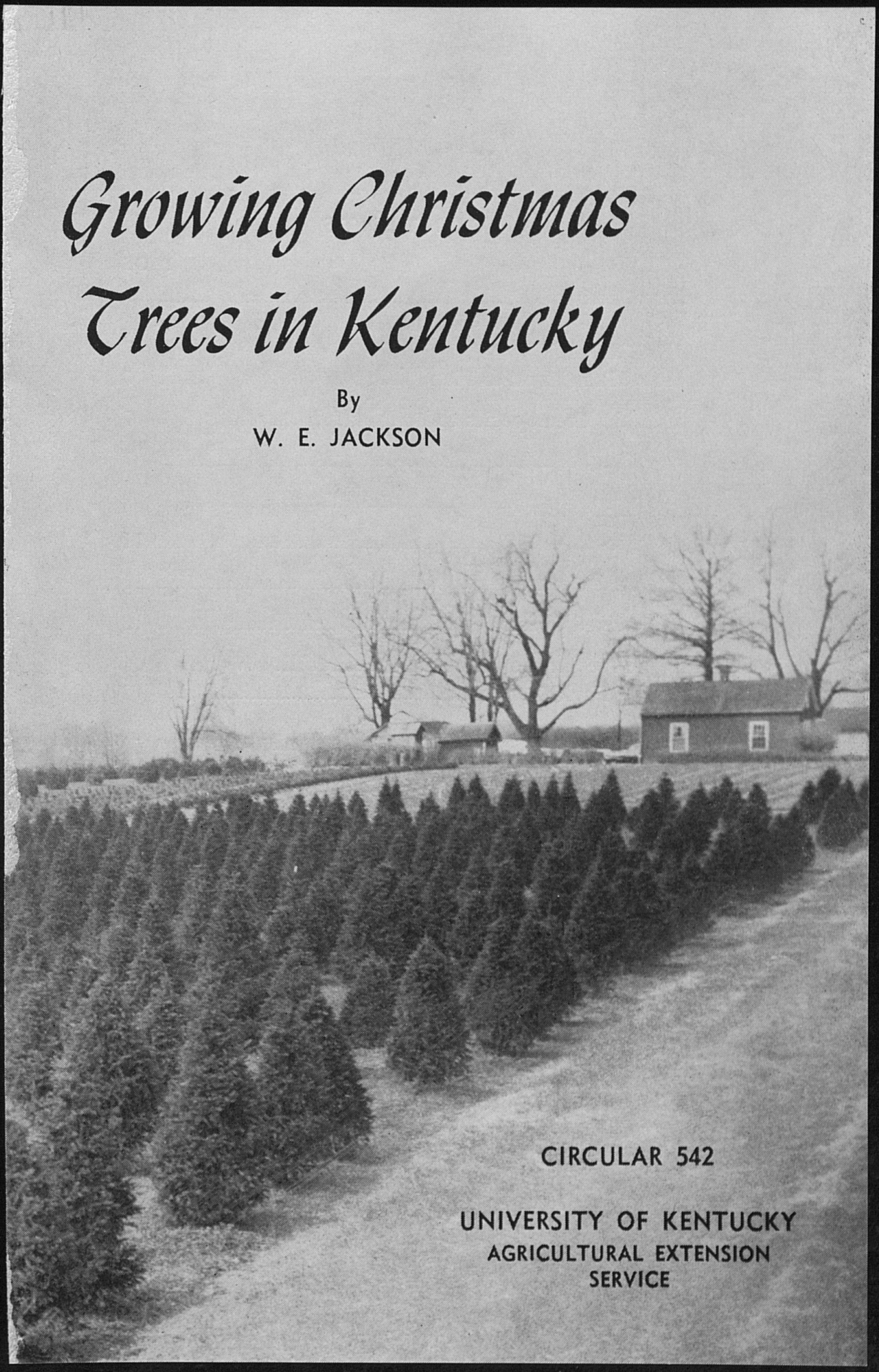
Growing Christmas Trees in Kentucky

By
W. E. JACKSON



CIRCULAR 542

UNIVERSITY OF KENTUCKY
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CONTENTS

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Most of the Christmas trees used in Kentucky come from nearby natural or wild growth areas. In recent years, however, many trees of exotic-type conifer species have been shipped in from outside sources and have found a good market. The demand for good quality Christmas trees has increased, and prices have risen steadily, resulting in stimulating interest among Kentucky farmers and other land owners in the possibilities of growing such trees in plantations.

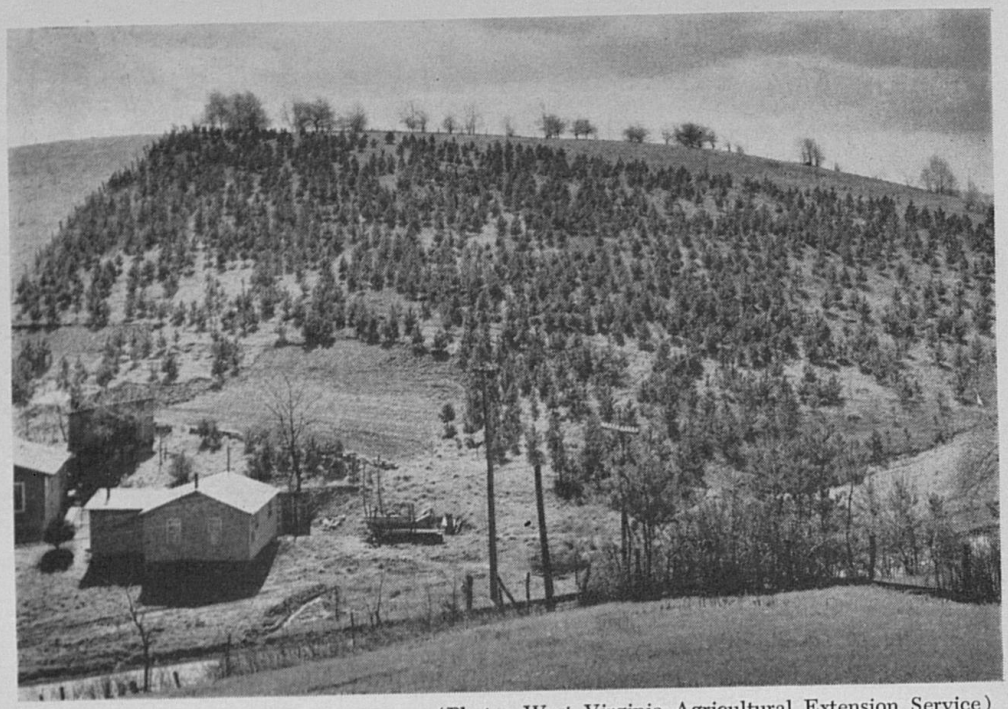
The purpose of this publication is to provide information that may be helpful to persons who are considering the raising of Christmas trees as a commercial venture.

Though Christmas tree plantations in Kentucky are not numerous, they may become, under favorable circumstances, an additional source of income for many farmers. Establishing a plantation, however, should not be considered as a "get-rich-quick" opportunity. It is erroneous to believe that a good cash return will result automatically in 8 to 10 years after setting out a block of conifers and then giving little or no care during the intervening years.

All things considered, the grower who profits from Christmas tree farming is usually one who sets aside a definite area of land and grows the trees with the same planning and management that he might devote to any other well managed crop. Such a grower plans a rotation of trees and plants accordingly. He also anticipates the market needs and possibilities in disposing of his crop. In other words, successful Christmas tree growing requires a knack of "know-how" and attention to detail.

CHOICE OF PLANTING SITE

If possible, the plantation should be located on a north or east exposure, although any land that is well drained and free from large woody vegetation will probably grow Christmas trees.



(Photo: West Virginia Agricultural Extension Service)

Fig. 1.— Rolling sites similar to the one pictured here lend themselves to the growing of Christmas trees.

It need not be the poorest land on the farm, because the annual return per acre from a well managed Christmas tree plot, once established and underway, may compare favorably with that from some other, more intensive farm crop. A definite drawback to using land that is extra fertile or has recently been under cultivation—especially if it has been heavily fertilized—is the competition to the newly planted small trees from weeds and grass. This necessitates cultivation for several years to control the competing growth and results in added expense. Furthermore, because of this combination of cultivation and soil fertility, growth of the trees may be so rapid that they will grow too coarse or too tall and slender, thus producing a "thin tree" in foliage which is not so desirable for use as a Christmas tree.

Some of the most beautiful Christmas trees are produced on soils neither too poor nor too fertile. Growth there is slow, but the resultant trees when 5 to 6 feet tall are bushy—usually without having been pruned.

Open rolling land so common throughout the state, now supporting a sparse growth of weeds and grass, is generally satisfactory for growing Christmas trees. Such land usually needs no previous preparation nor any subsequent cultivation. This is especially true where plow furrow rows are used in which to plant the trees. On the other hand, the annual growth of weeds and grasses can be so vigorous because of good soil that the lower two or three whorls of branches of the trees will be completely shaded out, causing each tree to have the appearance of being on stilts. In this case, no particular harm is done, but the trees will need that much more growth to reach a merchantable size because the stems must be cut above the lower dead branches when the trees are harvested.

HOW MUCH LAND TO PLANT

How much land to plant to Christmas trees depends, of course, on how much land of the right sort which the farmer cannot use to better advantage. While arriving at that answer, he may well ask himself these questions: How much time and attention can I devote to the Christmas tree project? Will my markets for

(Photo: Pennsylvania Agricultural Extension Service)

Fig. 2.— Cleared hilly land is suitable for a Christmas tree plantation. The ground should be fairly free of large woody growth.

(Photo: Pennsylvania Agricultural Extension Service)

Fig. 3.— A fine growth of Scotch pine on former waste land.

trees be within a short distance from the plantation? Will I likely have much competition from other growers or from the sellers of wild-growth trees?

Because a successful Christmas tree plantation is on a rotation-cutting system, it is necessary for the grower to estimate in advance the amount of space he will ultimately need. Of the total area to be occupied by trees, only about one-eighth or one-tenth will be planted each year. That is based on the assumption that the trees which the grower plants the first year he starts his plantation will be ready for harvest 8 to 10 years hence. After he harvests those trees he then replants the area the following spring, and the cycle or rotation is ready to repeat itself.

See pages 17 and 18 of this circular for information on how to estimate the number of trees required for a given area. Make allowance for some losses in planting and during the years up to harvest time. Also, for various reasons a few trees in each block will never grow into good, saleable Christmas trees regardless of the amount of care or pruning they may be given.

No greater mistake in Christmas tree farming is made than to rush into the project blindly, plant a lot of acres to trees the first year, and then sit back and wait for those trees to mature. When they do mature, there is the pressure to harvest all trees before they get too large and then, just when valuable experience in harvesting and marketing has been gained, the Christmas tree project ends because there is no further rotation of trees growing to replace those harvested.

SUITABLE TREE SPECIES TO PLANT

A good Christmas tree is one that is symmetrical, with evenly spaced branches, and sturdy enough to support decorative ornaments. A decision as to species of trees to plant, as well as the amount, will depend considerably upon the quality of the soil available, the expected local demand for particular species at Christmas time, and the extent of the growing operation.

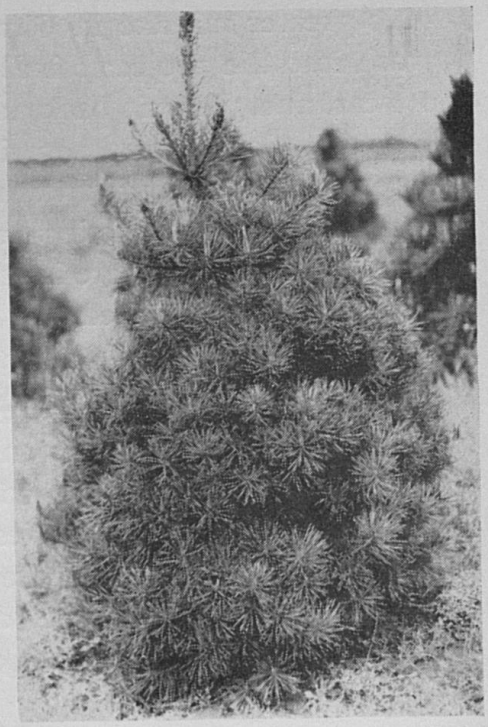
Pine

It is only within a comparatively few years that pine species suitable for Christmas trees have appeared on city markets in Kentucky. Pines have the advantage of holding their needles well and are extremely rapid growers as compared with spruce, cedar, and other species of evergreens. On the other hand, pines are likely to present a too open, scraggly appearance as compared with the more compact spruce, fir or cedar, because in all pines there are no little branchlets growing between the whorls of lateral limbs that mark each year's growth in height.

For several reasons pines usually can be the most economically produced of all planted trees: (1) Their hardiness enables them to thrive on hilly, stony or poor land unsuited for other agricultural purposes; although most pine species do best on slightly acid soils. (2) They grow well in practically any climate. (3) Most species will tolerate soil having a low moisture content. (4) Their growth is more rapid than that of any other tree used for Christmas purposes, thereby making it possible for them to be marketed sooner. (5) They require little cultivation.

As for the pines' susceptibility to insect infestation, the sawfly and tip-moth seem to be the most serious pests. The larvae of the

White Pine



Red Pine

Scotch Pine

Fig. 4.— Pines are the fastest growing trees used for Christmas purposes.

sawfly hatch in early summer and, clinging together in large masses, begin systematically to denude branch after branch of their needles. Fortunately, in plantations containing trees up to 6 and 7 feet the pine sawfly mass is easy to reach, and the insects can be knocked off the tree into a can or other receptacle. Dusting is also effective if the infestation is heavy and extensive. Tip-moth can be controlled by spraying or dusting.

Spruce

Spruces are characterized by short, spiny needles, and when properly spaced in the growing row and properly pruned (if necessary) will develop into trees having thick foliage and heavy branches. Various species of spruce, also balsam and fir, have been shipped into Kentucky for Christmas trees during recent years. Most of these have been wild-growth trees taken from the northern woods and, as a rule, are very much inferior to plantation-grown trees. Because these imported trees grow too close together in their natural environment, and do not receive suffi-

Norway Spruce White Spruce

Fig. 5.— Spruces have thick foliage and heavy branches.

cient sunlight, they are often spindly, open and one-sided. However, bushy, symmetrical, high quality spruce grown in plantations will always be very much in demand as living and cut Christmas trees, as well as for ornamental use. They also will generally command premium prices over those received for wild-grown trees.

Spruce will grow in all temperate climates. They require a rich, moist soil and normal drainage, and can be successfully grown in partial shade or full sunlight. The spruce species are slower growing than the pines.

Because the needles begin to shed within a few weeks after cutting, spruce cannot be harvested and stored far in advance for the Christmas tree market.

Spruce also begin to lose their needles early when brought into the house for use as a Christmas tree. This action can be prevented to a degree by keeping the butt of the tree immersed in water.

The Norway spruce is subject to attack by four pests that can cause serious losses before the trees are ready to harvest. They are the white-pine weevil, spruce-gall aphid, spruce sawfly, and red spider.

The white-pine weevil kills back the terminal top growth, causing several side laterals to take its place. Pruning of the new laterals and cutting off the dead terminal wood usually bring the tree into better shape. The dead terminal wood should be burned.

For protection against the spruce-gall aphid, if the infestation is heavy, it is best to remove and burn the affected trees. It is possible to control this aphid on less infested trees by spraying at the right time in the spring.

Unlike the sawflies that sometimes appear in large masses on the Scotch and red pine, the green larvae of the spruce sawfly appear singly. This insect infestation is ordinarily very light and can be checked with lead arsenate spray.

On the whole, the white spruce is less susceptible than the Norway spruce to insect infestations. The danger from red spider, however, is greater to white than to Norway spruce, but still not usually serious enough to require the use of chemical sprays.

Fig. 6.— Douglas fir.

Fig. 7.— Red cedar is a popular Christmas tree in Kentucky.

Fir

Without question, the fir is one of the more desirable conifers for Christmas trees. Trees of this species usually grow uniform and symmetrical in shape, having dark green foliage. The superior retaining quality of the tree's foliage under indoor conditions is noteworthy. The firs are short-needled and somewhat similar to the spruces in appearance; they are best identified by their flat needles and upright cones. They prefer moist soil which is kept cool by light shading from the sun. Large sized plantings of fir in Kentucky are not recommended because of the climate, yet where protected cove-type planting sites are selected the tree will grow well.

Red Cedar

This conifer species provides a very desirable type of Christmas tree. It is usually bushy and symmetrical in height and sturdy enough to hold ornaments and decorations well. The red cedar grows wild throughout most of the state and supplies most of the

Christmas tree stock sold commercially or cut individually by persons who get trees from near-by wild growing areas. This ready availability of red cedar may tend to offer lower price competition in the market to varieties of Christmas tree conifer species grown in nursery and plantation. Even though the ready availability of a wild supply may cause serious competition, many present-day market growers of Christmas trees are including the red cedar in their production plans as a species well worth propagating.

Mixed Species

A mixture of conifer species planted in plantation blocks or in separate rows in the same plantation is desirable, especially where the growing project is a small one. With a variety to offer on the market, additional sales may result. Also, different species have different rates of growth, making it possible to harvest a larger variety of choice individuals from the same plantation. A planting of 70 percent pine, 25 percent spruce and 5 percent fir and cedar, depending on the soil and climatic conditions, is recommended.

Tree Species Listed As To Desirability Within Their Group

PINE

Scotch Pine—Will grow in poor soil. Fast growing. Requires little pruning to develop into a symmetrical, thick, bushy specimen.

Austrian Pine—Needs a rich, light loam with a well-drained subsoil.

Red Pine—Thrives in poor soil; needs sunlight.

White Pine—Prefers light, sandy soil.

Virginia Pine—Will grow in poor soil. Fast growing, Requires little pruning.

SPRUCE

Norway Spruce—Grows best on moist, well-drained, porous soils.

White Spruce—Grows best on moist, well-drained, porous soils.

Black Hill Spruce—Grows best on moist, well-drained, porous soils.

FIR

Douglas Fir—Grows well in medium, fertile soil.

Balsam Fir—Prefers a medium-to-heavy soil; thrives in light shade.

RED CEDAR

One conifer species that desires and grows well on limestone soil. Will grow in medium and poor soil. Requires little pruning.

The rate of growth of the trees listed above is determined chiefly by the quality of the soil. Good soil, having the proper amount of moisture will grow good trees nearly twice as fast as poor, dry soil.

SOURCE OF PLANTING STOCK

The nurseries of the Department of Conservation, Division of Forestry, Frankfort, Kentucky, supply planting stock of red cedar and one or more species of pine. While this stock is mainly grown for forestry planting in the state, it may be adapted for Christmas tree growing. If so, the Department of Conservation has ruled that each tree must be harvested for Christmas use by severing it from its stem and not by digging up the tree with its roots so as to provide a living tree specimen to market in competition with those trees grown by commercial, ornamental tree nurseries. Order forms for use in securing the above type trees may be obtained from your County Agricultural Agent, or from the Extension Specialist in Forestry, Department of Horticulture, University of Kentucky, Lexington.

Christmas tree growers may also purchase planting stock from commercial tree nurseries that make a specialty of raising conifer seedling and transplant stock to supply the Christmas tree-growing trade. For more information about commercial sources of tree supply, write to the Extension Specialist in Forestry (address given above).

Trees grown in a nursery are classified as being seedlings or transplants. A seedling is a tree which has grown in a seedbed until it is ready to be removed to a permanent planting site or be transplanted in the nursery for additional growth. Seedlings are usually one, two or three years old when dug, depending on species.

A transplant is a tree which has been grown in a seedbed for one or more years, then removed to another place in the nursery where it remains for further growth (this may occur one or more times) before being lifted and planted permanently. Because of the extra labor expended in their culture, transplants cost more than seedling trees and should be used where planting site conditions are very unfavorable, such as in extra heavy sod or where overtopping weeds and brush would shade out younger or less hardier seedling plants.

Nursery age classes are designated according to the following manner:

Seedlings, 1-0, 2-0, 3-0, etc., signifiying that the trees are 1, 2 or 3 years of age and have not been transplanted from the original seedbed.

Transplants, 1-1, 1-2, 1-3, or 2-1, 2-2, designating by the first figure the age of the seedling before it was transplanted from the seedbed and by the second figure the number of years the tree has been in the transplant location.

Generally speaking, it is recommended that the Christmas tree grower use transplant stock, either 2-1 or 2-2. The extra amount paid for the sturdier, heavier rooted, transplanted stock can well be afforded in view of the quick returns in growth that can be expected, as compared with the growth resulting from slower maturing seedling stock. As previously noted, it is especially desirable to use transplant stock where existing vegetation on the site offers serious competition to the small trees.

PREPARATION OF THE PLANTING SITE

In most cases, no preparation of the soil before planting is needed. The added expense is usually not justified, and often a light growth of grass and weeds is sometimes beneficial to the growth of young trees when planted on exposed hill sites since it offers shade and moisture retention during the early stages of the plantation. If one intends to cultivate the trees after planting (this measure is somewhat debatable unless necessary as an aid to fire prevention), he will need to plow the site before the trees are set.

Fig. 8.— Plow furrows, 6 feet apart, running with the contour of the site, are a good means of laying out rows for Christmas trees. Rows of this type help to keep back weed growth and provide a means of catching and holding water.

Deep, single-plow furrows are excellent aids in planting, the trees being set in the middle of the furrows and the loose dirt thrown out by the plow share pulled in and well firmed around the tree roots. If, owing to hard soil conditions, it is necessary to deepen the planting spots in the furrow, a grubbing hoe should be used. Plow furrows, especially when used on a very fertile soil site, besides acting as a planting row guide, serve to keep grass and tall-growing weeds away from the little trees for at least two years, or until they become better established. Furrows also serve to collect and hold soil moisture. Such plow furrow rows should always be run in line with the contour of the planting site and as nearly level as practicable.

If the planting site is too rocky or rough to permit plow furrow rows being constructed in which to set the trees, the planting spot for each tree should have any vegetation or sod cover scalped off to a 10″ x 10″ dimension before the planting hole is dug.

WHEN TO PLANT

The spring planting season is usually from March 1 to April 15. Fall planting is usually done from September 1 to November 1, or before the ground freezes. Fall planting is quite satisfactory when large transplant stock is used and when the site is fairly dry. Never attempt to plant in the fall on open, moist sites, especially when planting seedlings, because the trees may be heaved out of the ground during the winter by alternate freezing and thawing of the moisture in the soil.

HOW TO PLANT

Plant trees in the following manner: (1) As soon as the trees are received from the nursery, open the bundles and place them in a dug trench, returning enough of the soil to cover the roots. If the soil is dry, water the trees. (2) Transport the trees from a heeling-in trench to the planting site in a bucket or bushel basket containing enough moist dirt to keep the roots covered. (3) Carry the trees along the planting row, wrapped in a wet burlap bag or in a bucket containing water and dirt. (4) With a mattock or grub hoe, dig a hole large enough to allow full spread of the roots. Place each tree in the hole at the same depth as it stood in the nursery. (5) Replace a small amount of topsoil around the roots and pack tight. Then push in the remaining loose soil.

If more than one tree species is planted, it is preferable to plant each species in a separate block or row to simplify cultural practices during both the growing years and the harvest.

The planting work should be carried on during cool, moist weather. In many cases, planting during a light rain is desirable

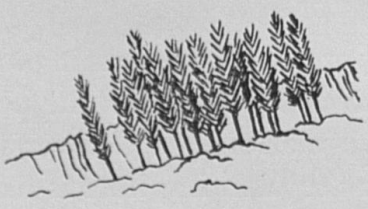
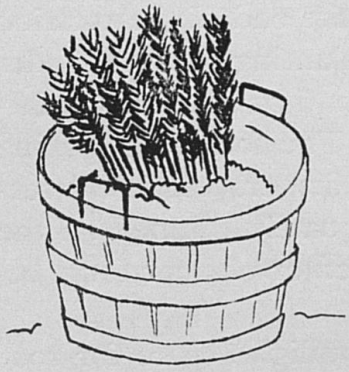


Fig. 9.— As soon as Christmas trees are received from the nursery, the bundles should be opened and the trees heeled-in. Put them in a trench deep enough to cover the roots; if the soil is dry, water the trees.



Don't let the roots get dry.

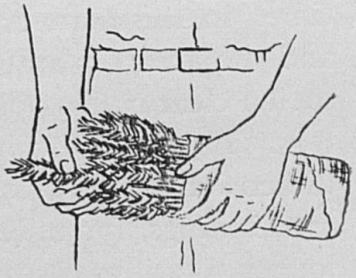


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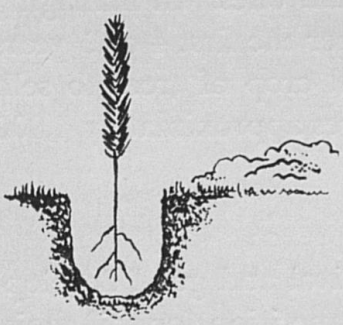
Fig. 10.— These suggestions will help you in planting your Christmas tree seedlings.

(A) Transport the trees from the heeling-in trench or seedbed to the planting site in a bucket or basket containing enough soil to keep the roots covered.

(B) Carry the trees along the planting row, wrapped in a wet burlap bag or in a bucket containing water and soil.

(C) With a mattock or grub hoe, dig a hole large enough to allow full spread of roots. Place the tree in the hole at the same depth it stood in the nursery or seedbed.

(D) Replace a small amount of topsoil around the roots and pack tight. Then push in the remaining loose soil.



Don't let the roots get dry.

C

D

since the trees will not be exposed to sun and drying conditions then. Too much care cannot be taken in securing a successful planting job and in seeing that the roots of the small trees are kept moist and covered until they are finally placed in the ground.

SPACING THE TREES

Christmas trees should be considered as a definite crop. They can be planted and harvested on a 5- to 10-year rotation basis, depending on the species used and the desired height at cutting

time. In this manner all trees are cut at the end of the rotation and the area replanted during the next planting season. Under such a clear cutting plan, a spacing of about 5 by 5 feet is satisfactory. This calls for 1,742 trees per acre. The foregoing spacing dimension makes possible the harvest of a first crop of small trees as thinnings, for unless the rows are adequately thinned on the longer rotations, many trees will be stunted or of poor form because of crowding in the rows.

A spacing of 6 by 6 feet allows full sunlight, space for root development, and growing room for trees even up to the time of harvest at taller heights. This spacing requires 1,210 trees per acre.

Another way of planting the trees might be carried out on a spacing of 3 by 3 feet. This spacing is based on cutting out every other row when the trees are 3 to 4 feet tall and every other tree from the remaining rows when a height of 4 to 5 feet has been attained. This leaves the rest of the trees to reach a taller height for larger size specimens. As fast as trees are cut in a block or entire row, they should be replaced by small ones. In managing a Christmas tree plantation in this way, after the first 4 or 5 years there should be found growing an annual crop of trees to sell. The foregoing spacing arrangement requires approximately 4,800 trees per acre to be planted.

CULTIVATION

The most serious deterrent to the survival and good development of a young tree plantation is the competition for soil moisture, plant food and light by other vegetation. Most coniferous seedlings are not so vigorous nor fast growing as many weedy annuals and brush species and require relief from excessive competition from these plants during the first one or two years after planting. Weed control to some extent is thus vital during these first years. Such weed control may consist of simply hoeing the weeds from around the seedlings in a 1- to 2-foot circle or by plowing a furrow between the rows, taking care to avoid injuring the developing outlying root systems. Once the seedlings have become well established and are growing vigorously, further cultivation is usually not necessary. In times of extreme drouth, it may be necessary to give the trees a little water.

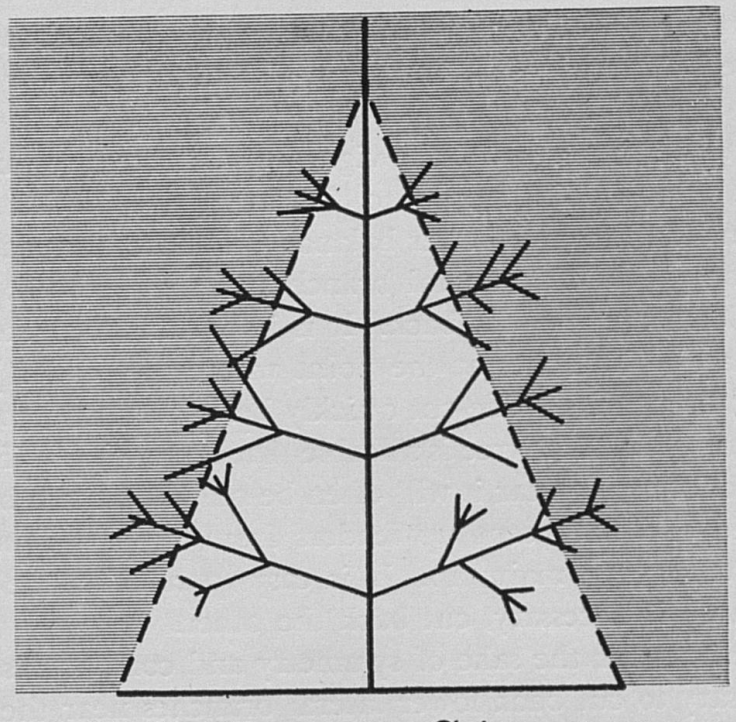


Fig. 11.— How to prune Christmas trees.

Diagram showing proper method of pruning or shearing for a more beautiful Christmas tree. Prune to a cone shape, roughly as indicated. Top should be trimmed shorter than would make a perfect cone, as this main shoot has a tendency to grow much faster than the side branches.

PRUNING

One good rule in respect to pruning is to start when the tree is small.

FIR—Douglas fir and balsam fir usually develop into satisfactory, merchantable trees without benefit of the pruning shears. This is to be expected where the yearly height growth is less than a foot and the terminal growth on lateral branches is in proportion.

SPRUCE—With spruce, there is a tendency for the young transplants to grow slowly and compactly for from 4 to 5 years and then for the main terminal leader to shoot up at an accelerated rate. Unless this is checked, an unsightly and usually an unmerchantable tree results.

Pruning is required to keep the top as bushy and compact as the lower part of the tree. For this work, pruning shears are the best tool. A satisfactory and convenient time to prune is in

late summer or early fall after height growth for the year is completed. The winter months can also be utilized for this purpose.

If pruning is necessary, the vigorous main stem terminal leader is cut off at a point from 6 to 8 inches above the last whorl of side branches. To give better balance and more compactness, the leaders on all the side lateral branches of the next two or three whorls down are also cut back. It is important to make the cut on the lateral branches at the point where the leader joins the whorl of branchlets. The cut quickly heals over, and there is no stub to stick out. The tree is saleable that same winter after pruning. The following year it will often be noted that two buds have developed and have sent up leaders from a point immediately below the severed main tip. It is easy to remove one of these leaders and, if necessary, cut back the other.

Sometimes for the sake of symmetry and compactness, it may be necessary to cut back lower lateral branches near the ground. In this case, just removing the leader of the year's growth is often not enough. It may be necessary to cut off the lateral growth of two or even three years, but always the same procedure is followed. The pruning is done at the whorl point so a stub is not left. Always keep in mind the endeavor to shape the tree to a symmetrical form. (See Fig. 10.)

PINE—With pine, quite a different technique must be used to control excessive height and lateral growth. The pines do not have buds and branchlets between the whorls that mark successive years' growth. If a portion of the main leader is cut off during the fall season, the stub that is left will die back to the whorl point in the winter, and the laterals will turn up during the next growing season to become leaders and thus form a ball-shaped tree.

If, however, the main leader and laterals are cut back between mid-June and mid-July, there is enough of the growing season left to enable the tree to form usually a cluster of new buds at the tip of the shortened leaders and laterals.

Unlike the spruce and fir, Scotch pine starts to increase its height growth by the third or fourth year after planting, especially the 3- or 4-year-old transplant stock. Frequently, this annual

height growth will be as much as 2 feet. Such wide spacing between laterals must be prevented if a compact, bushy tree is to be developed. Therefore, it is important to start the early summer pruning by the third or fourth year and to continue it regularly, if necessary, until the tree is harvested. Because 12 to 15 inches is a satisfactory spacing between laterals, the main stem leader is clipped off at that point and the surrounding shoots. The laterals of that year are also clipped at about the 8- to 10-inch point. New growth at the end of the laterals of the previous year also is treated in this manner.

HARVESTING

A tree is merchantable whenever there is a market for the size it represents. Thus, if there is a good market for small sized 2- to 3-foot table-type trees, it may be more profitable to sell the tree at this size than to grow it for several years longer. Table trees are easily harvested, and offer a quick turnover of investment.

For most Christmas tree buyers, the favorite tree size is from 6 to 7 feet. Consequently the rotation can be planned on the basis of making the first heavy cut when the bulk of the trees, after the fall pruning, in any one block is from 6 to 7 feet in height.

Selecting the most advantageous period of the pre-Christmas season during which to harvest the trees also requires some thought and having a knowledge as to the tree species being handled. As for needle loss because of early harvesting, there is no difference between pine or fir. With spruce, no difference in subsequent needle-holding ability has been noted in early December cut trees, provided the trees are stacked outdoors with the butts in contact with the ground which was kept damp.

Cutting for harvest can best be done with a pruning saw having a curved blade.

MARKETING

If one is to prevent bonfires of unsold trees at the Christmas season's end, it is almost necessary that "no tree is cut until it is sold."

It is probably safe to say that the Christmas tree market is one of the most disorganized, uncontrolled enterprises in the state.

The extremely limited marketing season accounts in part for this situation. In most years, however, the practice that really results in a supply greater than demand, consequently with many cut trees remaining unsold, is consignment selling to retail sellers. This latter phase of marketing's greatest danger is overstocking of the dealer, with the resultant loss being borne by the grower.

In most instances, local marketing conditions will determine the manner in which to handle the tree harvesting operations. Some growers merely market their trees at the growing place. The customer selects his tree, it is cut, and he takes it home. Or, it may be best to sell the trees outright on the stump to a dealer who comes in and cuts the trees designated. If the grower decides to retail his trees on a lot or sell small quantities to other dealers, the cut trees may be transported loose on a truck or wagon.

However, if it is intended to ship trees or truck them long distances, they should have their branches bound compactly down flat on the main stem, or baled. This allows many more trees to be loaded in the same space and tends to protect them from damage and breakage while handling.

(Photo: Pennsylvania Agricultural Extension Service)

Fig. 12— Trees being bundled for shipment to distant destinations. This enables more trees to be shipped in a truck and protects the trees from damage while being handled.

(Photo: Pennsylvania Agricultural Extension Service)

Fig. 13.— A heavily loaded truck of Christmas trees ready to leave for market. Backing the truck up to a steep hill or a ramp makes loading easier.

Much can be said in favor of selling the trees at the growing place when possible. When the Christmas tree farm is near a good-sized city and is accessible by car, this is the ideal way to market the trees. City people will drive out, allowing them to bring the children to help pick out the tree. Once this market becomes generally known, the grower usually sells many trees to customers who repeat their purchase of a tree year after year. The grower should encourage his customers to come out early in the fall to select and tag the trees they want and pay for them then, or the grower can harvest a supply of trees ahead of the demand and let the customer select from the trees already cut as they are stood up close by to permit easy inspection.

PROTECTION AND CARE OF THE PLANTATION

The chief enemies of a Christmas tree plantation while it is growing to cropping time are livestock, fire, insects, disease, and rodents.

Livestock

Livestock of any kind should never be permitted access to a plantation of trees. Hundreds of potential Christmas trees can readily be ruined by livestock trampling the plantation and breaking the branches. A high stout fence should always be maintained around the area.

Fire

A young coniferous plantation coming up through the dried grasses and weeds is a very flammable area. That is one good reason for the plantation to be located away from well-traveled roads, with the consequent risk of fire, theft and trespassing. Small plantings in blocks with the lanes between blocks, freed of flammable material by annual disking and with maintained access roads affords protection against fire. A knapsack pump filled with water should always be in readiness in a nearby shed.

Fires must be reckoned as a constant hazard to Christmas-tree growing during the spring and fall periods.

Insects and Disease

In the life of a Christmas-tree plantation, few diseases offer a serious threat to growing a satisfactory crop. With insects, the story is quite different. These have already been discussed under the various tree species.

In general it may be said that constant vigilance is well rewarded, if a full measure of health is to be accorded the growing trees.

Rodents

Rodent damage is largely confined to the pine species and is more apt to be severe on heavy sod. In orchards, similar damage is combatted by use of poison bait. Encouraging natural animal predators on mice or rabbits might in the long time view be the better solution.

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