

Lesson 3: Planting Trees

Developing a Tree Planting Plan

Good planting practices include good planting stock, a well selected and properly prepared site, proper planting methods, and adequate protection and care after planting. Failure in any or all of these planting practices usually results in unsatisfactory survival or growth or even in complete failure.

Factors to consider in developing a planting plan include:

- ◇ What trees grow well in the area? (Refer to Lesson 2.)
- ◇ What species will best fit the landowner's needs? (wildlife purposes, wood products, wind breaks, erosion control, ornamental, or shade)
- ◇ What species will grow in my soil type? (claypans or poorly drained soils restrict growth of most species)
- ◇ What are the growth rates of selected species?
- ◇ How much time and funds are available to be spent on tree planting and maintenance each year?
- ◇ What financial returns are needed on initial investment?
- ◇ How many trees should be planted in a given area?

A long-range forest management plan is the basis for determining the most economical use of forest resources, prevents spur-of-the-moment decisions, and allows scheduling and planning of management practices.

Obtaining Trees

Good tree stock is essential for successful planting practices. Choosing the right species for your forest plan and your given site is the first step. Refer to Lesson 2 for a description of common Missouri trees and the areas where they will grow. If planting a cleared area, you will also need to figure the number of trees needed. Figure 3.1 shows the number of trees needed for a given spacing.

Having decided the number and types of trees you wish to plant, you can order trees from a number of sources. Several private nurseries carry seedling trees and shrubs for planting. A partial list of these nurseries may be obtained by writing to: Extension Forester, School of

Natural Resources, Room 203 Anheuser-Busch Natural Resources Bldg., University of Missouri, Columbia, MO 65211-7270. Also your vocational agriculture instructor may have forms available to obtain trees.

Trees may also be purchased from the state nursery at Licking, Missouri. If you are interested in purchasing trees and shrubs from the state nursery, contact your county extension center, or write to: State Forester, Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65102. Either agency will provide a list of seedlings available and a nursery stock application form.

Care of Seedlings Before Planting

Best success is obtained when the seedlings are planted as soon as possible after arriving from the nursery. If planting will be delayed, the packing material around the roots should be kept moist and the following procedure should be carried out.

To store seedlings for one week or less:

- ◇ Put the bales in a cool, shaded place.
- ◇ Separate the bales (to avoid overheating and molding) and elevate one end slightly.
- ◇ Pour cold water into the elevated ends of the bales often enough to keep seedling roots moist.
- ◇ Do not store trees in water because roots may be damaged.
- ◇ Protect from severe freezing.

To store for more than a week:

1. Method 1: Hold bales in cold storage at 35° to 37° F.
2. Method 2: Put trees in a heeling-in trench.
 - a. Dig trench in a shaded protected place. Adjust depth to fit roots. Avoid areas with high rodent populations.
 - b. Cut bundle strings and spread trees.
 - c. Pour water on roots as trench is being refilled with soil.
 - d. Water as often as necessary thereafter to keep soil moist, but avoid overwatering.
 - e. A mulch placed on soil close to trees will help hold moisture.

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Figure 3.1 – Tree and Shrub Planting Guide

Tree		Rows Apart (feet)	Spacing in Rows (feet)
Pine: Shortleaf, Loblolly, Scotch, White, Jack, Austrian (wildlife)		10	10
Pine: Scotch, White (Christmas tree)		– variable –	
Black Cherry Cottonwood Cypress Green Ash Northern Red Oak	Pecan Pin Oak Silver Maple Walnut Yellow Poplar	15	15
Black Alder Black Locust	Hackberry Mulberry	14	12
Osage Orange		(hedgerow)	4

Number of Trees/Acre for a Given Spacing	
6 x 6 = 1,210	10 x 10 = 436
7 x 7 = 889	12 x 12 = 302
8 x 8 = 681	15 x 15 = 194
9 x 9 = 538	20 x 20 = 108

Never leave open bales of seedlings exposed to the sun and wind. During planting operations, take out a few bundles of trees at a time. Cover the others and keep them moist until they are needed. Be careful to avoid damaging the terminal buds.

Planting Tree Seedlings

In planting tree seedlings, it is essential to keep seedling roots moist. A good method for accomplishing this is to carry seedlings in a bucket half full of water or wet moss. Planting by hand may be done by one person; however, two-person crews are much easier since they can change positions and make the job less tiring. In two-man crews, one person is responsible for carrying the trees in the bucket, placing it in the hole, and holding it straight, while

the second person fills in the hole. The second person is also responsible for opening and closing the hole and for proper spacing.

There are several general rules to bear in mind when planting tree seedlings:

- ◇ Plant seedling at the same level that it was in the nursery.
- ◇ Make sure the seedling is upright and roots are not doubled over. Trees that have roots doubled up grow slowly.
- ◇ Pack the soil around the roots in order that the tree will remain in an upright position.
- ◇ Plant only one tree per space.

There are several procedures for hand planting seedling trees. The following are step-by-step procedures for the center hole method using a grubbing hoe and the slit method using a tree planting bar.

Center hole method using a grubbing hoe. See Figure 3.2.

1. Dig a hole to fit the root system of the seedling.
2. Set at the same depth trees grown in the nursery.
3. Fill hole half full of soil and tamp well.
4. Finish filling hole and tamp with feet.

Slit method using a tree planting bar. See Figure 3.3.

1. Hold bar vertically and drive blade full length into soil.
 - a. Pull handle toward you 4 to 5 inches.
 - b. Make a similar thrust in the opposite direction.
2. Remove the planting bar, insert the seedling, and shake the root out straight in slit.
3. Drive blade in at a 30° angle, 3 inches behind seedling.
 - a. Pull the bar toward you.
 - b. Push the bar forward to close the bottom and top slit.
 - c. Remove the bar and tamp with heel.

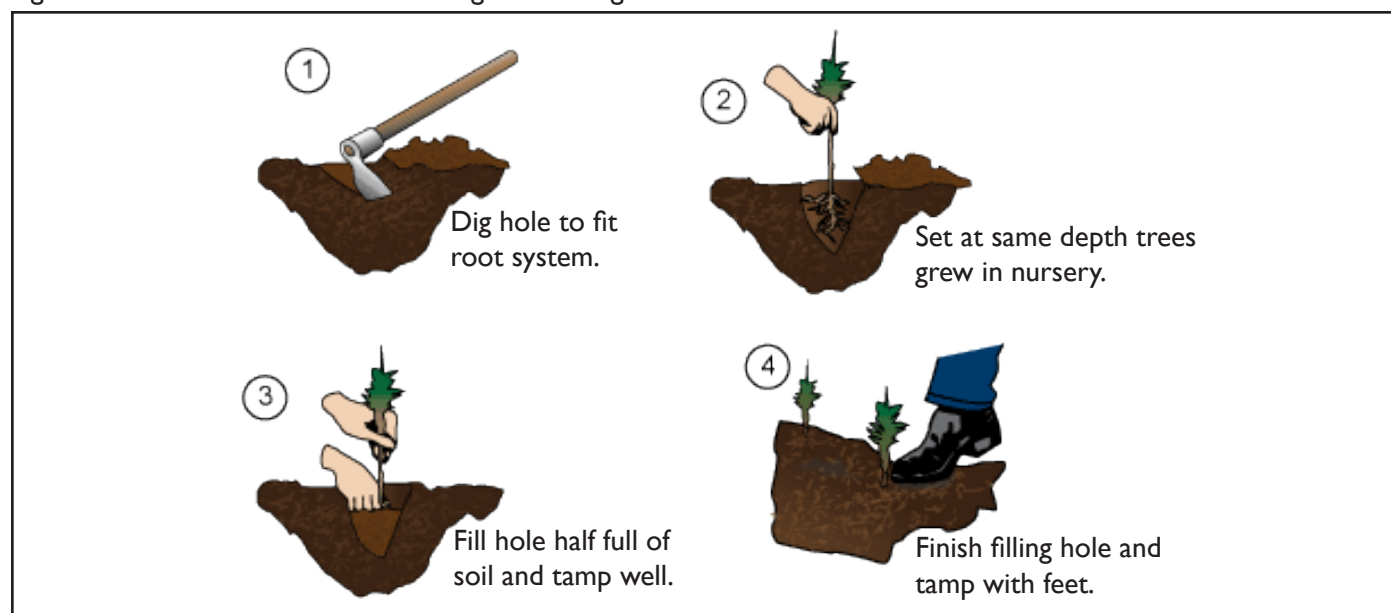
Care of Seedlings After Planting

There are several general rules which will ensure the success of your trees after incurring the time and expense of planting. First and foremost, protect your trees from their number one enemy – fire. Plow or disk a fire break if necessary and maintain it during the fire season.

Trees need to also be protected from livestock. They may damage trees of all ages and should be kept from plantations. Rank growth of weeds and grasses represent another enemy and can be prevented by light disking, using proper chemicals, mowing, or hoeing as often as necessary during the first 2 or 3 years. On poor soils, a light growth of vegetation such as broom sedge or ragweed provides some protection and may be beneficial. Inspect plantations regularly for evidence of attacks by insects and disease.

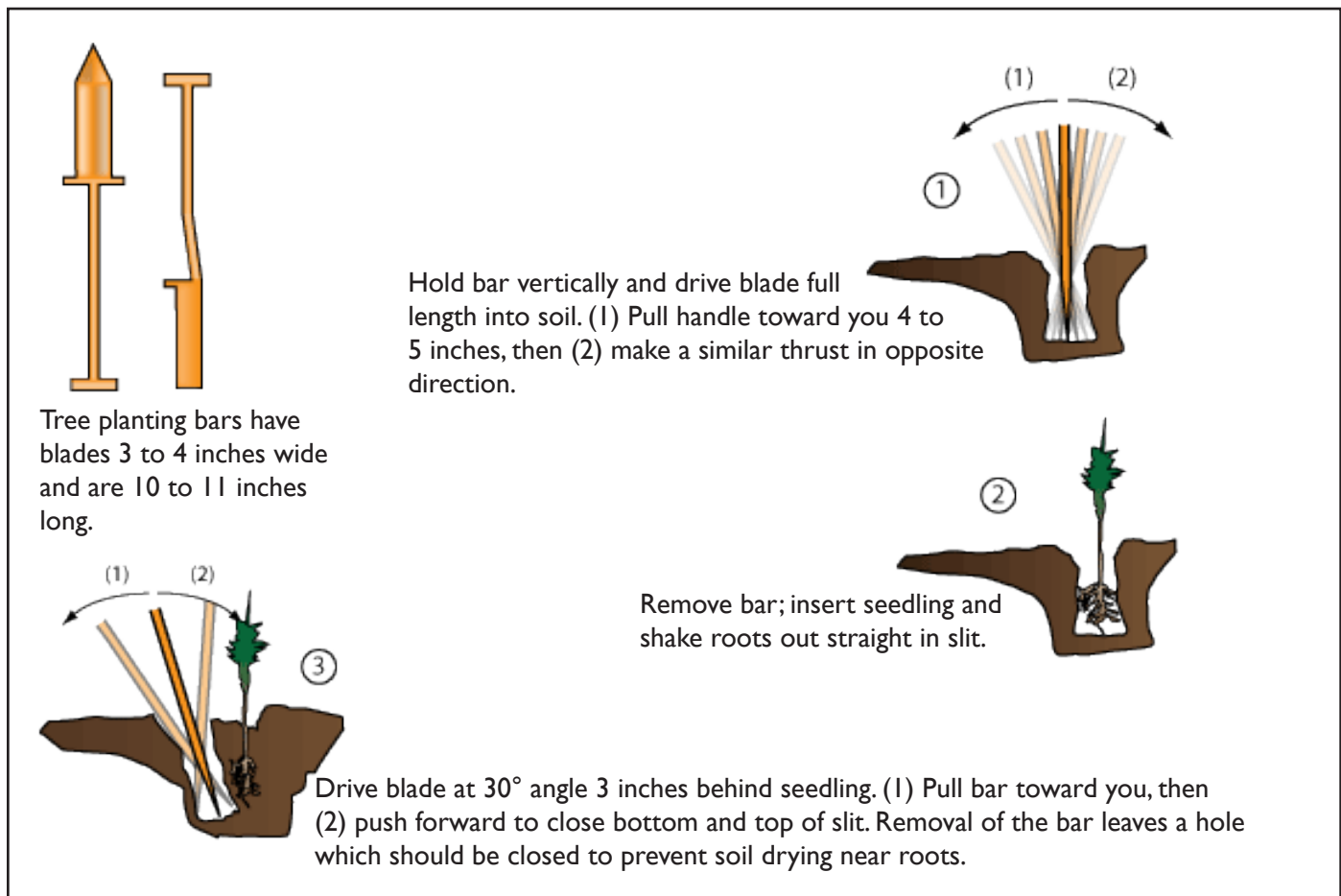
The careful use of fertilizer, when needed, can be an important part of caring for seedlings. Fertilization is usually not necessary for evergreens unless serious nutrient deficiencies exist. Hardwood (deciduous) trees sometimes benefit from fertilization. Fertility needs should be determined by soil test or foliar analysis. To avoid damaging seedlings' roots, do not apply fertilizers directly in the planting holes unless they have been specifically formulated for use in that manner.

Figure 3.2 – Center Hole Method Using a Grubbing Hoe



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Figure 3.3 – Slit Method Using a Tree Planting Bar



Summary

Seedlings planted today will be around for many years before they yield a return. It is very important, therefore, to have success. Success will depend on:

- ◇ Obtaining good seedling stock
- ◇ Properly storing that stock before planting
- ◇ Planting the stock correctly
- ◇ Caring for the seedlings after planting

Credits

Slusher, J.P., and G. Hoss. *Before You Order Tree Seedlings* (Guide G5006). Columbia: University of Missouri Extension, revised 2000. Accessed May 27, 2008, from <http://extension.missouri.edu/explore/agguides/forestry/g05006.htm>.

Slusher, J.P., and T. Robison. *How to Plant Forest Trees* (Guide G5008). Columbia: University of Missouri Extension, reviewed 1993. Accessed May 30, 2008, from <http://extension.missouri.edu/xplor/agguides/forestry/g05008.htm>.