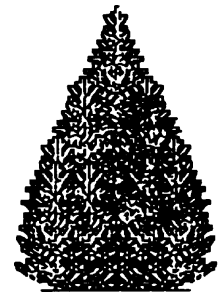


CHRISTMAS TREE PRODUCTION IN IOWA



Establishment and Care

Introduction

High-quality Christmas trees are not produced by merely planting seedlings and waiting a few years for a harvestable crop. There are several possible combinations of species selection, weed control, shearing patterns, and other decisions that make up the production sequence. The most profitable combination depends on the circumstances of the individual land manager.

Intensive cultural work is needed to produce high-quality Christmas trees. Operations include selection and evaluation of planting site, species and seed source selection, proper plantation establishment techniques, weed control, insect and disease control, shearing and shaping to improve form and density, and marketing the final product.

This publication contains information about the establishment and care of Christmas trees. For information on economic returns, consult extension pamphlet Pm-1499, *Christmas Tree Production in Iowa: Economics and Marketing*.

Environmental factors

The total environment of a tree is a complex interrelation of physical and biological factors. Physical factors include climate and soil. Biological factors are plant associates, the producer's cultural activities, large and small animals, fungi, and insects. To produce high-quality Christmas trees, the grower should understand these environmental factors and their effects on different species.

Site

For good growth, Christmas trees require well-drained, slightly acid soils. The best sites for growing Christmas trees in Iowa are slopes that face north or east and have loam soils. These slopes are protected from hot, dry summer winds, and their soils provide excellent growing media for trees.

Christmas trees will grow on other slopes and soils, but not as well. They will not flourish in calcareous (high lime) soils. Avoid soils that are continually wet and those with clay hardpan subsoils.

You have a wider choice of species if you are planting on a good site rather than on a poor site.

Species selection

When choosing a species for Christmas tree production, you should know if it is adapted to Iowa's climate and whether it will be accepted by the consumer.

Species that grow well in Iowa are Scotch (Scots) pine, white pine, red pine, Norway spruce, Colorado blue spruce, white spruce, balsam fir, fraser fir, Douglas fir, and concolor fir. Before deciding which to produce, investigate local consumer preferences; one species may be more desirable than another in a given locality. Douglas fir, for example, is favored by consumers in Nebraska and Kansas, while Scotch pine is the most popular in Iowa.

Because of public acceptance and species adaptability, you might narrow your choice to three species: Scotch pine, white pine, and red pine. These three, in fact, account for approximately 90 percent of the Christmas trees grown in Iowa.

Following are descriptions of these three species, along with general information about what and where to plant.

Scotch Pine **(*Pinus sylvestris*)**

Scotch pine is the most common Christmas tree, not only in Iowa but throughout the nation as well. Its needles are medium long, stiff, twisted, and in bundles of two. The tree holds ornaments well.

This species has a great deal of genetic variability in foliage color, needle length, stem straightness, and growth rate, depending on the original source of the seed. Scotch pine varieties come from three general areas: southern, central, and northern Europe.

Northern European strains (Riga) often have poor color. Southern European strains (France and Spain) have good color and shorter needles. They tend to grow slowly and to have heavier, crooked stems. They also are more susceptible to winter damage and some needle diseases. Central European strains (Scotch Highlands, Belgium, Austrian Hills, and East Anglia) have medium needle length, medium green color, and a faster growing rate. They are well suited to Iowa's conditions.

Many nurseries have selected strains with characteristics they consider desirable. These strains may not be desirable for Iowa, however, and producers should plant them on a trial basis.

Scotch pine needs fairly well-drained soil. Plant trees on north- and east-facing slopes in western Iowa and on all slopes in eastern Iowa.

White pine **(*Pinus strobus*)**

Investigate local market demand for this species before planting. In some

areas, white pine Christmas trees are in high demand, while in others demand is lower.

Needles are medium long, thin, blue-green in color, and in bundles of five. White pine foliage has a soft texture. The tree has poor density if not sheared.

White pine is widely adapted on well-drained soils, but it also does well on moist sites. It can be planted on all slopes in eastern Iowa and on north- and east-facing slopes in western Iowa.

Red or Norway Pine **(*Pinus resinosa*)**

Red pine is widely planted in eastern Iowa. It is more difficult to shape than white or Scotch pine. Needles are long, somewhat flexible, and in bundles of two. Red pine grows best on well-drained soils and is adapted to north- and east-facing slopes in eastern Iowa only.

Selecting stock

You can purchase seedling evergreens from the Iowa Department of Natural Resources Nursery at Ames or from commercial nurseries.

Young trees are sold as seedlings, transplants, or containerized plants. Seedlings and transplants are identified according to age with numbers such as 1-0, 2-0, 3-0, 2-1, and 2-2. The first digit refers to the number of years the tree has been in the seedbed; the second digit refers to the number of years in the transplant bed. Containerized plants are usually greenhouse-produced and sold by top size and container size.

When selecting planting stock, consider age, top size, and root size. Another important factor is root-shoot balance: Make sure the seedlings have sufficient root systems to support the tops.

Planning before planting

To avoid operational and maintenance problems, give some thought to the plantation's layout and design before you begin planting. Here are some suggestions to consider.

Plan lanes every six to 10 rows for firebreaks, access during development, and tree removal at harvest time. Lanes should be 12 to 16 feet wide, located around and throughout the entire plantation. To minimize spread of fire, they should be mowed short or kept free of vegetation by disking or spraying with an appropriate herbicide.

Provide easy access to the plantation for trucks and equipment by avoiding sharp turns and steep slopes. The road to the plantation should be passable by trucks in all kinds of weather.

Plan ahead for harvesttime, when you will need an area at the front of the plantation for concentrating cut trees, turning trucks around, and loading.

The distance between trees and rows depends largely upon the kind of maintenance machinery you plan to use. For a garden-type tractor, space trees five feet apart with five feet between rows. In this five-by-five spacing, trees will be smaller than in wider spacing. On the other hand, if you plan to use a two- or three-plow tractor and equipment, such as a 50-inch rotary cutter, eight to 10 feet between rows is more desirable. The most popular spacing has been five by eight feet. On steep slopes, space rows farther apart to provide clearance for equipment.

Table 1 shows the number of trees to plant per acre at various spacings.

Site preparation and planting

Where ground is level and will not erode, fall plowing followed by disking in the spring provides ideal planting conditions. In heavy sod on steep land, plow or till strips for planting each row of trees, or spray the strips with a herbicide like Roundup. Some tree-planting machines have a sod-busting blade for planting without prior ground preparation, but most tree-planting machines are not satisfactory in Iowa for planting in sod without prior site preparation.

The best time to plant is in the spring when the soil temperature approaches 50 degrees Fahrenheit. This is about oat-sowing time in April.

If possible, pick up the young trees at the nursery to avoid damage that sometimes occurs during commercial shipment.

If you must store trees for a time, put them in a cooler at 35 to 40 degrees Fahrenheit. If a cooler is not available, “heel” them in the ground in a protected, shady spot: Dig a trench by pitching the soil to one side, place the roots in the trench with the tops protruding, then fill the trench with the original soil. Soak thoroughly with water.

When you are ready to plant, simply dig up the heeled plants as needed. Be sure to keep the roots moist at all times; tree roots exposed even briefly to drying winds will be injured or killed. When planting, carry the seedling trees in a pail containing enough thin, soupy mud to cover the roots, or use superabsorbant water gel.

On level or rolling ground, you can use a tree-planting machine. Two people with a tractor and a planter can plant 6,000 to 8,000 trees per day.

One person can hand-plant 400 to 600 trees per day. Your county extension education director, district forester, or County Conservation Board can help locate a planting machine.

If planting several different species of trees, plant each species in separate blocks for easier pest control.

For further information on planting, consult extension pamphlet Pm-496, *Tree Planting in Iowa*.

Weed control

Weed control depends primarily on soil type. Less weed competition occurs on coarse, sandy soils than on rich, loamy soils.

Several chemicals control grass and weeds, including Princep, Poast, Surflan, Goal, Kerb, and Fusilade.

Roundup can be used as a rescue treatment, either by shielding each tree or by spraying at a reduced level in late fall. Application of chemicals must conform to the manufacturer’s recommendations.

Mulching with organic mulches such as wood chips, ground corn cobs, or grass clippings also provides satisfactory weed control. Do not use manure as a mulch.

Mowing between rows, combined with herbicide or mulch on the rows, will control most competing vegetation. Mowing also reduces fire hazard by diminishing fuel buildup and helps control some diseases and rodent populations.

Fertilizer

Conifers do not have heavy nutrient requirements and in Iowa’s naturally fertile soils generally do not need additional fertilizer. Excessive nitrogen can “burn” young, supple needles.

Shearing

For top-quality trees with full, symmetrical crowns, dense foliage, and good taper, shearing (pruning) is

essential. An ideal tree is two-thirds as wide as it is tall. This means a tree six feet tall would be four feet wide at the base. Pines should have a slightly wider base than spruces and firs.

Shearing starts the third or fourth year after planting, or as soon as growth of the terminal leader exceeds 10 to 12 inches in length.

Shear pines during the growing season, usually from early June through mid-July. Clip the terminal leader on a 45-degree angle back to 10 to 12 inches in length. Shear all lateral branches in the top whorl to four to six inches in length. Then shape the rest of the tree to conform to a cone. You can shear pines into one-year-old wood but not into two-year-old wood. To set new buds, pines must have healthy, vigorous needle bundles, which are not present on two-year-old wood.

Shear spruces and firs during the dormant season in late summer and fall, usually after the middle of August. Cut back the leader on a 45-degree angle, one-half to one inch above a bud. Also cut back the laterals around the leader, leaving at least one bud on each so that lateral branches fit the desired cone shape.

Basal pruning—the removal of all branches below the first good whorl 12 inches above the ground—can be done any time during the year.

For further information on shearing, consult extension pamphlet F 348, *Christmas Tree Shearing*.

Protecting young trees

Conifer needles destroyed by fire or grazing will never regrow. Maintain fire breaks around and through the plantation to control grass fires, and construct a sturdy fence to keep farm livestock out.

Rodents, rabbits, and deer can damage Christmas trees. In the winter, field mice frequently girdle

young stems of small trees. Rabbits usually chew on the bark. They also eat buds, which can cause serious damage. Deer feed on buds and small branches and rub their antlers on small trees, causing breakage and bark damage.

Control field mice by maintaining poison-bait stations throughout the plantation or by mowing in late fall to reduce the winter habitat. Heavy hunting is a good control measure for a large rabbit or deer population. Some chemicals can be sprayed on trees to repel rabbits and deer.

Insects and diseases can destroy a Christmas tree plantation. Be especially watchful in early spring and late summer for insects and any

abnormal growth or appearance on the trees. If you notice any abnormal situation, consult your county extension education director or district forester.

Other information

Each land manager's Christmas tree production possibilities are unique. For specific information for a locality, contact the district forester of the Department of Natural Resources, the county extension director, or the local representative of the Soil Conservation Service. Appropriate information may make the difference between success and failure.

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Table 1. Trees per acre at various spacings.

Tree spacing:	5 x 5	5 x 6	5 x 8	6 x 6	6 x 7	6 x 8	8 x 8	6 x 10
Trees per acre:	1,740	1,450	1,090	1,210	1,037	910	680	725

. . . and justice for all

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