sheets. Our field evaluators preferred the roll product offered by American Supply. The precut Nu-Towel Blue car-wash towels were about 6 inches too short for an optimum-sized roll. You may want to compare the convenience of the precut sheets of the Nu-Towel Blue car-wash towels to the flexible length offered by the American Supply Corp. roll product.

Toweling used in the cleaning industry is a generic product. Rigid product specifications generally are not required. Product specifications can vary from lot to lot. Toweling rejected for high-end uses, such as medical gowns, may find its way to wholesale cleaning suppliers, where it is well suited for cleaning products. Lower priced “second quality” fabrics from American Supply Corp., were just as suitable for wrapping tree seedlings as the top-quality fabrics.

Suppliers

As a service to USDA Forest Service employees, MTDC has identified sources of the highest-rated Sontara fabrics that are available as off-the-shelf products. We may have missed some sources, or overlooked similar products during our limited market search. The Forest Service does not recommend one supply source over others.

- **Rolls of Sontara fabric**

American Supply Corp.

Attn: John Bisceglia

P.O. Box 10420

Cranston, RI 02910-0093

Phone: 800-779-4040

Fax: 800-779-4040

E-mail: sales@American-Supply-Corp.com

Web site: <http://www.american-supply-corp.com>

What to order: Absorbent-grade Sontara No. S-8830, 22-inch by 200-yard rolls, \$80 per roll (March 2005 price), plus shipping by United Parcel Service. Each roll weighs 16 pounds. Shipping is free for orders over \$1,000 (13 or more rolls) when delivered to the same location. Anticipating some future orders from the Forest Service, American Supply has

agreed to custom cut a supply of this product, so it may be available on short notice, at least on a seasonal basis. The easiest way to order and to validate availability is to call John Bisceglia directly.

- **Nu-Towel Blue car wash towels**

Dultmeier Sales

Omaha, NE

Phone: 800-228-9666

Web site: <http://www.dultmeier.com>

What to order: Product No. NTB501, 150 sheets per case, \$32.95 per case. Each sheet is 22 by 24 inches. The product is available folded or unfolded. The unfolded sheets are much more convenient. Before you order this product, make sure the sheets are the correct size for the bareroot stock you plan to wrap.

Acknowledgments

Cathey Hardin, Bitterroot National Forest

Jeff Pennick, Idaho Panhandle National Forests

Deb Mucci, Missoula Technology & Development Center

About the Author

Brian Vachowski has been the reforestation and nurseries program leader since 2002 and has been a project leader specializing in recreation, trails, and wilderness projects at MTDC since 1993. He received a bachelor's degree in forestry from the University of Massachusetts and a master's degree in outdoor recreation from Utah State University. He has

worked for the Nez Perce, Bighorn, Winema, and Routt National Forests in recreation, wilderness, lands, planning, rural community assistance, special uses, fire, and timber positions. Before coming to MTDC, he was an assistant staff officer for wilderness and recreation on the Nez Perce National Forest.

Library Card

Vachowski, Brian. 2005. Reusable toweling for wrapping tree seedlings. Tech Tip 0524–2323–MTDC. Missoula, MT: U.S. Department of Agriculture Forest Service, Missoula Technology and Development Center. 6 p.

A limited market search and evaluation of alternatives to burlap for wrapping bareroot tree seedlings into packages of 35 to 50 seedlings, found that DuPont spun-woven Sontara absorbent toweling performed best. This lightweight toweling

stayed wet for several hours, could be cleaned and reused several times before being discarded, and was available at reasonable cost. Two suppliers were located, one offering a roll product, the other offering precut sheets. Other suppliers may be available.

Keywords: bareroot stock, burlap, DuPont, evaluations, fabrics, jelly-roll, market searches, planting, reforestation, Sontara, towels

Single copies of this document may be ordered from:

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5785 Hwy. 10 West
Missoula, MT 59808–9361
Phone: 406–329–3978
Fax: 406–329–3719
E-mail: wo_mtdc_pubs@fs.fed.us

Electronic copies of MTDC's documents are available on the Internet at:

<http://www.fs.fed.us/t-d/> Username: t-d Password: t-d

For additional information about reusable toweling for wrapping tree seedlings, contact Brian Vachowski at MTDC.

Phone: 406–329–3935
Fax: 406–329–3719
E-mail: bvachowski@fs.fed.us

Forest Service and Bureau of Land Management employees can search a more complete collection of MTDC's documents, videos, and CDs on their internal computer network at:

<http://fsweb.mtdc.wo.fs.fed.us/search/>



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