

## TREE & SHRUB PLANTING



Trees and shrubs are an important part of Michigan's natural ecosystem. About 50 percent of the state is forestland. The plants that make up our forests provide food in the form of fruits, berries, and hard mast (nuts) for a wide variety of wildlife; browse for rabbits and deer; nectar and pollen production for bees and butterflies; and leaves for caterpillars and other insect larvae. They also offer critical cover for wildlife to nest, rest, hide from predators, and seek shelter from heat, cold, and moisture.

The **Trees and Shrubs** chapter in the Backyard Management section explains the wildlife value of key plant species, and considers landscaping goals and site selection. The **Knowing Your Soils** chapter in the Habitat Planning section will help you understand how to identify soil types and to know what plants will grow best on your property. This chapter focuses on how to purchase healthy trees and shrubs, plant them properly, and manage them successfully. Considerations include site selection and preparation, plant selection and pre-planting care, planting techniques, and post-planting care.

### Site Selection and Preparation

The decision to plant shrubs and trees should be made months in advance of their arrival at the nursery or at your local county



### Trees and shrubs produce food and cover for a variety of wildlife.

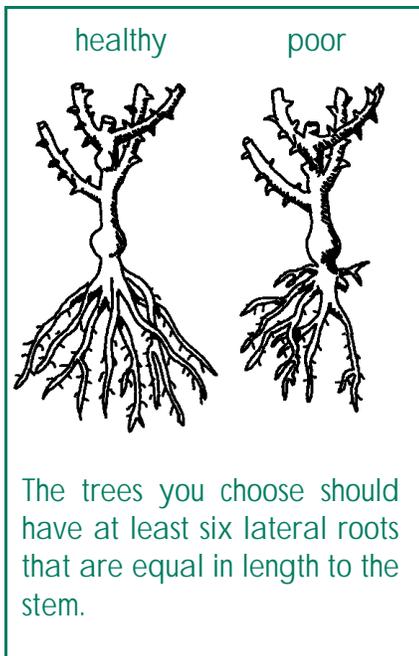
Conservation District. For best success, plan in the spring or summer before planting (including soil testing), prepare the site for planting in fall, order stock in winter, and plant upon arrival in early spring. Place your order early or you may have to choose from leftover stock or receive your seedlings past prime planting time. Lack of planning is one of the main reasons why some landowners fail to grow healthy trees and shrubs. Select plant species that are adapted to the soil texture, drainage, and amount of shade at your site. Do not plant a shade intolerant tree in the shade of other trees as they will die. Slopes greater than 6 percent, odd-shaped fields, ditch banks, property boundaries and wetland and forest edges all make ideal shrub-planting sites. The local Conservation District office, nurs-

ery, public library or Michigan State University Extension offices will have information on specific plant requirements.

Site preparation includes reducing weedy competition and any logging debris, and improves soil conditions for tree growth. Most planting failures can be traced to poor weed control, so this step is very important. Because weeds compete directly with seedlings for water, nutrients, and sunlight, they must be controlled before (and after) planting. In the fall before planting, place a weed-barrier cloth or apply a general emergent herbicide like Roundup. Be sure to read and follow all label directions. Individual planting sites should be 36 inches across. When planting in rows, prepare a 36 inch wide strip. All vegetation within the area must be killed. If weeds are growing again in spring when it is time to plant, apply an emergent herbicide once again. "Emergent" herbicides kill only those plants already growing. Mechanical treatments such as disking or plowing will also help to control weeds. Many tree planters even scrape the sod off the planting site at the time of planting to reduce weed competition.

### Plant Selection and Pre-Planting Care

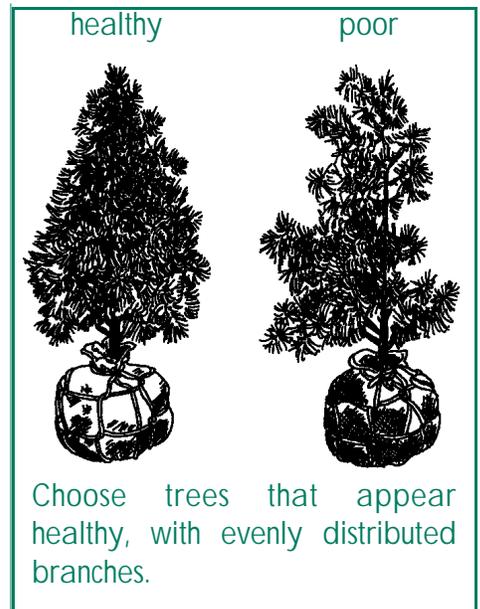
You may purchase trees and shrubs as transplants or seedlings. Transplants are plants that were uprooted and planted in another



location, while seedlings are young plants grown in one location. Both are available in bare-root form or come with soil either in containers or balled and burlapped. Seedlings are less expensive when bought in large amounts. They are also easier to plant with a tree planter because of their small roots. Transplanted stock is more expensive than seedlings, but survival and growth rates after planting are often better. In addition, larger transplant stock grows more quickly into recognizable trees or shrubs. When only a small number of trees and shrubs are needed, purchasing them with soil attached is a good idea because planting success rates are higher due to decreased shock to the plant. If possible, it is best to choose plants that were grown from a local source.

Seedlings can be one, two, or three years old and are designated as 1-0, 2-0, or 3-0 stock. Transplants are usually three to five years of age, and the last number in the sequence tells how long they have been in the transplant beds. For example, stock designated as 2-1 is three years old total, the last year of which was spent as a transplant. In addition to age, some seedlings and transplants are sold by height class, which has the advantage of establishing a plantation that should develop uniformly. Seedling sizes may range from six to 12 inches. Buy the biggest or oldest seedlings you can afford. Avoid small, spindly stock less than six inches tall. Hardwood saplings should have a trunk diameter (also called a stem caliper) of at least 3/8 inch and at least six vigorous lateral roots that should be equal in length to the stem. Avoid hardwood stock with a single large taproot.

How stock is handled at the nursery and in transit often determines its health. Signs of mishandling include dry roots, white-tipped roots, excess soil on the roots, swollen or burst buds, pres-

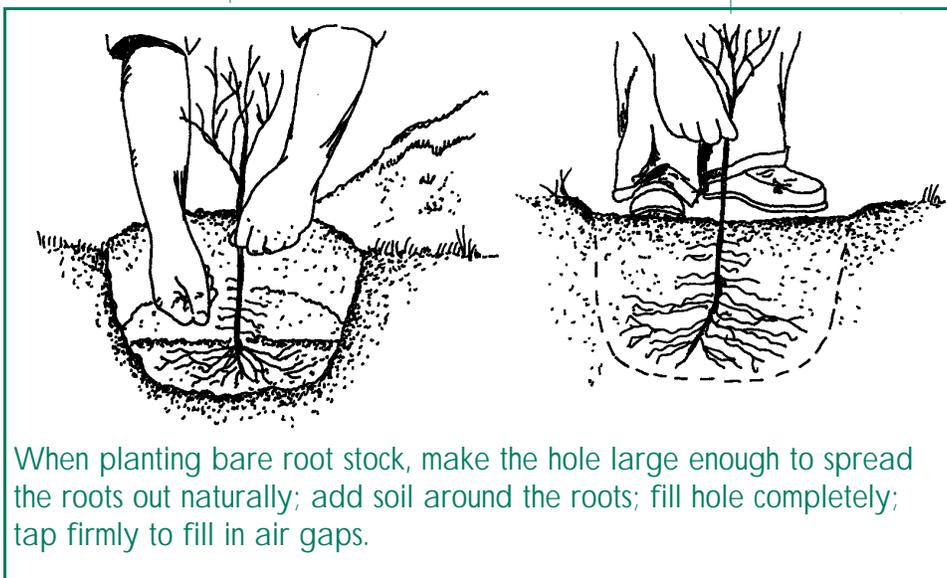


ence of mold on needles or stems, broken stems or stripped roots, and containers that are ripped or crushed.

Bare-root plants, regardless of whether they are seedlings or transplants, need to be kept moist before and during planting. Keep the shipping package moist or place the plants in a pail with an inch or two of water (over-watering can kill the plants). The best option is to mix peat moss, dirt, and water in a pail to make a slurry. Put the little trees or shrubs in

the slurry and keep them in a cool place (35 degrees Fahrenheit if possible) until you are ready to plant, which should be within 48 hours.

Plants sold in containers should have soil and roots joined tightly. Pruned roots should be cut cleanly and be no wider than an



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average finger. Check for the absence of large, circling roots by feeling down into the top 3 or 4 inches of the pot. Stock that has been balled and burlapped should have a firm root ball near the trunk. Size of the ball should be about 1 foot for each inch of trunk diameter.

## Planting Techniques

It is best to plant in early spring or late fall when the plants are dormant. However, in heavy soils such as clay, planting in fall is discouraged as the plants may be frost heaved from the ground before roots can become established. When planting, keep the young plants moist and out of direct sun, if possible. If the roots of the trees were not pruned to an eight-inch length at the nursery, do so with clippers or a sharp ax. Root pruning makes planting easier and increases survival rates. The depth of the planting hole and length of roots should be about the same but not less than 8 inches, and the root collar (small swelling where the ground level was at the nursery) should be an inch deeper than the new surface.

When planting bare root stock by hand, use a shovel to dig a hole large enough to spread the roots in a natural, uncrowded way, add soil around the roots to the root collar, and tap firmly to exclude air. You can also use a planting bar, or dibble, to make a vertical slit in the soil and to repack the soil around the tree after planting. Be careful not to crowd the roots, and make sure the soil is firmly replaced. If possible, water the trees after planting.

When planting trees and shrubs with soil attached by hand, slope the sides of the hole away



When planting trees and shrubs with soil attached to the roots, slope the sides of the hole away from the plant and dig deeply around the hole to prevent excessive shock to the plant.

from the plant and dig or deeply rototill to a depth of 12 inches around the hole. Before placing plants in the hole, loosen the roots from the soil. This extra preparation will lessen the shock of transplant and give roots a chance to spread in a wide periphery while in softer soil. How wide an area to dig depends upon the amount of space available, whether roots of other trees will be damaged, and soil compaction (the more dense the soil, the wider the area). The usual range to consider is two to five times the diameter of the root ball. Wet the bottom of the hole before planting, place the tree or shrub upright, pack soil firmly, and water if possible.

Planting machines are usually used when planting large numbers of trees or shrubs. Bare root stock is usually used. The planting machine makes a slit in the soil where the operator places the tree. The machine then closes the slit and packs soil around the roots. Typically pulled behind a tractor, some planting implements have a furrowing attachment to clear away

debris and vegetation. Others have spray attachments for applying herbicide. Check with your county Conservation District office or nursery for availability.

One person can plant 40 to 60 trees or shrubs per hour by hand or 200 to 300 per hour with a machine planter. Hand planting may be the only method on steep or rough terrain, and it is better for walnut and various oaks, which have long tap-roots. If you are planting conifers, the typical rate is 600 to 1,000 trees per acre. Hardwoods are typically planted at 300 to 500 trees per acre. Windbreaks of hardwoods and/or conifers should have at least three staggered rows. Tree spacing to reach these recommended densities is included in the

| Distance Apart | Number of trees per acre |
|----------------|--------------------------|
| 6 X 10         | 726                      |
| 7 X 7          | 889                      |
| 7 X 10         | 622                      |
| 8 X 8          | 681                      |
| 9 X 9          | 538                      |
| 10 X 10        | 436                      |
| 12 X 12        | 302                      |

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accompanying panel. Do not plant stems and rows too close together. Eight to 10 feet apart is usually sufficient. This may look like a long way when the stems are 10 inches tall, but when they are eight feet tall you will know why you should plant them with ample space.

## Post-planting Care

Watering at intervals will help newly planted trees and shrubs to become established and grow successfully. Mulching with bark, peat moss, or straw retains soil moisture and holds down competing weeds or grass. Support stakes and wires will help taller trees if necessary. Protect the tree from browsing by deer or rabbits, if necessary, by installing plastic tubes or wire cages.

After the first year, some maintenance is usually needed. Eliminate competing vegetation

within a 3-foot circle for a period of at least three years. Hand pulling weeds, hoeing or relying on a selective herbicide are all good methods whether applied singly or in combination. Using weed whackers or whips is not a good idea because they can injure young plants. Mowing is not usually effective weed control either. Pruning may also be needed annually to help growth.

In summary, successful tree and shrub planting requires thorough planning, careful selection and planting, and proper maintenance. Poor maintenance may delay the growth of your trees and cause them to die or require replanting. However, if done correctly the reward is added beauty to the landscape and invaluable habitat for wildlife.



Keep a watchful eye out for wildlife eating your new plantings for lunch.

### FOR ADDITIONAL CHAPTERS CONTACT:

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**Private Land Partnerships:** This partnership was formed between both private and public organizations in order to address private lands wildlife issues. Individuals share resources, information, and expertise. This landowner's guide has been a combined effort between these groups working towards one goal: Natural Resources Education. We hope this manual provides you with the knowledge and the motivation to make positive changes for our environment.

FOR ADDITIONAL ASSISTANCE: CONTACT YOUR LOCAL CONSERVATION DISTRICT