

## Tree and Shrub Establishment- NRCS Practice Code 612-

Refer to: [Conservation Practice Standard Tree/Shrub Establishment \(Code 612\) \(usda.gov\)](#)



### Site Preparation

Depending on the current condition of the site, establishment/planting method, and landowner's goals, different practices may be needed to prepare the area for tree planting.

More detailed site preparation information is available at the link below.

[Conservation Practice Standard Tree-Shrub Site Preparation \(Code 490\) \(usda.gov\)](#)

### Brush/Tree Management

In many cases, undesirable shrubs or trees will be in the area where more desirable species will be planted. If a mechanical planting method is being used, these shrubs and trees should be removed from the site with as much of their roots as possible. If hand planting, these undesirable trees may only need to be killed so they don't compete for resources with planted trees. In some cases, desirable trees may already be present. It may be possible to leave these and hand plant around them.

### Grassland Conversion

Existing grass and weeds can quickly outcompete newly established trees. The existing vegetation will need to be controlled before the trees are planted. The entire site should be treated if species such as Johnson grass, reed canary grass, fescue, or brome are dominating the area.

The time to start converting grassland is the fall before a planting occurs. Mow the existing vegetation in late summer or early fall. If possible, burn the area with a prescribed fire\*. After the vegetation grows to a height of 6 to 12 inches, spray the area with a non selective herbicide\*\* such as glyphosate (Roundup). The following spring, burn the area again with prescribed fire\*, if possible, and retreat with an herbicide\*\* such as glyphosate.

*Note:* It may be necessary to spot treat undesirable vegetation until trees become established.

### Agriculture Field Conversion

When converting an agricultural field to trees, little to no site preparation is needed. Some type of grass cover crop may need to be established if the ground is highly erodible.

### Direct seeding site preparation

Please reference the link below for direct seeding guidelines.

<http://www.csu.edu/cerc/researchreports/documents/IllinoisDirectSeedingHandbook2003.pdf>

### Pre-planting Herbicides

After existing grass or weeds are controlled, a pre-emergent herbicide such as Sulfometuron methyl (Oust) at rate of ¾ oz. /acre should be used to combat future weeds. This can be done in 4 ft. wide strips for rows of bare root seedlings or 4 ft. by 4ft. square spots where container trees are to be planted.

## Tree Selection and Care

Your planting site and method determines the species to be planted and type of tree stock to buy. The type of stock you buy determines the way you care for your trees between the time you receive it and the time you plant it.

### Species Selection

The species you plant depends on your site. Some species will grow on many different types of soil and sites. However, most species are more adapted for certain types of soil and terrain. For example, a black walnut will grow well on an upland area and a well drained bottom area. It will not, however, thrive on a poorly drained site. Species selection also depends on your goals for the site. If timber production is your main goal, oak species and black walnut are generally your best choice. If you want to promote wildlife such as rabbit, quail, and songbirds, then a shrub planting might be the route you want to take. Contact you IDNR district forester or local NRCS office with assistance on species selection.

### Type of Planting Stock

#### *Container:*

Air root pruned trees should be of conservation grade in 3-gallon containers (10-inch diameter by 8 inches deep); Minimum caliper at base should be 3/8 inch and minimum height of 3 feet; Seed stock should be within 100 miles north or 200 miles south of the planting location.

#### *Bare Root:*

You will need to purchase seedlings from a private nursery. At least 80% of the hardwood stock must be in the 12 to 18 inch size range and the minimum acceptable root length is 8". All seedlings should come from an Illinois seed source as this may affect the quality and survival of your tree planting.

#### *Care for root stock:*

Keep seedlings in cool area, the north side of your house covered in burlap, for example, and keep the roots moist before planting. **DO NOT** let the roots dry out, but also do not store submerged in water. Plant the trees as soon as possible after receiving them.



### Planting Methods

#### *Hand Planting:*

Bare root trees should be planted at the depth they were grown at the nursery, no deep and no shallower (see Figure 1). This is indicated by the root collar, or where the main stem and the roots meet. A hole should be dug deeper and wider than the roots of the seedling. Back fill loose dirt and pack firmly to ensure there are no air pockets. Be sure that the main taproot is not turned to the shape of an L or J and instead sticks straight down. Long taproots or large side roots may need to be pruned. A tree planting bar may also be used, and is faster than digging individual holes (Figure 1).

For container trees, dig a hole slightly deeper than and twice as wide as the root ball. Backfill the hole and lightly pack the soil until the top of the root ball is level with the ground when placed in the hole. Place the tree in the center of the hole and backfill the soil around the root ball, making sure to get rid of all air pockets. Be sure to not get any soil up against the stem of the tree. Water the tree, if possible. Mulch around the tree can help with weed control and water retention. As with the soil, make sure not to mound mulch next to the trunk of the tree.

### *Mechanical Planting:*

A tractor drawn tree planter can be used for bare root trees. These split the ground open, providing a place to plant the tree, and then seal the ground around the tree. Remember to always keep the roots moist right up until the tree is placed in the ground. Make sure the tree is not planted too shallow or too deep (Figure 1). It is best to start planting slow until an efficient method/system is formed.

For container trees, a gas operated handheld auger or an auger attachment from a skid steer or tractor can be used to dig the hole. After the hole is dug, follow the hand planting procedure for container trees.

### *Spacing:*

The most common spacing for bare root plantings is 10ft by 10ft, or 435 trees per acre. To make things easier, rows can be marked with wire flags prior to planting. Other spacings can be done. Contact your district forester or local NRCS office for more information.

Container trees are normally planted on a 30ft by 30ft spacing, or 48 trees per acre. Planting can be sped up if each tree is marked with a flag prior.

Shrubs call for a much tighter spacing. For upland wildlife habitat, a 5ft by 5ft spacing or 60 shrubs per 1,500 sqft is recommended for bare root stock. A 7ft by 7ft spacing, or 30 shrubs per 1,500 sqft is recommended for container stock.

## **Post Planting Maintenance**

### *Weed control:*

Grass, weeds, and volunteer trees can suppress the newly planted trees and quickly outcompete them. This can be combated by either mowing or spraying once a year between the rows of planted trees. When doing this, be sure to leave an untreated strip of approximately 2 ft on each side of the row. Allowing this untreated strip to grow up in weeds can help hide the newly planted tree from deer. Deer love to eat the new growth of trees.

Control weeds and trees for three years after planting. After three years the trees should be well established and able to surpass most new volunteer trees. Allowing the new volunteer trees to grow, helps train the planted trees to grow straight. The close spacing, of the volunteers and planted trees, aids in self pruning, increasing the value of the trees.

### *Predator control:*

Animals such a deer, rabbits, and mice can ruin a tree planting. Deer and rabbits browse the trees, deforming or killing them. Mice can consume most of the seeds in a direct seeding and eat at the roots and root collars of seedlings as well. Other than allowing weeds to grow up around a tree to conceal it, tree shelters or wire cages can be placed around the trees for protection. Tree shelters can be purchased through most tree nurseries or online retailers. Tree shelters can also reduce damage from deer rubbing their antlers on the trees in the fall. Over seeding a direct seeding will help reduce the odds of rodents consuming all the seed. Owl boxes can help control rodent populations.

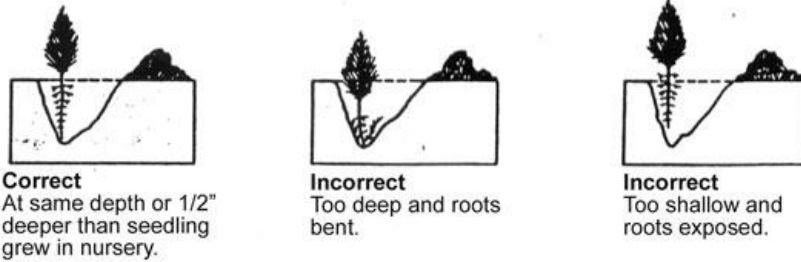
### *Thinning and pruning:*

It may become necessary to thin and/or prune a tree planting. Thinning or pruning usually happens 10-20 years after the planting. The exact timing of when to thin/prune depends on the site and the trees. The initial thinning should target undesirable trees that are competing with or over topping the canopy of the desirable trees. Small trees should be left to help train the tree to grown strait and aid in self pruning. A second thinning will more than likely need to happen in the future to provide more resources for the desirable trees. Please refer to the Forest stand improvement for guidelines on thinning.

Pruning may be considered if there are not enough volunteer trees to aid in self pruning. Also, some species of trees are poor self pruners. Pruning involves removing the lower branches of a tree to create a cleaner log and encourage growth upwards, not outwards. No more than 1/3 of the total tree crown should be removed in any given year. Cut the branches off as close to the trunk as possible without damaging the main bole. Make sure not to leave stubs. If a branch collar is present, cut where the collar and the branch meet (see Figure 2). The less defect in the main sawlog (bottom 17") of a tree, the more valuable it will be. Note that pruning is generally only economically feasible on high-value timber species (ie. black walnut and white oak).

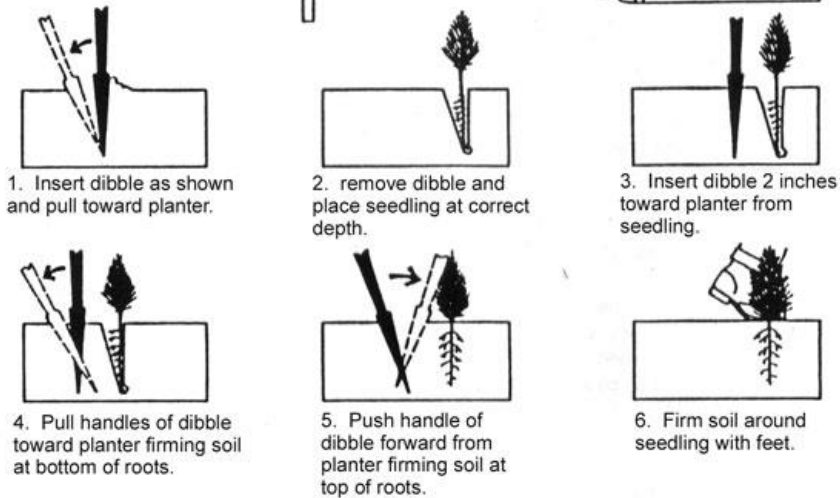
Figure 1.

### Correct and Incorrect Depths



### Dibble Planting

#### "Planting Bar"



### Mattock Planting

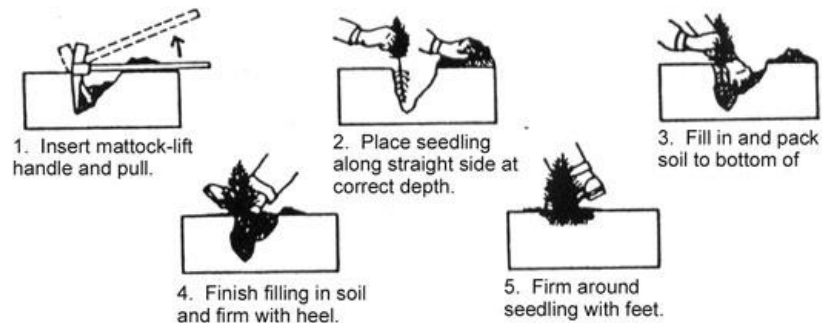
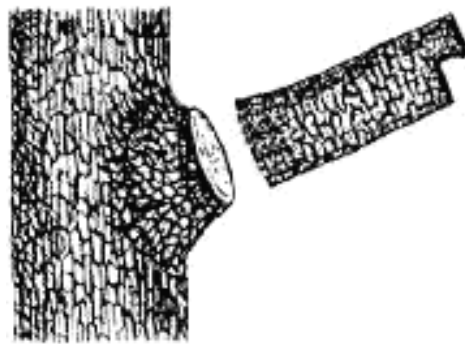
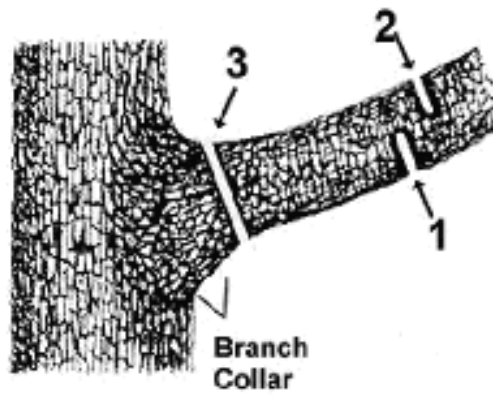


Figure 2.



**More useful information is available at:**

<http://www.csu.edu/cerc/researchreports/documents/IllinoisDirectSeedingHandbook2003.pdf>

<http://www.arborday.org/trees/tips/>