Shortleaf Pine Bareroot Seedlings

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Nursery-grown bareroot seedlings are an affordable, readily available option for artificial regeneration of shortleaf pine. At most forest seedling nurseries, bareroot seedlings are less than half the price of containerized seedlings. In addition, planters can carry more bareroot seedlings in a planting bag (than containerized seedlings), thus increasing hand-planting efficiency. It is important that your seedlings are adapted to the planting site for best growth and survival. It is recommended that the seed used to grow them comes from the same geographic area they are planted. The challenges of bareroot seedlings include their sensitivity to: long term storage, poor planting techniques, and extreme weather conditions following planting. If seedlings are planted in the recommended time frame after delivery, and proper planting techniques are followed, then bareroot seedlings are a cost-effective regeneration option.

Bareroot Nursery Practices

Bareroot nursery practices for shortleaf pine are similar to those used for loblolly pine, with a few minor exceptions. In loblolly, top-pruning may be used throughout the growing season to control height growth; whereas, in shortleaf, top-pruning is only done once, if at all. Shortleaf seedlings grow quickly in soils sterilized by fumigation, and become spindly if not top-pruned at 7–8 inches. Seedlings sown in soils two years after fumigation rarely need top-pruning. Fertilization, pesticide application, watering regimens, and other cultural nursery practices are similar for bareroot production of both shortleaf and loblolly.

Bareroot Seedling Storage

Long-term storage of shortleaf bareroot seedlings after harvest from nursery beds, or lifting, is the primary concern. Bareroot shortleaf should be planted as soon after harvesting as possible to minimize time in cold storage. A sharp reduction in survival occurs if seedlings are not planted within two weeks of lifting. Survival may still be greater than 50% after one month in cold storage, but seedling survival rates will be less if field conditions are not ideal (drought, inclement weather).

Figure 1: Bareroot shortleaf pine seedling at Baucum Nursery, Arkansas. Credit: Holly Campbell

Planting Bareroot Seedlings

As with all tree seedlings, handling of the seedlings before and after harvest, planting techniques, and weather conditions

during the first year are all crucial for survival. After lifting, nurseries spray the roots with water and a gel polymer (substance that absorbs 100xs its weight in water) to protect the roots from drying out until they are planted. Then seedlings are packed in wax-coated bags or boxes and placed in cold storage until planting.

Bareroot shortleaf seedlings are either machine or hand planted. Planting should occur from October–February, while seedlings are dormant. Planting from March to April, or later, is not recommended. When planting, it is best to plant the root collar just below the soil surface. For specific planting guidelines, visit the following websites:

Mississippi State University Extension publication:
http://msucares.com/pubs/publications/p1776.pdf

The US Forest Service:
http://www.rngr.net/publications/care_and_planting.

Shortleaf pine bareroot seedlings exhibit greater sensitivity to weather changes that occur soon after planting than loblolly. When shortleaf and loblolly are exposed to the same harsh weather conditions immediately after planting, shortleaf tends to “brown-up” whereas loblolly seedlings remain green. Shortleaf, however, usually makes a full recovery in the spring following the harsh weather event.

Recommended Bareroot Seedlings Specifications for Shortleaf Pine
Seedling height: 10 to 12 inches
Root length: ≥ 5 inches of the 5 first-order laterals*
Root collar diameter: 4.0 to 5.0 mm (< 1/5 inch)

*First-order lateral roots are the roots that branch off the main tap root, usually at the top of the tap root near the soil surface.