

FORESTRY FACTS



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Species For Christmas Trees In The Lake States

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Growing Christmas trees is wonderfully satisfying. It is an opportunity to earn extra money, watch and help trees grow, maximize the potential of your land, involve the family, start your own business, and more. It also requires commitment, hard work and some important land management decisions.

One of the most important decisions for anyone interested in growing Christmas trees is what kind of trees to grow. This decision reflects the location of your land, the type of soil, the amount of care you can give to your trees, and your awareness of local and distant markets. In fact deciding which species to grow can make the difference between success and failure of your new business.

This publication explains some of the strong and weak points of trees commonly planted in the Lake States for Christmas tree production. These are species which are well adapted for our soils, winters and markets. They are not, however, the only species available. Species not discussed in this publication such as Black Hills spruce and Douglas fir are grown in limited numbers by some growers. Case studies on successes and failures on growing species such as these can be found in publications of the state Christmas tree growing associations, the National Christmas Tree Producers Association or talking with other growers.

Getting Started -- Slowly

Before deciding to get into the Christmas tree business a few words of caution are in order. Growing Christmas trees requires a fair amount of labor and there are many costs such as taxes, herbicides, fungicides, insecticides, and fertilizer beyond the more basic ones of equipment, labor and insurance. Learn all you can about growing and marketing the trees before even buying land or planting stock. Attend a state association meeting and visit with those who are already in the business. There is a Christmas tree growers association in all the Lake States as well as the National Christmas Tree Association located in Milwaukee, Wisconsin. Addresses of the associations are listed in the back of this publication. Your local University Extension Office or Department of Natural Resources Office is another source of information regarding tree planting and where you might purchase trees.

It is strongly recommended that you start out on a limited scale. Remember that you are dependent on the weather to provide enough moisture, good growing seasons and relative freedom from insects, diseases and fire. As a grower you will have to learn what you can do to minimize the losses from these hazards. By starting out with few trees, you will help yourself stay committed and limit your early losses. In addition, growers should remember

that consumer interests and demands do change over the years and Christmas trees are a long range crop, subject to many perils and management costs. Consultation with Christmas trees growers associations, nursery growers and professional foresters will all help guide a new grower in helping to determine the species to plant and the future value of the crop.

Planting Stock

Seedlings, transplants, containerized trees and "pulls" or "wildings" are all terms used to describe different types of stock available to the Christmas tree grower. The terms are used to differentiate stock with different growth histories and different pros and cons.

The age and growth history of planting stock is usually described using a two number code. In this, the first number is the number of years the "tree" spends in its original seed bed. The second number indicates the number of years a "tree" spent in a transplant bed. Adding these two numbers together will yield the age of the tree.

A seedling is a young tree planted from seed and lifted (removed) from the bed 2 to 3 years later. If lifted after two years, it is called a 2-0 seedling. If lifted after three years, 3-0, etc.

Transplants are young trees which start out as seedlings, but are lifted, pruned and replanted at a wider spacing to allow for more growth. 2-1 stock grew for two years as a seedling and one year as a transplant. 2-2 stock grew for two years as a seedling and two years as a transplant.

Containerized trees are grown in greenhouses under ideal conditions for a period of several months. The name refers to the styroblocks they are grown in while at the nursery. Some containerized seedlings are transplanted for one or two years before planting.

The terms "pulls" or "wildings" refers to naturally seeded young balsam fir trees which are pulled from the woods. They are most successful if planted in a transplant bed for a year or two before planting in the field.

Species Choices

When choosing a species to plant for Christmas trees a grower must choose the species best suited for the site. This means taking into consideration the soils, exposure, existing vegetative cover and availability and size of stock. It also means choosing between short and long needled trees. Pictures of the species discussed are found in the last part of this publication.

Common Short Needled Trees

Commonly planted short-needled trees include balsam fir, Fraser fir, white spruce and blue spruce. Less frequently, Black Hills spruce, Norway spruce, black spruce, concolor fir and Douglas fir are planted for Christmas tree production. They are not discussed in this publication.

Balsam Fir (*Abies balsamea*)

This species is perhaps the favorite tree of both consumers and growers. The species is tolerant of shade and grows well in dense woodland settings, but requires sunlight to develop into a well shaped Christmas tree. Its distinctive fragrant foliage contributes greatly to its popularity.

Range: For our region, balsam grows best in the northern parts of the Lake States.

Site conditions: Balsam prefers a north or east exposure with a pH of 4.5 to 6.0. It will not do well in frost pockets and requires some type of grass control around the young plantings. Balsam prefers moist, well drained soils near lakes and streams and likes cold winters and warm (as opposed to hot, dry) summers.

Needles: The needle-like leaf is flat, stalkless (being attached flush to the trunk or branch) and between 1/2 and 1 inch in length. It is a rounded point needle, dark green and lustrous above with silvery white bands beneath. The term "double needle" balsam is sometimes used but only means that the tree has been growing in ample sunlight and has developed an unusually dense needle arrangement.

Twins, branches, bark: Twigs grow out almost perpendicular to the grayish and finely hairy branches. The twigs resemble crosses and the rounded bud tips are coated with a waxy pitch. Bark is gray or brown, thin and quite smooth often with many resin blisters.

Common diseases: The balsam gall midge and the balsam twig aphid cause many needle problems for Christmas tree growers.

Recommended stock: Most growers have found that it is to their advantage to purchase transplant stock instead of seedlings. The additional root development as well as larger size prove to be well worth the increased cost. If using "pulls" remember they may do better if put in a transplant bed for a year or two first.

Fraser Fir (*Abies fraser*)

Being a native to high elevations of the Appalachian Mountains, Fraser fir will not grow on all sites in the Lake States, but it is growing in popularity and is well liked by the consumer. In the Lake States it is a slow grower and it is not uncommon for it to take 10 to 14 years to reach a market size of 8 feet.

Range: Fraser fir can be planted down to 1500 feet if located on a northeast facing slope.

Site conditions: This tree can stand the winter cold and is moderately frost tolerant, but not tolerant of drought or shallow soils. It requires good, fertile, well-drained soil. If that optimum soil is not possible, it requires at least moderately fertile well-drained soil about two to three feet deep and with good organic matter for moisture retention. A soil pH of 3.5 to 5.5 is the best range for this species, especially with elevations in excess of 2000 feet.

Needles: Fraser fir has flat, short, (3/8" to 1 1/4") dark green needles with a pleasant fresh cut aroma. The underside of the needle is silvery and soft to the touch.

Twigs, branches, bark: A somewhat stiffer twig than balsam fir and branches taking on a stout appearance. The bark has numerous resin blisters.

Common diseases: Fraser fir is relatively pest free, but the spider mites can affect it. A disease called Phytophthora root rot can affect the roots in heavy or poorly drained soils.

Recommended stock: Large transplant stock of 2-2 or 3-2 is generally recommended. Grasses and sod compete for moisture with smaller stock.

White Spruce (*Picea glauca*)

This native tree has a long history as a Christmas tree as well as pulpwood and lumber species. Its one disadvantage is a relatively poor needle retention. Retention has improved with the addition of a chemical spray which increases needle holding capacity, but even so this tree is not a favorite to ship. Its bulk also complicates shipping. This species will do well for a grower who has a choose and cut operation or is close to a retail outlet.

Range: Extensively found in forests of the northern Lake States as well as the far eastern U.S. and Canada.

Site conditions: A soil pH of 4.8 to 6.5 is preferred on moist upland sites. White spruce does best when planted on a heavier soil with a slope of 25% or less.

Needles: Needles are four-sided and crowded along the upper half of branches. They are 1/2" to 3/4" long, dark bluish-green when mature and are sharply pointed. White spruce is sometimes called the "cat" spruce, a name it earned from a slightly disagreeable odor given off when its needles are crushed.

Twigs, branches, bark: Twigs are stout, with orange-brown bark grading to a gray color on the trunk. On young trunk and branches the bark is quite smooth.

Common diseases: The spruce budworm, Eastern spruce gall aphid and spruce spider mites attack the white spruce.

Recommended stock: 2-1 or 2-2 transplant stock is recommended for white spruce planting.

Nurseries produce quality transplant stock at reasonable price. The additional cost of a transplant is money well spent when planting this species.

Blue Spruce (*Picea pungens*)

The blue spruce, generally referred to as Colorado blue spruce, is often thought of as a landscape plant, but has found its way into the Christmas tree market. Because the true blue color is not reliable, many Christmas tree growers pick their own seed from known blue sources of parent stock to ensure more blue colored trees at harvest time. A grower may do better financially to grow trees to sell as potted or baled live trees.

Range: The natural range is in Colorado, Montana, eastern Utah, central Arizona and eastern New Mexico. It is commonly grown in the Lake States.

Site conditions: This species is tolerant of extreme low temperatures but grows slower than white spruce. It grows best on western, southern and eastern slopes of 15% or less, at a pH range of 5.5 to 6.0.

Needles: Needles are short, generally around one inch long, four sided, prickly, stiff and sharp. The needles grow all along and around the twig.

Twigs, branches, bark: The twig is straight, stout, smooth and dark yellow brown. Bark on young trees often takes on a cinnamon-red color.

Common diseases: The Cooley spruce gall aphid does cause some damage but the fungus *Rhizosphaera* needlecast is a very serious problem in Wisconsin. Most growers must apply a fungicide annually to control the needlecast.

Recommended stock: Another species that will do best if transplant stock is used in the field planting.

Common Long-Needled Trees

Pines represent the long-needled species, with Scotch pine, red pine, and white pine making up the majority of the pines grown for Christmas trees. Austrian pine has been tried, but it is susceptible to disease and extreme cold so it is rarely a good choice. Good needle retention is one advantage that the pines have over the short-needled firs and spruces. However, the pines lose their color early and growers must color the trees with some type of green foliage spray.

Scotch pine (*Pinus sylvestris*)

Scotch pine is perhaps the most commonly grown tree for Christmas trees in the Lake States. But choosing a preferred Scotch pine variety can still be a challenge. There are several varieties of this species, each with their own special characteristics. It is generally true that the varieties with the longer needles tend to be more resistant to winter injury and more tolerant of frost than the shorter needle varieties. The Southern European varieties include the French and Spanish with shorter needles and good color. Central European varieties such as Scotch Highlands, East Anglia, Spey Valley, Belgian and Austrian Hills are fast growers with long needles. Trees from Northern Europe are not considered to be good quality planting stock. Growers should be aware that if Scotch pine is not cut for Christmas trees, the majority of this species tends to develop very crooked stems as well as disease and insect problems.

Range: Scotch pine has an extremely broad growth range not only in the Lake States but throughout central and eastern U.S. Since it is a native of Europe it is found over most of that continent as well as northern Asia.

Site conditions: This tree likes full sunlight and sandy soils. It is tolerant of shallow soils and does best on south and western exposures on slopes of 15% or less. The pH range is 5.0 to 6.0.

Needles: Needles, in groups of two, range in size from 1 1/2" to 3" and are stiff, flattened, twisted and spreading. Colors range from green to blue-green.

Twigs, branches, bark: Branches are regularly whorled in young trees but more often than not the trunk is crooked. The bark is bright orange-red on young trees and somewhat darker on older trees.

Common diseases: Scotch pine diseases include Brown spot needlecast, *Lophodermium* needlecast, *Cylaneusama* needlecast and winter burn. The major insect pests are the pine tortoise scale, pine needle scale, redheaded pine sawfly, root collar weevil and Pales weevil. Deer and mice also cause damage.

Recommended stock: 2-0 seedlings as well as containerized stock do well for this fast growing tree.

Red Pine (*Pinus resinosa*)

This tree, also known as Norway pine, is commonly grown as a reforestation species but over the years has been used to form some beautiful Christmas trees. While it is planted in great abundance in the Lake States, it is presently not as popular for Christmas trees as the Scotch pine. Because of its rapid growth on sandy soils care must be taken to ensure that the shearing is completed during the proper time. Red pines are well suited to plantation growth since they do not grow well in shade.

Range: Red pine is a native of the Lake States so it is suitable on any exposure and throughout most of the region. The name Norway pine comes from an early explorer who confused the red pine with Scotch pine which grew in Norway.

Site conditions: Red pine prefers dryer, sandy or sandy-loam soils. It grows well on a soil pH of 5.0 to 6.5.

Needles: The needles are 4" to 6" long, dark green in groups of two along the branch.

Twigs, branches, bark: A very distinguishable reddish, brown bark which breaks into thin, irregular flaky scales. The color carries through into the twigs.

Common diseases: Red pine is damaged by the red headed pine sawfly, pine root collar weevil and Pales weevil.

Recommended stock: Quality 2-0 seedlings are now the most common bare root planting stock. Since this is a rather rapid growing tree the planting of 3-0 seedlings grown in the central and southern areas of the Lake States can be extremely difficult to plant because of their size. Containerized trees are very popular and grow well.

Eastern White Pine (*Pinus strobus*)

Presently white pine is not among the most popular Christmas tree species. This is largely because its soft flexible branches do not support numerous or heavier decorations. However, its flexible branches are an asset for shipping since the tree lends itself to easy baling and shipment on trucks. Because white pine grows fast it requires heavy shearing to keep the main trunk hidden with foliage. Because of their straight trunks and suitable wood, white pine can be left to grow for lumber if plans should change and Christmas trees are not cut.

Range: Not only does white pine cover the most of the Lake States, it also is common throughout the eastern U.S.

Site conditions: White pine thrives best on soils between 4.8 and 7.4 pH. Eastern exposures are optimal but it will grow on most exposures with slopes of 30% or less. It grows on sandy soils and rock ridges, but prefers fertile well-drained soils. It is fairly tolerant of shallow soils, drought and shade.

Needles: Needles are 3 to 5 inches long, bluish-green, flexible and occur in groups of five.

Twigs, branches, bark: Branches are dense and horizontal with thin, smooth bark. The bark is grayish green to dark green in color.

Common diseases: Insects such as the white pine weevil and diseases such as the white pine blister rust (in northern ranges) are only two of several which can be a problem. The introduced pine sawfly is also a major pest in Southern Wisconsin. Environmental injury can also be a problem since white pine is susceptible to air pollution and winter burn.

Recommended stock: Seedling and transplant stock do well. As with all species, transplant material does tend to have a better developed root system.

Associations

----- Michigan Christmas Tree Association
P.O. Box 256
Okemos, MI 48805-0256

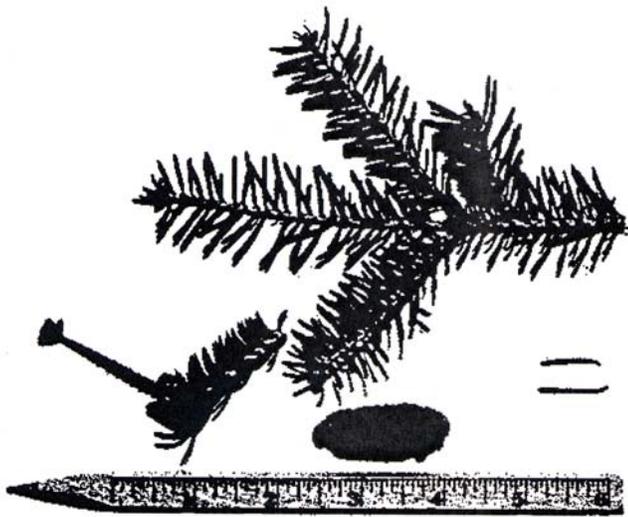
----- Wisconsin Christmas Tree Producers Assoc.
P.O. Box 105
Arlington, WI 53911

----- Minnesota Christmas Tree Growers Assoc.
P.O. Box 124
Osseo, MN 55369

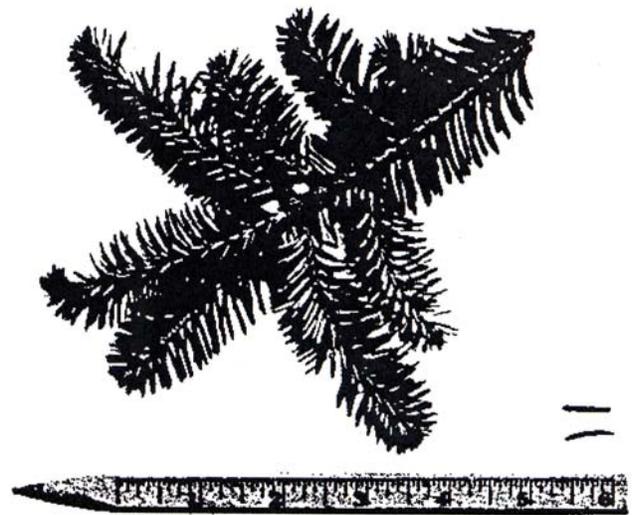
----- National Christmas Tree Association, Inc.
611 E. Wells Street
Milwaukee, WI 53202

Summary of Species Requirements

Species	Soil Type	Soil pH	Site	Exposure	Tolerance To Frost
Balsam Fir	Sandy to Clay Loam	4.5 to 6.0	Moist Uplands	North and East	Poor
Fraser Fir	Clay to Clay Loam	3.5 to 5.5	Moist Uplands	North and East	Fair
White Spruce	Sandy to Clay Loam	4.8 to 6.5	Moist Uplands	North and East	Poor
Blue Spruce	Sandy to Clay Loam	5.5 to 6.0	Moist Uplands	West, South and East	Poor
Scotch Pine	Sand to Sandy Loam	5.0 to 6.0	Dry	South and West	Good
Red Pine	Sand to Sandy Loam	5.0 to 6.5	Dry	All	Good
White Pine	Sand to Clay Loam	4.8 to 7.4	Moist	All	Fair



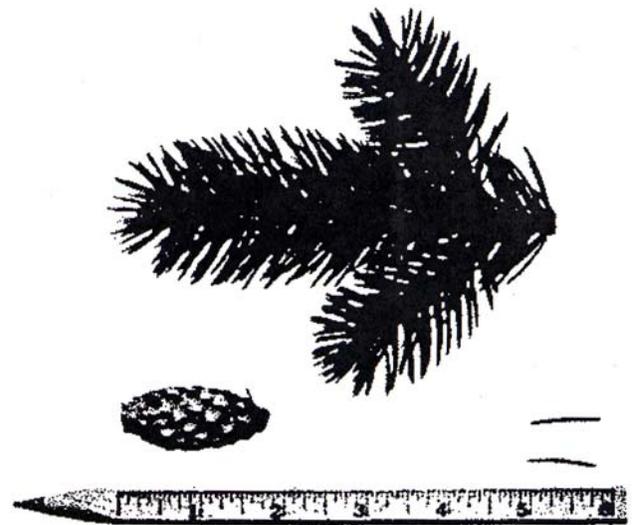
BALSAM FIR



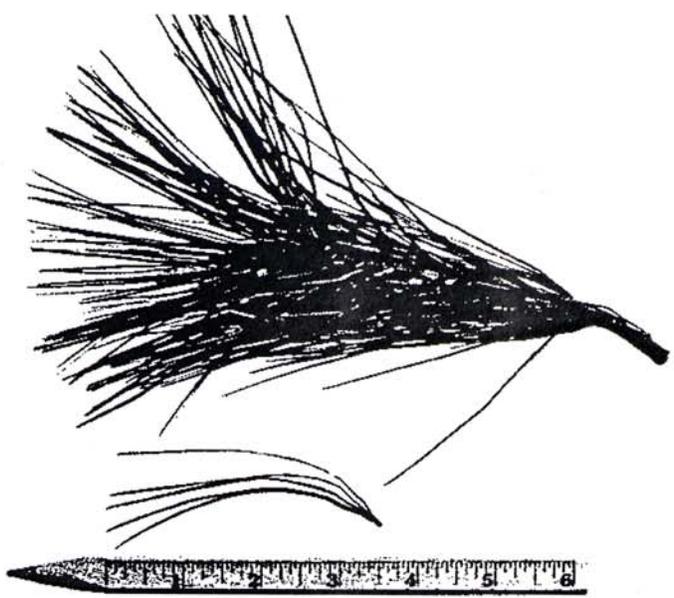
FRASER FIR



WHITE SPRUCE

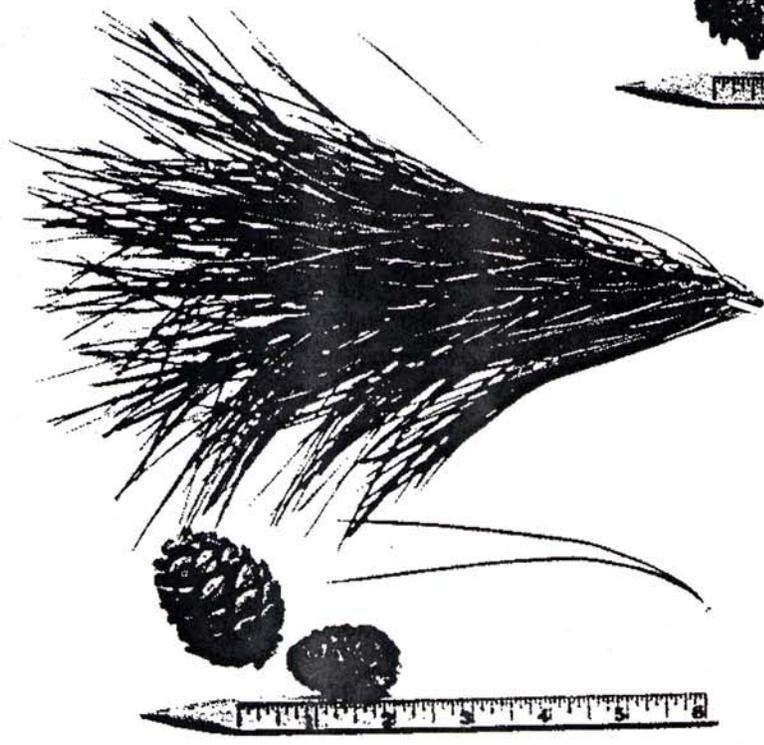
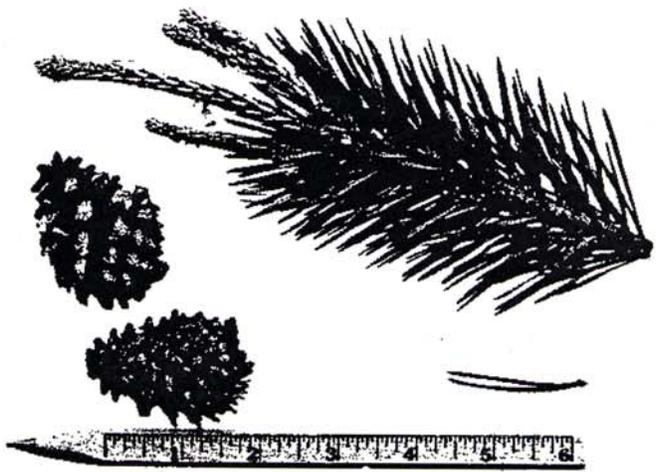


BLUE SPRUCE



WHITE PINE

SCOTCH PINE



RED PINE