

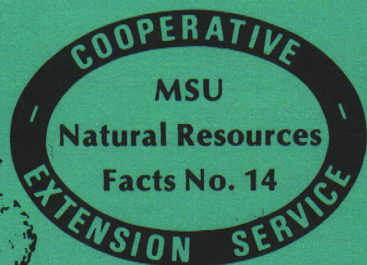
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Growing Christmas Trees in Michigan
Michigan State University
Cooperative Extension Service
Michigan Christmas Tree Association
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Growing Christmas Trees in Michigan

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By **M. R. Koelling and D. P. White**
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Michigan is a leading producer of plantation-grown Christmas trees. The location, climate, and soils of the state are well suited to the production and distribution of quality Christmas trees, and for the past several years Michigan-grown Christmas trees have been marketed throughout the U.S. Of the annual national harvest of 29 million trees, nearly 14%, or approximately 4 million trees, come from Michigan plantations located in many different areas of the state. Some trees are produced on lands owned and managed by large national companies while others are harvested from small plantations which comprise only a portion of a larger farm operation.

For some, the possibility of producing Christmas trees appears to be an attractive means of generating additional income. Such ventures may be established to serve as an investment for children, to supplement retirement income, or to provide additional income to pay land taxes, etc. Others may wish to establish and manage a Christmas tree plantation as a means of adding to the value of land which is being held for speculative purposes. For

any of these objectives, the first step is to acquaint yourself with the Christmas tree industry and the requirements for cash, labor inputs, land, equipment, and general management techniques. This publication helps to answer a few of the basic questions which should be resolved before investing time and capital in establishing and producing Christmas trees in plantations.

Can Christmas Trees Be Grown In All Parts Of The State?

Generally speaking, yes, although some areas are better suited than others. A combination of adverse climate and unfavorable sites prevents some species such as Fraser fir, Douglas fir, and certain varieties of Scotch pine from growing well in northern areas; however, other species such as white spruce and balsam fir can grow very well. These latter two species are commonly planted in the southern portion of the state as well. Harvesting may be more difficult in northern counties, owing to heavier snow conditions in the late fall. Furthermore, the distance to large metropolitan marketing areas is greater for trees produced in northern Michigan plantations.

Small tracts of rough or irregularly shaped land are well suited for growing Christmas trees.



What Type Of Soil Is Required?

Depending on the species, Christmas trees can be successfully produced on nearly all Michigan soil types with the possible exception of poorly drained soils including mucks and peats. However, not all species can be grown on all soils. As a rule, pines are better adapted to coarser soils containing sand and gravel while the various spruces, Douglas fir, and balsam fir will grow better on finer textured soils such as loams and clay. Obviously, depending on local conditions, some overlap in species adaptability to soils is present. For all species adequate drainage is important. Generally speaking, Christmas tree plantations will not be profitable in wet areas with poor drainage.

How Much Land Do I Need?

This will depend on how much time, effort, and money is available to establish and manage the plantation. Approximately 1,210 trees can be planted on an acre of land with the trees spaced 6 feet both ways (normal spacing). Firs can be planted somewhat closer. In actual practice, however, the number planted will be slightly less (1,000+) since some space will be used for access lanes, turning areas, etc. For hobby or supplemental income purposes, nearly any size area can be used, depending on the level of activity and income desired. For commercial operations producing trees for the wholesale market, a 40-acre plantation is probably minimum size with larger acreages (around 100) more cost efficient. Large operations mean more efficient use of time and equipment and greater income. Remember that several ages of trees must be present to support sustained annual harvests; thus, only a small fraction (approximately 1/10) of the total acreage in a plantation will be harvested in any one year.

What Species Should I Plant?

In the past, the species most commonly used for Christmas trees included balsam fir and white or black spruce. These trees grew naturally in the northern portion of the state. Their short needles, naturally attractive shape, and fragrance contributed to the Christmas spirit. Today, since nearly all trees are produced in plantations, several additional species are used for Christmas trees.

Scotch pine is the most commonly planted species for Michigan plantations. This species is especially popular because of its rapid growth rate and response to plantation culture. Several varieties of Scotch pine are available depending on location.

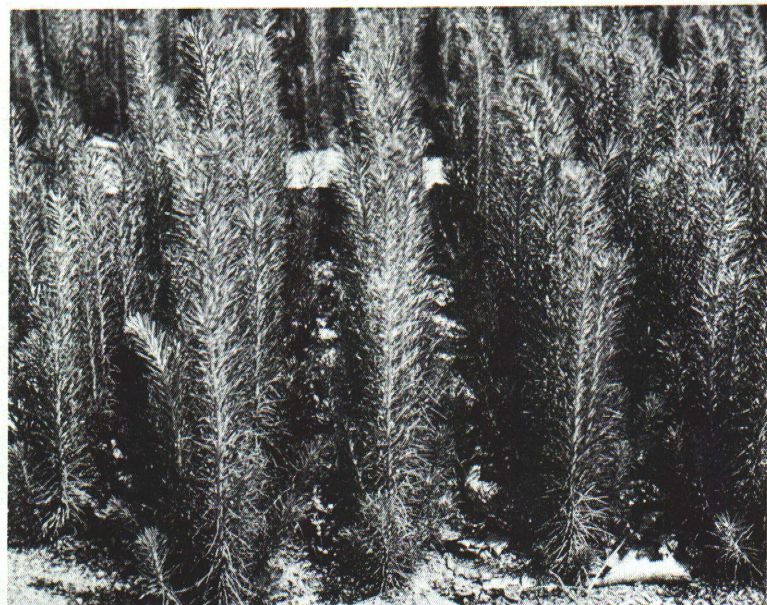
A few other pines are also grown for Christmas

trees. They include Austrian, eastern white pine, and red or Norway pine. Southwestern white pine has also been planted by a few producers. Generally, pines are well suited to coarse-textured soils and do well when planted on areas of sandy soil which are unsuitable for producing other agricultural crops.

In addition to the pines, several other species can be grown and managed to produce Christmas trees. White spruce is well suited to finer textured, upland soils. Blue spruce generally grows well throughout the state and is commonly used when a small tree is desired. Often the entire tree, including roots, is dug, potted, and used as a "living" Christmas tree. Following the holidays it can be planted outdoors as an ornamental plant. Of all the spruces, blue spruce has the best "keeping" qualities but presents the greatest difficulty in harvesting and handling.

Douglas fir of southern Rocky Mountain origin (Arizona and New Mexico) is commonly grown along the Great Lakes and on inland sites where air drainage is good. When planted on other sites, injury from late spring frosts is common. As with other nonnative species grown for Christmas trees, geographic origin of the seedlings is of considerable importance to survival and growth. Douglas fir is considered by most as the premium Christmas tree, and should be planted more often where soils and sites are favorable.

Other species which have been grown in plantations include Fraser fir, balsam fir, and Norway spruce, although the latter is not recommended due



Uniform vigorous seedlings or transplants are essential in establishing a good plantation.

to sparse foliage and poor needle retention. Plantations of these species are not as common as others.

Where Do I Get Seedlings For Planting?

Good quality nursery stock is essential for producing quality trees. The small grower or hobbyist has two or three options. He can produce his own seedlings if he has the facilities and time. However, if this is done, it is important to use seed from proven trees (trees with good growth rate, color, and form). In some locations, young plants may be collected from natural stands, but be certain to obtain approval from the landowner. Balsam fir and white spruce commonly seed-in along roadways. Young plants may be lifted in the spring and transplanted in a garden bed. One or two years later they may be outplanted in plantations.

Seedlings for Christmas tree production may also be purchased from the local Soil Conservation District Office. The selection of species and specific varieties available within a species is usually small, although seedlings can be purchased in small quantities. For larger operations, seedlings are most often purchased from commercial nurseries. A number of private nurseries are located in Michigan and adjoining states. Some produce a large variety of material—both seedlings and transplants of the commonly used species and varieties. For large operations, most orders for nursery stock should be placed well in advance of the planting season, and this is especially true if seedlings from a particular seed source are desired.

Planting stock is classified as seedlings or transplants. Seedlings designated as (1-0), (2-0), or (3-0) are produced from seed planted directly in the seedbed and allowed to remain there one, two, or three years. Plants of this type, usually (2-0) size, are recommended for most pine plantings. If the seedlings are lifted from the seedbed after one or two years and then replanted in a second nursery bed where they remain for an additional year or two, they are referred to as transplants. Transplants are designated as (2-1), (2-2), (3-1), etc. The sum of both numbers gives the total age of the plant. Transplants are suggested when planting spruce, Douglas fir, or other firs.

When Do I Plant The Trees?

Nearly all plantings of Christmas trees are made in the spring. In the lower peninsula, planting may begin in late March, particularly on light, sandy soils. In the northern part of the state, planting often extends into May. If container-grown stock is to be used, planting may be made later in the growing season.



Machine planting is well suited for planting trees in larger open areas.

Planting in the fall has occasionally been done. The criterion for this is whether or not the fall rains start early. Do not fall plant in dry soil. The principal advantage of fall plowing is assisting the seedling in becoming established for more growth the following spring. However, on heavy soils some losses may occur due to frost heaving. Early and continued snow cover will help reduce this problem.

How Do I Plant The Trees?

Seedlings and transplants can be planted either by machine or hand. Machine planting is used exclusively in large commercial plantations, with hand planting done to replace trees which have died for one reason or another, or in rough and inaccessible areas. In small operations involving a few acres or a few thousand trees, hand planting is satisfactory. Hand planted trees have a better chance of survival (if done properly). Moreover, you can use bigger stock, thereby shortening the rotation. But, use of a planting bar, mattock, or shovel is a slow job. On a good day most inexperienced planters will not be able to plant more than 600 to 700 trees. Planting in

heavy sod or weedy areas will increase the time required. New plantings should not be made in heavy sod without preplanting weed control.

What Care Is Needed Following Planting?

Control of grass and weed growth around the seedlings is needed the first few years following planting. Otherwise, the herbaceous material will compete with the young trees for soil moisture and nutrients. If some form of control is not provided, several seedlings could be lost, and the growth rate of all reduced. Similarly, rodent, insect, and disease problems will be more serious in a plantation where some form of grass and weed control has not been practiced.

Weed control is usually obtained by the use of chemicals, cultivation, or mowing. Often a combination of two treatments is used. Several suitable herbicide materials are available through agricultural chemical supply firms. Mowing is generally done using small tractors or special purpose mowers. Cultivation is not well adapted to Christmas tree production. Besides being impracticable for large areas, it may cause root injury to established trees and contribute to accelerated soil erosion.

What About Shearing The Trees?

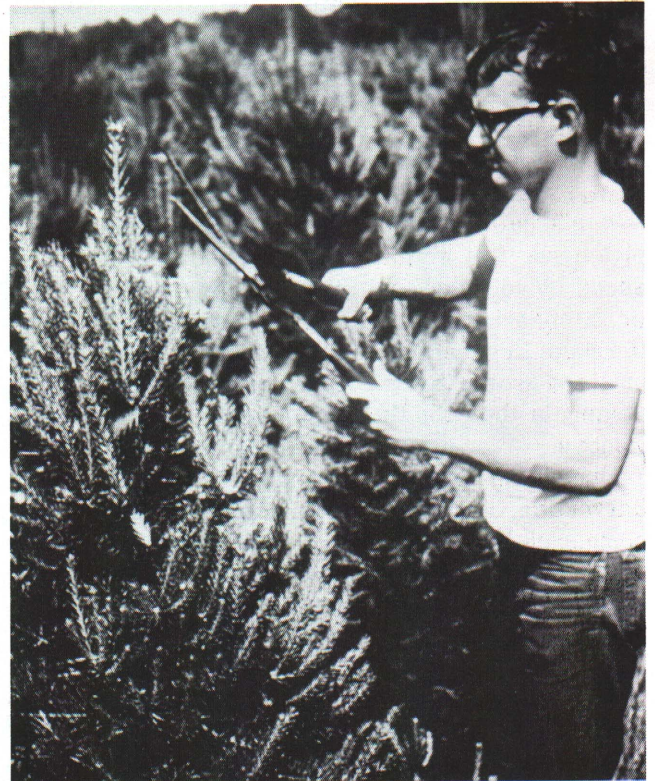
Most Christmas trees produced in plantations are sheared annually, beginning when the trees are around 3 feet tall. This usually occurs three or four years following planting. Shearing must continue through the year of harvest to produce a quality tree. It is done for two principal reasons: 1) to develop a uniform, characteristic shape and taper to the tree, and 2) to thicken the foliage of the tree as a result of promoting added bud and twig formations.

With members of the pine group, shearing should be done during early summer when height growth is nearly complete. June 20 to July 20 is commonly recommended as the ideal shearing time. For ease of scheduling, the fourth of July is a convenient target-date. Removal of the terminal portion of each newly formed twig causes a new cluster of buds to form, from which growth will occur the following year.

With spruces and firs, including Douglas fir, shearing may be completed as for pines, or it may be done during the dormant season in mid or late winter. Shearing during the dormant season is possible due to the development of lateral buds on the twigs of spruces and firs. If dormant-season shearing is practiced, pruning cuts must be made immediately above a lateral bud on each twig. New growth will develop from these buds the following year.

Shearing is usually done using either a pruning

knife, or hand or hedge clippers. The pruning knife does the best job, but it is not for amateurs or children. Adequate safety precautions should be taken including training and protective guards for hands and legs.



Annual shearing of individual trees beginning the third or fourth year following planting is required to produce quality trees.

What About Insect and Disease Problems?

Prompt identification and management of destructive insect and disease problems is a must for producing quality Christmas trees. Unlike most other forestry ventures, wood quality is of minor importance in producing Christmas trees. Christmas trees are valuable because of their appearance, based primarily on shape, fullness, needle color, and uniformity. Even minor foliage, insect, or disease problems are reason for concern and corrective action. Approved insecticides and fungicides are usually available.

In contrast to other intensively managed tree crops such as nut or fruit orchards, there is no need to follow a specified spray schedule which involves several spray treatments each year. Instead, the Christmas tree producer should frequently inspect his trees and use a spray treatment only when required.

Insect and disease problems on Christmas tree

plantings are complex. For more information on specific pest problems and their control, see the references listed on page 7.

When Are The Trees Ready For Harvest?

The time between planting and harvest depends on the species of tree and the size desired. To produce the average 6 to 7 foot Scotch pine, an average of 7 to 9 years is required. If smaller-sized trees are desired, the time interval will be correspondingly less. For species such as Douglas fir or Colorado blue spruce, 10 to 12 years may be needed, although this time can be reduced with intensive management practices. The actual time required will be influenced by soil type, cultural and management practices, shearing practices, and geographic origin of the seed. In general, growth rates are slightly faster on trees grown in the southern portion of the lower peninsula than for those growing in more northern regions.

Once the proper size has been reached, harvesting begins in mid-to-late October on large commercial plantations in the northern part of the state. Harvesting continues through mid December or until all trees are harvested. Since small producers have fewer total trees to harvest, they can begin and complete the harvest later, which is a distinct advantage in producing high quality, fresh trees for local markets. In large plantations, early harvesting is necessary to complete the operation before unfavorable weather develops. Following harvest, trees are covered and stored in a shaded outdoor area, or in large barns or warehouses.

How Do I Market The Trees?

Christmas trees are marketed in three ways: 1) wholesale, usually to a jobber or retail lot operator; 2) retail, from a sales lot direct to consumers; and 3) choose-and-cut, where consumers select, harvest, and transport their own trees. Most wholesale buyers are in the market for several thousand trees and usually deal directly with large growers or marketing associations. Growers should complete a written contract with the buyer and collect a substantial deposit (25%+) when the contract is signed and demand full payment on delivery or harvest. Retail lot operators also buy trees direct from growers or, in some cases, the grower operates his own retail lot.

Choose-and-cut operations are well suited for plantation locations near metropolitan areas. Success depends on a good selection of trees, advertising, adequate parking, ability to handle crowds and deal directly with people. Of all marketing methods, this can be most profitable and the only approach



Chemical control of certain insects may be necessary to maintain quality foliage on Christmas trees.



Some growers shake their trees to clean them of dead needles and other debris before baling for shipment and sale.

suitable for the part-time operator with a few acres of land. The land must be adjacent to the residence or full-time occupancy at the plantation site during the harvest period is essential.

What Kind Of Profits Can I Expect?

The amount of net profit realized from a Christmas tree operation will depend on several factors. Among those of greatest importance are: species planted; quality and size of tree produced; insect-disease control required; length of the growth period in years; land ownership costs, and location and method of marketing. Exact costs and returns will also reflect regional location and management skills.



A load of quality trees ready for the retail market. Premium trees may be produced within 8 years from well managed plantations.

Using Scotch pine as an example and assuming an eight-year growth period to produce a 7 foot tree, the following costs are somewhat typical of what might be expected on a per-acre basis (1,000 trees actually planted). Because land ownership costs are highly variable and are incurred on owned land whether or not trees are planted, they are not included here.

Cost of planting stock (delivered)	\$60.00 (per 1,000 trees)
Planting costs	\$35.00 (per acre)
Weed Control costs (year 1 thru 3)	\$75.00 (\$25/acre/year)
Mowing costs (year 1 thru 5)	\$40.00 (\$8/acre/year)
Insect-disease control (average/year)	\$96.00 (\$12/acre/year)
Shearing costs (year 4 thru 8)	\$400.00 (8 cents/tree/year)
Tinting-harvesting-baling costs	\$562.50 (75 cents/tree—750 trees harvested)
Land clean-up costs of unsalable trees	\$50.00
	\$1,318.50

If 75% of the original 1,000 trees planted became salable, and the average wholesale price is \$3.50 per tree, total gross revenue would be \$2,625.00. When production costs are subtracted (\$2,625.00 - \$1,318.50), \$1,306.50 per acre is realized. When ap-

plied to a 10-year production period (includes clean-up time), an average income of \$130.65 per acre per year is obtained.

It must be stated that these are only average values and do not reflect cost changes which may occur as a result of severe insect-disease problems, weather-incurred losses, etc. Likewise, the cost of management and equipment required to perform some of the operations listed is not included. This is an important item and must be accounted for; however, much of the equipment needed is available if other farming operations are conducted. If not, a sizable cost share must be allocated to equipment purchase. On the other hand, additional income which may be received as a result of better management (more trees planted per acre, higher percentage of trees harvested, and increased value for trees produced) is likewise not included. Similarly, additional income which may be received from different marketing methods, such as retailing or choose-and-cut is not included. Nevertheless, this compilation does present relative levels of costs and returns to expect from an average operation. As with all ventures involving the production of agricultural crops, the management abilities and skills of the operator greatly influence the level of success of the operation.

Additional Information Sources

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