CP3 - Pine/Softwood Tree Planting

Wisconsin Job Sheet 623

TREE PLANTING TIMELINE

1. July of the year before planting.

   A successful tree planting project begins approximately nine months before tree seedlings arrive in the spring. Plan now to accomplish the following steps, so that they are completed in a timely manner.

2. September of the year before planting.

   Begin Site Preparation by spraying or tilling to control existing vegetation, and prepare the site for spring planting. A critical step for successful tree planting is to provide a planting bed free of competition from weeds.

3. October/November of the year before planting.

   Plan to order tree seedlings five to six months in advance. Pines and other conifers may only be available for ordering through January and February. State nurseries and private nurseries in Wisconsin grow tree seedlings adapted to our climate. Other mid-western or Lake States nurseries also produce stock that will grow well, but avoid ordering from nurseries more than 100 miles south of the state line.

4. April/May of planting year.

   Plant tree and shrub seedlings in April or early May. Seedlings may be planted by hand using a shovel or planting bar or with a tree-planting machine. Check with the DNR forester in your county to find out if a planting machine is available to use. Many counties have planting machines that they rent out for a reasonable fee. Renters must usually provide the tractor and crew to do the planting. With a little experience, people can plant about 5,000 trees (10 acres worth) a day with a planting machine. To be practical, plan on a maximum of 500 trees per day per person for hand planting crews. If you do not want to plant trees yourself, check with your DNR Forester for a list of custom tree planting services. Custom tree planters can do the entire job for you, including the site preparation, planting and follow up care.

5. June - August of planting year.

   Mow or spray to manage weeds and other competing vegetation.

6. After planting year.

   Don't expect to walk away from the seedlings once they are in the ground. Plantings will need mowing and/or spraying to control competing vegetation for at least 3 years. Sometimes animal control measures are needed if rabbits, deer or rodents take a liking to the trees. Insects and diseases may become a problem in plantations.

SITE PREPARATION

The single most important part of planting trees is protecting the small bare-root seedlings from existing, competitive vegetation. This cannot be over-emphasized. Not only do these plants compete for light and water, many grasses produce natural chemicals which suppress tree and shrub growth. If not managed, competition from weeds, grasses, and shrubs will choke out the planting in short order. Sites may be prepared for planting using

mechanical means, chemical means or a combination of the two.

Mechanical Site Preparation

Reduce the competition from a thick grass sod by moldboard plowing and/or discing in 6 foot wide strips. Leave undisturbed sod between the strips. By minimizing the amount of soil that is disturbed, the threat of water erosion and weed seed invasion by such things as Canada Thistle is reduced. Till on the contour in order to further reduce erosion. Spring plowing is not generally recommended, as it will introduce air into the soil that can dry the roots of newly planted stock. If residual cover is relatively small, a rotary or sickle-bar mower can be used to cut competing vegetation as close to the ground as possible. On land that is greater than a 6% slope or when planting large areas consider using banded herbicides.

Chemical Site Preparation

Weedy or grassy competition can be controlled with selective herbicide use. Effective control depends on four factors:

- timing of application
- herbicide selected
- weather conditions
- application rate

Heavy sod can be controlled by a fall application of herbicide in the year prior to planting. Alternatively, a pre-emergent herbicide can be applied in the spring just after the trees are planted and before the existing grass cover has "greened up". Herbicides should not be allowed to come in contact with the tree roots. Banding of herbicides controls weeds yet minimizes the impacts on erosion.

Very dry conditions will limit the effectiveness of most herbicides. Be sure to follow label directions for application rates, as rates differ depending on soil type and herbicide. Consult with your local DNR Forester for specific herbicide recommendations. NOTE: All herbicides must be applied in accordance with label recommendations and their registered use.

Controlling Grasses and Broadleaf Weeds

Glyphosate (Accord), dicamba (Banvel) and 2, 4-D should be applied before trees are planted or as hand directed sprays during the growing season. They should not be applied over the top of actively growing tree seedlings. Glyphosate controls grasses as well as broadleaf weeds; 2, 4-D and Banvel kill only broadleaf weeds. With Banvel and 2,4-D, fall treatments are highly preferable to spring treatments; these growth hormone products prevent the plants from becoming cold hardy, and even if the herbicide fails to kill all the plants by first snowfall, the cold winter temperatures kill the remaining plants.

Controlling Alfalfa

Several herbicides have proven effective in controlling alfalfa: clopyralid, glyphosate, dicamba and 2,4D. Clopyralid (Transline) can be applied over the top of most of the commonly planted forest tree species during the growing season. It is effective when applied from the time uncut alfalfa is 6 inches in height to as late as early July. A supplemental Transline label allows its use on forest sites in Wisconsin; copies of this label are available from DNR Forest Pest Specialists.

Brushy Weed Control

Unwanted trees and shrubs, such as elm or box elder, should be removed prior to planting. Most Wisconsin deciduous trees and shrubs are prolific sprouters and in one year can grow 3-5 feet from cut stumps. To prevent sprouting, treat the stump with a recommended herbicide

PLANTING INFORMATION

April is tree planting time in Wisconsin. Plant after the frost has left the ground (late March), but before bud break and shoot elongation (late May).

Bareroot Conifer Stock

Trees purchased as bareroot conifer stock are between 1 and 3 year old trees and are either seedlings or transplants. A designation such as 2-0 means the tree spent two years in the same seedbed, while a designation of 2-1 means the tree spent 2 years in a seedbed and 1 year in a transplant bed (transplanting improves root development).

Seedling Handling

1. Handle seedlings carefully. Keeping them healthy requires minimizing physical damage and keeping them at a constant low (33-40 degrees) temperature with a high relative humidity. They must remain in a state of dormancy from the time of lifting to the time of planting.

2. To prevent desiccation, plant seedlings as soon as possible. If root hairs become damaged, they will never properly uptake water and nutrients.

3. Seedlings are often packaged and shipped in plastic-lined boxes that provide both physical and moisture protection for the seedlings. Bags are used for smaller quantities of seedlings. They do not protect seedlings from physical damage.

4. Until you are ready to plant, do not handle your seedlings individually. Leave them in their packaging to minimize physical damage.

5. Transportation is a vital consideration for all sizes of orders. For large orders (over 1000 seedlings) a refrigerated truck is optimal. If one is not available the following steps should be taken with a pickup truck:

   - Place foam sheets on the bed and spacer boards between the foam and the boxes for ventilation.
   - With bags, or bales, build a frame to allow for airflow about the packages.
   - Cover packages with a damp canvas tarp.
   - Cover the canvas tarp with a solar-reflective tarp
   - Fasten the load securely.

   If the order is small, a refrigerated van is still the best way to go. If this is not possible, and the packages fit into your car, air conditioning on maximum along with insulation and ice packs is advised. Only a few minutes in a hot trunk can damage seedlings permanently. If you suspect that the seedlings have not been kept cool since leaving the nursery, you may want to open the package and sprinkle the roots with water.

6. Seedlings should **not** be 'heeled-in,' nor planted in shallow soil pits for long-term storage. Do **not** immerse seedlings in water as this can drown root hairs. Do not delay planting while waiting for optimal soil conditions. Since most people do not have adequate long-term storage, seedlings are better off in the ground. If the planting job is large, consider receiving staggered seedling shipments to minimize storage time. The less time the seedlings spend out of ideal storage, the more vigorous they will be.

7. Root prune seedlings only if the length of the root system is longer than the depth of planting. If necessary trim the roots so that the length from the root collar to the tip of the root is the same as the depth of planting. Root pruning should be done in a controlled environment where the seedling root system will not be exposed to the drying effects of the sun and wind, where water is available to re-moisten the seedlings and the ambient air temperature is relatively cool (e.g. 40-50 degrees Fahrenheit). The worst place to do root pruning of seedlings is on the tree planting site itself.

PLANTING PROCEDURES

Hand Planting

When planting by hand be sure to:

- keep seedlings shaded and cool until planting.
- minimize handling of the seedlings.
- carry seedlings in a bucket or planting bag along with wet burlap to keep seedlings moist.
- never carry seedling exposed to the air or immersed in water.
- ensure seedling roots hang freely and just touch the bottom of the hole.
- prune back long anchor roots if needed.
- ensure the new soil line is just above the old soil line
- pack the soil after planting.

A rough estimate is that an inexperienced, but physically fit, tree planter can plant 500 seedlings by hand per day.

Machine Planting

Mechanical planting is suitable for especially large orders to be planted on even terrain. Generally a 30-50 horsepower tractor and a crew of three is sufficient. The principles of seedling protection listed above certainly apply. Experience in operation of tree planters comes quickly and a crew can usually plant 5000 seedlings a day.