

THE PRODUCTION AND MARKETING
OF DOUGLAS-FIR CHRISTMAS TREES ON
WESTERN OREGON FARMS

By

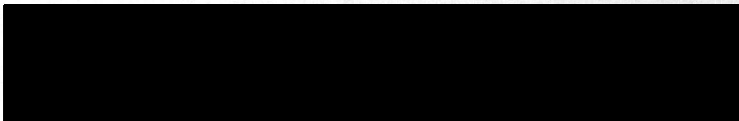
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INTRODUCTION

Christmas trees can be grown profitably as a sideline crop on the odd portions of low-value and idle land which are existent on most farms and rural home sites in Western Oregon.

Because the Christmas tree is an institution in the American home, there is a constant market in every city. At the present time, the demand is supplied principally by wild reproduction which is less shapely and of lower quality than plantation grown trees, and is greatly needed to restock the burned-over forest land in Western Oregon.

Sustained yield management of privately owned forests and increased public regulation of forest practice will undoubtedly decrease the indiscriminate cutting of natural-grown Christmas trees and will thereby increase the demand for farm-grown, quality Christmas trees.

In this study, the writer has made no attempt to cover all of the techniques and alternative methods which can be employed in the growing and selling of Christmas trees. Instead, a single step-by-step plan, of sound and accepted principles, is herein presented with the hope that it will be a direct aid and an incentive to the farmers of Western Oregon to produce Christmas trees for the Western Oregon market.

PART I - THE PRODUCTION OF CHRISTMAS TREES

Growing Stock

Species Selection

There are three prime considerations in the selection of species for a Christmas tree plantation. The species selected must have the combined attributes of beauty, suitability to locality, and the ability to grow rapidly and yet compactly.

Douglas-fir (*Pseudotsuga taxifolia*) has symmetrically arranged branches with sufficient stiffness to support decorations, and foliage that is dense and fragrant. The needles will not shed for at least two weeks in a moderately warm room. It is native to all of the counties west of the Cascades and will make satisfactory growth on almost any site.

There are other species with most or all of these qualifications. However, Douglas-fir is probably the only species that will readily adapt itself to almost any set of conditions in Western Oregon.

Douglas-fir will, therefore, be dealt with exclusively in this paper.

Age of Seedlings

Two-year-old seedlings are preferable for Christmas tree planting because there is a better balance of roots and crown than in other aged seedlings and, therefore, an appreciably smaller mortality rate from desiccation. Two-

year-old seedlings are also more readily available from the nurseries. It is essential that the growing stock be root-trimmed at the nursery because seedlings that have been root-trimmed will develop full crowns and compact foliage, whereas seedlings that have not been so treated will grow tall and spindly.

Where and How to Order Seedlings

The Oregon Forest Nursery at Corvallis, Oregon, will distribute seedlings to farmers upon order. All requests for trees should be mailed to the State Board of Forestry, Salem, Oregon. Order as far in advance as possible before planting and specify number of trees desired, species, age, and the date the order is to be filled. They will be shipped collect on delivery for two dollars and fifty cents per thousand plus the cost of postage or freight.

Site Selection

Where to Plant

Rough hillsides, stump land, or irregular fence corners are preferable sites for planting. Fertile land that is tillable should not be selected for the plantation, not only because a greater profit can be made from regular farm crops, but because seedlings planted in such a site grow too rapidly and thereby lose the desirable compactness of crown. Douglas-fir will grow successfully in almost any soil except extremely heavy sands, swamps, and heavy clays.

The area should be fenced so that grazing may be prevented or carefully regulated.

It is most desirable to have the plantation located within sight of the house or away from roads to minimize theft of merchantable trees.

Taxes and Carrying Costs

Most of the farms in Western Oregon have these odd portions of land which are of little value for grazing or regular cropping but could be used satisfactorily for Christmas tree production. It is generally considered among farm owners that their property is taxed as a unit, and that the assessed value would not be changed even though these small portions of land were planted. Carrying costs and taxes, therefore, need not be considered herein.

Planting Techniques

Time to Plant

Planting may be done in Western Oregon almost any time after the 1st of March. Planting should be done after the frost is entirely out of the ground but early enough for the roots to become established before dry weather occurs. If the seedlings are planted too early a high mortality will result from frost-heaving or winter killing. If they are planted too late in the spring the drying effect of the wind and the sun will prove disastrous. A cool, cloudy day with little wind should be selected for the actual planting date

because the fine roots of seedlings are so easily damaged by drying.

Care of Trees Upon Arrival

It is desirable to plant the trees immediately upon arrival from the nursery. However, since orders should be placed several weeks before planting is contemplated, it is not always possible to shift other activities to coincide, and the weather may not be cool and cloudy enough to permit planting. If this be the case, the planting stock must be "heeled in." The ideal site for "heeling" is a level, shaded area of "free" soil that is well drained and near a hydrant or other water source. The trees should be removed from the bale and placed in a sloping trench that is dug approximately a foot deep, a foot wide, and as long as needed. Cover the roots with the soil and pack firmly with the heel. Thoroughly wet the soil in and around the trench and water each day until planting. If the site is not naturally shaded, a two by three foot framework covered with boughs or brush will serve adequately. A canvas or tarp must not be used because ventilation will be shut off and the heat will be increased.

Treatment of Brush and Herbaceous Vegetation

To obtain the most rapid growth and the least mortality, without regard to cost, the plantation should be tilled before planting and cultivated thereafter to minimize competition for moisture and nutrients⁵. However, present stumpage values do not warrant such an intensive and costly practice.

and satisfactory results may be obtained with a small amount of preparation.

If the plantation is covered with scattered brush, tall weeds and grasses, or fern, it is well to clear the area. This may be done by light, controlled burning. Clearing may also be done by the grazing and trampling of several head of livestock confined on a small area for several days. Either method will prove satisfactory in clearing the site and in both cases the cost is negligible. Such a treatment will expedite planting, reduce competition for moisture and nutrients, and lessen subsequent fire danger.

Spacing and Number of Trees Per Acre

Proper spacing is particularly important for the development of well-formed Christmas trees. Sufficient space must be allowed for each tree to develop as an individual rather than as a closed stand. Conversely, the trees must be close enough together to retard excess weed growth and to fully utilize the area.

Four by four foot spacing is recommended, and will allow the planting of approximately twenty-seven hundred trees per acre⁵.

It is not necessary to measure the distance between each tree. In fact, on rough ground or stump-land, it is more important to select the right spot for planting than to adhere to uniform alignment. In many cases it will be necessary to plant trees six, eight, or even ten feet apart but in no case should they be planted less than four feet apart.

Select spots for planting in good, deep, stable soil and on the north side of logs, stumps, and bushes for adequate shade. In selecting spots avoid dry mounds, deep depressions, decayed wood, fire baked soil, dense vegetation, and rodent colonies³.

Care of Trees While Planting

Young tree roots are highly susceptible to the drying effect of the sun and wind. Exposure for a very limited length of time may well cause a high mortality rate. It is, therefore, important to plant on days that are at least partially cloudy and when there is no wind.

Immediately after digging, cover the "heeled-in" stock with two or more layers of water-soaked burlap. During the planting and in transport from the "heeled-in" beds, submerge the roots in a bucket of water. Keep the trees covered with wet burlap or submerged in water at all times during the planting operation.

Method of Planting

A grub hoe with a four inch blade is an excellent tool for planting. It can be made more efficient, however, by heating the blade and straightening it to a right angle with the handle³.

The "one-man grub hoe method" of planting, taken from Dr. Thornton T. Munger's "Instructions for Planting Douglas-fir on Logged-off Lands in Western Oregon and Washington," is probably the best method for Christmas tree planting in

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this region. It consists of the following seven steps:

"Step 1. Planter drives his grub hoe blade into the ground perpendicularly, its full length if possible in one stroke.

"Step 2. Planter raises up on the handle to open hole at bottom.

"Step 3. Planter thrusts the handle downward and at the same time draws the blade toward him, making thus a clean square hole.

"Step 4. Keeping blade of grub hoe in hole (to hold back the soil) he inserts one tree vertically; roots should be spread in the hole as naturally as possible, not twisted or allowed to hang together like a rope.

"Step 5. Still holding the tree with one hand so that its former ground line is slightly below the ground line on the downhill side of the hole, he partly pulls out the blade and by reinserting it at an angle and giving a downward thrust presses a wedged mass of soil against the lower roots, filling the bottom of the hole.

"Step 6. Remove the blade and with a downward push at the side fill the hole with soil full and solidly. If this step is properly done little further filling or tamping is necessary under most conditions.

"Step 7. Before moving to the next tree, stamp with heel (not toe) beside the tree to firm soil. If this causes a depression scrape a little soil with hoe or shoe to fill up hole."

If the soil is sandy or rocky, it may be necessary to dig a hole and plant the tree in much the same manner as in transplanting vegetables. Heavy sod should be scalped back about two feet from the hole to retard the growth of herbaceous vegetation.

To insure a high survival be sure to keep the roots damp at all times, dig the hole large enough for the roots, insert the tree to its original ground line, fill the hole

with moist mineral soil, and pack the soil firmly at the bottom of the hole as well as the top.

Five or six hundred trees can be planted by the average workman under ordinary conditions in one day⁵. The number per day may be considerably less if the soil is rocky or covered with heavy sod. On the other hand, as the planting progresses, the workman becomes more adept and can increase the number of plants set per day appreciably.

Plantation Care

Cultivation

Douglas-fir will make satisfactory growth in Western Oregon without cultivation. On the better sites, cultivation will even force height growth at the expense of crown compactness, thus causing the development of low grade Christmas trees¹.

If the plantation tends to be overrun with grass and weeds, carefully controlled grazing will solve the problem. Allow a small number of livestock to graze the area for short periods of time. They should be removed from the plantation in two or three hours to avoid serious trampling of the trees. For the same reason, livestock should not be kept in the area over night. No grazing whatever should be permitted before the trees are two years old.

Protection from Fire

Fires that occur on recently planted areas burn the grass, shrubs, and litter. If such a fire progresses

uniformly through the plantation, it will destroy the entire stand². It is, therefore, imperative that adequate fire protection be provided.

Plantations that are bounded by roads, streams, or plowed fields are comparatively safe. If no such barriers exist, a fire break may be constructed by plowing four or more furrows around the plantation.

As an added precaution, it is well to have an open-topped, fifty gallon barrel, filled with water, and loaded on a trailer, wagon, or sled so that it can be moved rapidly to the fire. A shovel, water bucket, and several burlap sacks should be kept with the barrel of water.

Protection from Rodents

Mountain beaver, rabbits, ground squirrels, gophers, wood rats, and pack rats do the greatest damage to tree plantations. Where present, they may be controlled by the use of commercially prepared poison. Because the above mentioned rodents destroy other crops, control measures are probably in effect before the plantation is established. Information relative to difficult rodent control problems can be obtained from the county agricultural agent.

Insect and Disease Control

Douglas-fir is highly resistant to the attack of insects or diseases. If there is evidence of an attack by either insects or disease, control methods should be initiated promptly. Send a specimen and a description of habits of insects

that appear to be causing damage, to the Office of Forest Insects, Bureau of Entomology, Department of Agriculture, Washington, D. C., for identification and control recommendations. Disease control recommendations may likewise be obtained from the Bureau of Plant Industry, Department of Agriculture, Washington, D. C.¹

Crop Rotation

Christmas trees will grow to merchantable height in from six to twelve years, depending upon the site. The trees will vary in height from three to eight feet. It is preferable to harvest the entire crop in one season for the following reasons:

1. It is cheaper to clearcut the entire plantation than to attempt to select the best trees.
2. Replanting the entire plantation is cheaper than spot planting because the operation can be accomplished at one time.
3. Dealers prefer trees of varying sizes.
4. The small trees that would be left will not make sufficient growth to warrant holding them over.

Replanting

Replanting can be done in the spring following the removal of the original crop. The same techniques should be used as in the first planting. It is well, however, to select the spots for the second planting between the spots of the original planting.

PART II - THE MARKETING OF CHRISTMAS TREES

Harvesting

When to Cut

There are two limiting factors in the time for cutting Christmas trees. They must be cut early enough so that they may be shipped, prepared for retailing, and sold before the afternoon of December 24th. They must not be cut so early that the needles will shed before the trees are utilized.

When the trees are sold to a wholesaler, the trees should be cut immediately prior to the delivery date. The wholesaler will set the delivery date between November 15th and December 15th.

If the farmer decides to retail his trees, he should plan to cut them immediately prior to the setting up of his Christmas tree lot, which will be during the second week in December.

Method of Cutting

The value of the tree is directly proportional to its appearance. It is, therefore, essential that the tree be cut and handled carefully so that it will retain its natural beauty.

A sharp, two-pound axe is the best tool for harvesting the trees. Most trees can be cut neatly and rapidly with one stroke of the axe. The butts can be squared with a hand saw after the trees have been cut and collected. One workman can harvest from 800 to 1000 plantation grown trees in one 8-hour

day.

Bundling

Trees that are sold to a wholesaler should be bundled according to a standard procedure. Bundles can be loaded rapidly and compactly and can all be sold for the same price. Sort the trees according to size and bundle according to the following table:

Number of trees per bundle	Height in ft.	Color of tags	Estimated weight
8	2 to 3	red	3 lbs. per tree
6	3 to 4	blue	4 " " "
4	5 to 6	pink	8 " " "
3	7 to 8	yellow	15 " " "
2	9 to 10	purple	25 " " "
1	11 to 12	orange	35 " " "

Use binder twine to tie the trees securely in bundles. Insect treated binder twine should not be used because it will kill the trees upon contact.

Shipping

If the farmer plans to retail his trees, bundling is not necessary, especially if the trees are to be transported a relatively short distance. In this case, it is preferable to pile them compactly on a farm truck. A 14-foot stake-rack truck will hold from 1700 to 2200 trees of average size.

Every precaution should be exercised to prevent needle loss due to poor ventilation and excessive heat while shipping. To insure adequate ventilation and minimum heat, build a platform of 1x4 inch boards nailed to 2x4 inch supports and secure it to the truck bed before the trees are

loaded.

Water sprayed on the trees with a hose will help to keep them fresh.

Wholesaling

Advantages of Wholesaling

After harvesting the trees, it is advantageous to wholesale them for the following reasons:

1. There is little risk involved because the tree buyer places the order, pays for the trees upon receipt of them, and thereby, assumes the risk of retailing.

2. Retailing necessitates a large investment, the leaving of the farm, temporarily, and greater risk is involved due to the swamping of the market by other retailers.

3. If the farmer does not have a truck or other necessary equipment for retailing, he probably would not be justified in acquiring them for a sideline enterprise.

A limited market may also be found at grocery stores and service stations in the nearest town or city. Several hundred trees could be disposed of in this manner without much cost to either the grower or the seller. It would not be advisable, however, to attempt to dispose of any great volume of trees in this manner.

Retailing

Advantages of Retailing

The farmer who has raised 4000 or 5000 trees for market

and who finds it possible to leave his farm for ten days or two weeks, can dispose of his trees at a much greater profit by setting up a Christmas tree lot. At the same time, he could have that much-needed vacation.

Location, Size, and Cost of Lot

A vacant lot, approximately 200 feet by 300 feet in size, which is located on a busy downtown corner, should be rented prior to the cutting of the trees. The rent will be from \$15 to \$85, depending on the size of the city and the location therein. It is well to select the lot on a street where traffic moves slowly and where there is ample parking space.

About the 8th of December, or at least two weekends before Christmas, the trees should be put on the lot and final preparations for selling be made.

Installation of Lights, Water, and Gas

It is necessary to install electric lights immediately. The power company will install a meter and an electrician will wire the lot for a reasonable amount. An average lot will burn 2000 watts for lighting and 1000 watts for color and decoration per day. The cost for the season will be from \$8 to \$20. Colored lights and decorations should be burned throughout the night because of their advertising appeal.

Water and gas can be installed at a nominal cost if the farmer wishes to live in a tent on the lot. At any rate, water is essential in preserving the trees.

Retailer's License

A city retailer's license is required in most cities. The cost is \$6 in Portland, Oregon, and may vary in other cities.

Construction of Tree Stands

Since most trees are decorated so that the stand is covered with artificial snow, the conventional type of tree stand will suffice. The stand may be constructed as follows:

Cut ten-inch lengths from inexpensive 1x4 inch softwood boards and nail together at the center to form a cross. For larger trees, the stands will, of course, be larger and may be up to 40 inches square. The cost per stand will range from two cents to seven cents apiece. Attach the stand by driving a nail through the center of the cross and into the butt of the tree. It is not necessary to prepare the stands ahead of time as their construction can be incorporated with the selling.

Artificial Coloring of the Trees

The demand for artificially colored trees is growing each year. Since coloring of the trees is inexpensive, and since it increases the selling price of the tree, it is advisable to be prepared to color at least 10 per cent of the trees sold. Artificial coloring is done by spraying a good grade of calcimine on the tree with a regular air-pressure spray gun. Instructions for mixing the calcimine are attached to each package. There will be a demand for silver, gold, blue, white, pink, and two-tone Christmas trees. At

least one well-formed tree should be sprayed with each of the above colors, decorated, and left on display.

Advertising

As in other enterprises, success in Christmas tree retailing is dependent upon proper advertising. This may be done by radio, newspapers, handbills, and signs at a relatively small cost.

Radio is probably the most effective means of advertising Christmas trees. The smaller radio stations will assist in wording between program, by-line advertisements which will cost \$5 to \$10 per announcement for 50 words or less. Radio advertisements should be on the air before five o'clock so that workers will be reminded to purchase the tree while enroute from their jobs to their homes.

Block insertions in newspapers is the next best means of advertising.

The distribution of attractively designed handbills will also prove effective.

Signs that are brilliantly lighted, colored appropriately, and visible for a block or more are essential.

Selling Price

The retail price of natural colored Christmas trees is normally 15 cents per lineal foot. Although prices do not drop appreciably lower than this, they may rise to twice this amount. An additional 15 cents is usually charged for the stand. Artificially colored trees sell for twice the

above amount. Eight to 10-foot trees sometimes sell as high as \$10 or \$12 each.

Risk of Retailing

The greatest losses in retailing are, in the main, due to over-buying at prices that are too high. If the farmer grows his own trees, transports them in his own truck, and keeps retailing expenses at a minimum, he has little chance of losing money on his investment.

Cost Summary

Since the costs of producing and marketing Christmas trees fluctuate from year to year, the data recorded below show only the relation between the cost of production and marketing and the ultimate selling price.

Relative costs are shown for a one-acre plantation where 2700 seedlings were planted and from which 2000 Christmas trees were harvested.

Production Cost

Cost of 2700 seedlings and freight	\$8.00
Site preparation, 16 hours at \$.50 per hour	8.00
Planting cost, 40 hours at \$.50 per hour	20.00
Plantation care, 1 day per year, for 10 years, at \$.50 per hour	40.00
	<u>\$76.00</u>
\$76 capitalized at 5% interest for 10 years ...	\$123.80

Wholesaling Cost

Cost of cutting, 3 days at \$.50 per hour	\$12.00
Cost of bundling, 2 days at \$.50 per hour	8.00
Cost of shipping 200 miles at \$.20 per mile	<u>40.00</u>
	<u>\$60.00</u>

Retailing Cost

Cost of cutting, 3 days at \$.50 per hour	\$12.00
Cost of shipping 200 miles at \$.20 per mile	40.00
Cost of renting lot	60.00
Cost of lights, gas, and water	20.00
Cost of tree stands at \$.05 each	100.00
Cost of spraying 200 trees at \$.10 each	20.00
Cost of advertising	50.00
Retailing labor cost, 20 days at \$.50 per hour .	<u>80.00</u>
Total Retailing Cost	<u>\$382.00</u>

Net Profit from Wholesaling

2000 Christmas trees averaging 5 feet in height and wholesaling at \$.04 per foot ..	\$400.00
Subtract production cost	\$124.00
Subtract wholesaling cost	<u>60.00</u>
	<u>\$184.00</u>
	<u>184.00</u>
	<u>\$216.00</u>
Net profit per acre	\$216.00
Net profit per acre per year	\$21.60

Net Profit from Retailing

2000 Christmas trees averaging 5 feet in
height and retailing at \$.15 per foot \$1500.00

Subtract cost of production ... \$124.00

Subtract cost of retailing 382.00 506.00
\$994.00

Net profit per acre \$994.00

Net profit per acre per year \$99.40

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