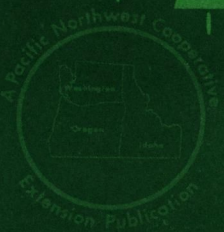


*raising  
Christmas trees  
for  
profit*





# Raising Christmas Trees for Profit

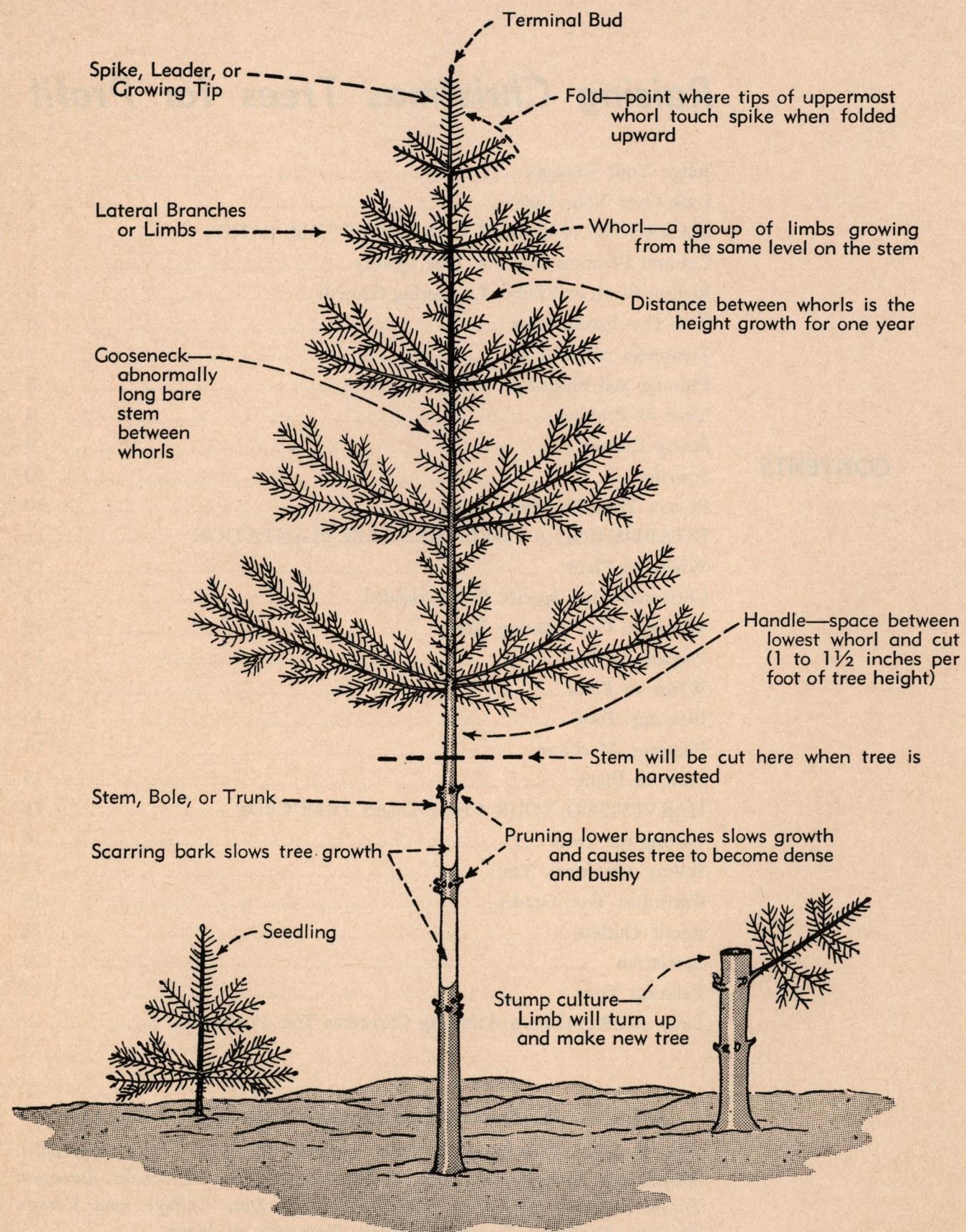
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## A Pacific Northwest Cooperative Extension Publication

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## Raising Christmas Trees for Profit

CHRISTMAS TREES are not always chance by-products of forest lands. They often are a deliberately planned and managed farm crop. They are a big business in many areas of the Pacific Northwest. Each year about six million trees, mostly Douglas fir, are cut in Idaho, Oregon, and Washington. A low estimate of the sale value of this crop is ten million dollars. Trees are shipped to markets in nearly every state and in some foreign lands.

During recent years, enough trees have been harvested to fairly well meet demand—both locally and in other states. High quality trees will be required to meet the growing competition of the market place.

Before you decide to enter the Christmas tree business, weigh the advantages of your location, study your land and markets, then make up your mind. Not all tree land will produce good Christmas trees.

A good Christmas tree has buyer appeal. More specifically, it has fresh, clean foliage and a dense, uniform, well-balanced crown of evenly spaced branch whorls that sweep gently upward. In the Pacific Northwest, good Christmas trees are further considered to be somewhat triangular in shape. Good shape in a Christmas tree, however, varies considerably with the kind of tree and the likes of people in different areas.

### Judge Your Chances

Most northwest Christmas trees come from naturally reseeded, logged-off forest lands in a few areas ideally suited for them. These areas will continue to furnish most of our trees, but many Christmas trees are cut as surplus from stands managed primarily for timber. Even on the best lands, however, producers must invest time and money on cultural practices, such as removing brush, shearing and pruning to improve the quality of trees.

Your first decision must be whether to manage for timber or Christmas trees. Good Christmas tree land must be taken and used where found. Often, it is not convenient to markets, and trees must be

cut early and shipped far. The handling and shipping often reduce quality. Thus, some producers are planting economically on less favorable land near good markets. Although their management costs are higher, transportation costs are lower. The fresher local trees are often favored and command higher prices.

The marketing period for Christmas trees is short and intensive. Local surpluses often develop and price cutting follows. Cut Christmas trees are perishable, without value the day after Christmas. Many trees are fed each year to post-Christmas bonfires. This is not always wasteful from the forestry standpoint. Responsible producers harvest only marketable trees. They manage their lands to keep them continuously productive.

Correctly done, Christmas tree cutting is not destructive but is based on sound forestry practices. If you can produce quality trees at reasonable cost and are close to good markets, it's a safe bet for you.

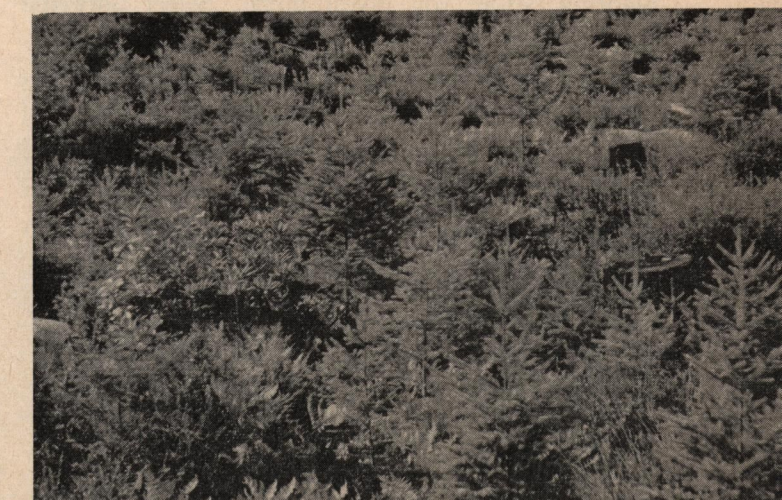
### Look Over Your Land

Whether you are thinking about managing natural Christmas tree land or starting a plantation, you need to consider soil, climate, location, roads, protection, and labor supply.

### Soil and Climate

Christmas trees that grow too rapidly develop spindly, undesirable forms. The best Christmas tree soils are often infertile. In the coastal areas of Washington and Oregon where the climate is favorable, the best Christmas tree soils usually are the sandy, gravelly, well-drained loams. Trees there grow slowly, less than 12 inches in height each

Natural Christmas tree land with new stand after logging.







A Christmas tree growing in the Palouse area of Washington. If the climate keeps growth slow, Christmas trees can be grown on rich soils. Usually, infertile soils will be a better choice since the trees will be bushy and dense.

year, and become bushy and dense, with uniformly spaced whorls of branches. On these infertile soils, brush also grows slowly and is therefore more easily controlled. Here, also, the trees are quickly replaced by natural seed fall. Trees 150 years old are often less than 12 inches in diameter, indicating a very poor timber site. Christmas tree raising is the obvious choice.

Where the soil is too rich and climate is mild and humid, trees grow too fast. It is both difficult and costly to produce marketable Christmas trees on rich soil because of the great amount of pruning and cultural work that is necessary. Good trees can be raised on fertile soils, however, in areas of light rainfall and short growing seasons. The Palouse area in Washington and Idaho is a good example.

Use native trees as a guide. The tree species you raise must be suited to the soil. Look at the trees already growing on the land if you plan to use native species. If they are the right kind, grow slowly, and are dense, uniform, and a fresh dark green, chances are you have the right combination of soil and climate for successful Christmas tree raising.

The more varieties of Christmas tree species suited to the land and the market, the more valuable the land for raising Christmas trees. If you plan to grow trees that are not native, make a small trial planting before you invest much. Select only the species which grow well in climate, soil, and elevation similar to those of your site. Watch how the tree grows in its new surroundings. It may fall prey to insects and diseases it resisted in its natural range. It is risky to invest in large plantings of trees at altitudes and in climates widely different from those of their natural range.

Late frosts often injure the foliage, so stay out of frost pockets. At high elevations, heavy snows that come early in the fall and remain late in the spring may seriously interfere with harvest. Don't try to grow Christmas trees where there are seasonal floods or drought.

### Location

If you have the choice, select the location carefully. You have a big advantage when you are near the market outlets. You can cut trees daily during the season, market them fresh and fireproof directly from the woods, and cater to special demands.

### Accessibility

Good roads are important. They should be all-weather roads since your most important operations are carried on in bad-weather months. The soil that grows your Christmas trees must also support the network of harvest roads over which you take out your trees. If you raise your trees on fairly level land, your costs for laying out and maintaining roads will be less.

### Protection

Theft and fire are problems in the Christmas tree business. These may be greatly reduced if you have the right location. For example, if the main road to your woodland passes your farm buildings, it is easier to control entrance and exit of unauthorized persons. Areas within fire protection districts are safest from fire.

### Labor Requirements

Labor costs are always one of your big expenses. Social security, payroll taxes, and insurance must be paid as well as salaries.

Even the best Christmas tree land needs a lot of work to increase the quantity and quality of trees. Unless you can do the job alone, you had better arrange for the necessary help beforehand. Other farmers may compete with you for the same help.

Getting labor for the rush season is important. You need help to cut and transport trees, solicit orders, and manage sales.

*Briefly, these are some of the problems and advantages you will have if you decide to raise Christmas trees for profit. Now, let's look at the Christmas tree business more closely.*

## Managing Natural Christmas Tree Lands

Christmas tree farming, like any other business, takes long-range planning. *Ask your local forester for advice from the start.*

In managing a natural Christmas tree area, you have to start with it as you find it. Your first decision is whether the best land use is in raising timber, or Christmas trees, or both.

Look at the trees growing on the land to make this decision. If the average distance between branch whorls is less than 14 inches and most of the trees are dense, uniform, and a dark green color, your site probably is suitable. If the distance between branch whorls is more than 14 inches, the trees are growing too fast and are more valuable as timber. When you decide that the area is most suitable for Christmas trees, begin to plan your operations.

### Plan the Roads

You need a good network of harvest roads throughout your Christmas tree area. Lay these out with an eye toward permanence, and be sure that they are passable the year around. Often the roads can be planned so they will also serve as fire breaks. Fit existing woods roads into your permanent road plan as much as possible. Build new roads as needed to open the area for harvest and protection.

Lay out the roads on the contour to avoid steep grades. A well laid-out road system will, in the long run, more than pay for itself in reduced road upkeep costs, harvesting efficiency, and savings on transportation equipment repair.

### Cultural Practices Improve Tree Quality

One experienced tree farmer says, "Farming Christmas trees consists generally of removing brush and helping the trees to shape themselves by systematic thinning, pruning and shearing."

Wild tree lands vary greatly in composition, and thus in their needs for cultural practices. Usually they contain trees of different ages, including seedlings, saplings, and poles. The trees grow singly or in dense patches. Some spots may be barren of trees and have patches of hardwood brush.

Every job that you do to improve the number and quality of Christmas trees is a cultural practice. You will practice some or all of them if you stay in the business very long, whether you manage wild tree lands or establish a plantation.

Tools commonly used in cultural practices are the light double-bitted axe or machete and some kind of pruning shears.

The trees shown on the left have not been managed. The spindly tops will not make good quality Christmas trees. The trees on the right have been shaped for quality. Thinning and other cultural practices have been used, too.







Brush and other competing species have been cut on this well-managed Christmas tree farm. Removing brush allows the Christmas trees to grow without competition so that they will develop into bushy, well-formed, well-colored trees.

### ***Reduce Brush and Other Competing Growth***

Bushy, well-formed, well-colored trees can develop only where they have enough room to grow in all directions. Trees grown in hardwood brush usually have deformed lower branches that need to be pruned off to a point above the brush to make good trees of them. Keeping down the low brush allows trees to develop uniformly from the ground up. It also allows natural reseeding and prevents the delay necessary when a tree must grow through and out of the brush. Hardwood brush is most persistent where the soil is fertile.

All undesirable trees in a Christmas tree area should be cut down. Lodgepole pine, also called Black pine or Jack pine, is common on some of the best Christmas tree lands of Washington and Idaho. The first tree farmers cut these out on Douglas fir sites to favor Douglas fir. Lodgepole pine, however, is fast gaining favor as a Christmas tree.

All undesirable trees cut down should be limbed so that they lie close to the ground and rot fast.

Dead trees with limbs make it difficult to get around the area and also deform small Christmas trees that may grow through or near them.

### ***Thin Out Excess Trees***

Christmas trees spaced too closely interfere with each other's growth. For instance, where two trees the same size grow so closely together that their branches overlap, those branches do not grow as

The trees below are crowded. Many marketable trees will be cut to give more space for remaining trees to grow.



The large center tree was pruned to release smaller trees under it. This tree will fill out as a result of pruning.

fast as branches on the open side. You will have two flat-sided trees. One tree must be cut down before this happens.

The beginner almost always keeps too many trees. At Christmas tree size not more than 2,000 well-spaced trees per acre can grow unhampered. So thin according to the number of trees per acre and space requirements, which depend on tree age.

The first step in a densely stocked stand is to harvest, in the first cutting, as many merchantable trees as possible. If the trees are still too thick, thin out others. Try to visualize which trees will take the place of those cut this year and give them elbow room. You may have to prune lower limbs to release the trees from competition with adjoining trees.

In thick, even-aged stands you must thin heavily to favor the crop trees selected. In stands where trees range from seedlings to 12 feet, and include several age classes, you may be able to farm on two levels. Prune the larger trees from the bottom up until the top remaining will make a Christmas tree. The seedlings underneath will then get more light. Thin and shape the low-level trees as necessary.

Some farmers leave a few tall trees as wind buffers and seed sources for future crops. This is good practice. Keep at least six well-spaced seed trees per acre where you rely on natural seeding to reproduce the crop.

Except for the seed trees, most growers limit the size to not more than 14 feet. The size depends on the market. The most popular sizes among consumers are 5 to 8 feet.

One man can prune and release 500 to 1,000 well-spaced trees in a day, according to one experienced operator. To do the job right, one man alone keeps busy culturing 80 acres of good Christmas tree land.

### ***Treatment of Thickets***

When natural Christmas tree lands are first placed under management some dense stands or thickets may be found grown just beyond Christmas tree size. Such thickets can be heavily pruned and thinned to bring them back into production.

Select the best-shaped dominant crowns to keep, and cut away the trees crowding them. Give them 1 to 3 feet of clear space all around the crown. Prune off all dead limbs up to a good whorl of live branches. This heavy thinning and pruning will allow enough light to reach the ground for new trees to get started and take over when the upper level of cultured trees is removed.

This thicket was thinned and pruned. The dominant trees were left and the trees crowding them were taken out.





## Pruning and Shearing

Pruning and shearing are practices that upgrade the quality of Christmas trees and enhance their value.

Such practices are variously called pruning, shaping, shearing, trimming, clipping and forming, but all seek the same objective—a fuller bodied, uniform, good quality tree that will compete well on the local or export market.

In the past northwest Christmas tree producers tried to limit their labor investment per tree by using the speediest and most economical cultural practices. They removed entire lower branch whorls up to the point where the tree assumed a natural good shape, and scarred the stem to slow down the rate of growth when this was necessary.

With increasing competition from plantation-grown trees and a growing public demand for quality trees, much more attention is being given to shaping the quality of each individual tree. Shearing is therefore another method being added to the list of cultural practices used in the northwest to produce quality trees.

Shearing is the practice of trimming the branch ends to even them up and cutting back the terminal leader when necessary to keep the branch whorls spaced uniformly or to keep height in check.

These trees were pruned by a northwest tree farmer. Tops will fill out and become bushy before trees are marketed.



By careful shearing it may be possible to get a tree ready for market in shorter time than by the older methods of heavy pruning and scarring. The sheared tree does not have to suffer severe shock from heavy pruning and scarring. Resulting discoloration will be less. By shearing, long branches can be evened up and openings in the crown can be made to fill in. Clipping the branch ends stimulates formation of additional buds back along the branch and greatly increases the leaf surface area of the tree.

Actually, if a producer disregards the economics of the business, he can shear to make a Christmas tree of almost any kind of tree on any site. Very few producers will succumb to such a temptation; most will continue to seek the Christmas tree varieties that have the best inbred characteristics, and will grow to quality trees naturally.

Tools used in shearing Christmas trees include the long-handled hedge shears, small hand shears used by gardeners, small hand sickles, knives or machetes. Almost any tool with a good sharp edge that handles well can be used.

## Time of Pruning

As a group, the pines require considerably more pruning and shaping than the spruces and firs. The time of pruning is also more critical. The pines should be shaped at the peak of the growing season in June to mid-July. The new growth is still limber and there is enough of the growing season left for the plant to set new bud clusters. The spruces and firs do not grow as fast as the pines and therefore require less pruning. Also, they form buds at intervals along the new year's growth instead of only at the branch tips as with pines.

The spruces and firs may be pruned throughout the year but the ideal time is early enough in the growing season to stimulate additional bud formation. Terminal leader growth needs to be kept within 12 to 14 inches annually to produce a uniformly branching tree. Cut the terminal leader slant-wise just above the bud nearest the desired length but never below the last bud on the leader.

In trimming the terminal leaders there is always a possibility that more than one new leader will



The tree at the left is the result of an accidental stump culture. The limb left on the stump turned up and will make a second Christmas tree. The tall trees on the right have been scarred to reduce their growth rate, prevent open tops.

form next spring. When this happens, nip out all but one best leader.

The most important pruning that can be done to Christmas trees is in the formative years long before harvest. It is then the basic structure of the tree can be formed and faults corrected. From then on, watch the tree's development carefully and apply cultural practices as necessary to keep it developing to the desired shape.

Opinions vary on the effect of pruning on growth reduction of trees. One Oregon grower reports that by removing one-third of the tree's lower branches, he gets a 25 per cent growth reduction. By removing about half the lower branches, he gets a proportionate growth reduction.

Generally, producers agree that light pruning slows height and diameter growth and stimulates needle formation for about two years. After that, the denser foliage tends to overcome effects of light pruning, and the tree shows increased height and diameter growth.

## Stump Culture

Stump culture is the practice of allowing one or more green limbs to remain on the stump of a



cut tree. A limb will turn up and form a new tree on the stump. Because its root system is established, the turn-up tree should develop faster than the original tree. In many instances these trees have a better shape and color than did the original growth. Leave at least 3 inches of stump above the green limb or limbs. The top of the stump will dry out and die back several inches from the top, and the limbs must be left below this dieback area.

Selecting the right limb or limbs to leave is important. A vigorous rounded limb  $\frac{1}{4}$  to  $\frac{1}{2}$  inch in diameter with uniform branch whorls is much better than a flat spindly one. Opinions differ on whether one or more green limbs should be left. Some producers leave several limbs and let them develop until they can select the best one and then cut the others. This requires an extra trip to the stump. If several limbs are allowed to remain too long, all will be flat sided. It might be best to settle on one good limb for the turn-up when the tree is cut but some growers have reported that trees died when only one limb was left.

Stump culture is most practical where trees are scattered and reproduction is scarce. It is also effective if you manage your trees on two levels. Some experienced tree farmers question its value where



natural reproduction is adequate because of the competition it gives surrounding trees.

Some operators report having harvested as many as three successive Christmas trees from the same stump. A grower in Kitsap County, Washington, reports that about 50 per cent of his stump cultured trees grow to desirable trees.

### Scarring

When trees grow too fast to make well-formed dense Christmas trees, scarring slows their growth. Very often, pruning them up from the base to the first good whorl of branches is all that is needed to slow their growth. If this doesn't work, skin a strip of bark from one or two sides of the lower trunk. This is called scarring or bleeding. An alternate method now widely used to achieve the same result is shearing.

The first year after scarring, the needles may yellow slightly. Don't harvest the tree until it has regained its color.

Scarring also may help make the crown fill out. For this purpose, scarring should be done one to three years before harvest to give the tree time to bush up.

Scarring usually slows growth until the scar is healed, three to five years, depending on the size of the tree and the scar. The degree of scarring varies. Only experience can tell you how to use it best on your trees. Consider also the technique of shearing. Visit adjoining farmed areas to observe results and compare growth rates with your trees. Experienced farmers are usually glad to share their knowledge.

### Protect Your Christmas Trees

#### Against Fire

Any fire in the Christmas tree area is disastrous, and every precaution should be taken against it.

- Fell snags along the roads and establish fire lines.
- Separate hazard spots, such as large slash piles and heavily traveled highways, from your trees by adequate fire barriers.
- Don't allow debris from pruning and thinning to accumulate without added precautions.
- Keep fire tools handy during the fire season.

The district forest wardens of the State Forestry Departments are always available and will advise you on fire protection measures.

### Against Insect, Disease, and Rodent Damage

Compared to other agricultural crops, forest trees are relatively free from serious insect and disease attacks. On Christmas tree lands, this is especially true. The trees are cut while they are still young and vigorous, and before their later life enemies can do them much harm.

Damage from defoliating insects, mites, and aphids can become serious. All of these are easily controlled by chemical sprays. Keep close watch on your trees and check damage quickly. Your County Extension Agent can help you recognize and control harmful insects. So can your local farm forester.

In some cases, winter damage may look like insect or disease attacks. Play safe. Have all questionable conditions checked by experts.

In some areas ground squirrels, pocket gophers, and field mice feed on the bark and roots of trees during winter months. If you find evidence of heavy populations of damaging rodents, consult the Fish and Wildlife Service in your state about possible rodent control programs.

### Against Grazing Cattle

Never let cattle graze your Christmas tree area. They trample and injure the trees by rubbing and breaking off limbs. Fence the forest land to keep out grazing livestock. Deer are browsers and if plentiful can quickly ruin a Christmas tree stand.

### Against Theft

Trespass is an ever-present problem. Building gates to prevent entry and watching over the area carefully during the season are about all you can do. Posting the land against trespass may help. Close cooperation with local law enforcement officers is recommended.

The Northwest Christmas Tree Association through its legislative committees is constantly working on this and similar problems of concern to the industry.

## Establishing a Christmas Tree Plantation

If you select a site and plant it to Christmas trees, you have several advantages over the man who farms natural Christmas tree land. You can:

1. *Prepare the land before planting.* You can eliminate weeds and brush by burning, or with machinery, or with chemicals such as 2,4,5-T and 2,4-D.
2. *Select a site near good markets.*
3. *Choose the best tree species* for your land and your market.
4. *Lay out roads* and provide protection against fire before planting.
5. *Space trees* so they develop uniformly and are easy to manage.

There are some disadvantages, too, in establishing plantations. You must select species that suit your land and climate, obtain planting stock, plant the trees, and see that they become established. Your production costs are higher than those on natural Christmas tree lands. To compete with local forest-grown trees, your crop must be of high quality and be raised within reasonable cost limits.

### Where to Plant

Plant the soil that appears suitable for trees—well-drained, sandy or gravelly loams that are unsuited for other higher value agricultural uses. Plant suitable odd corners of fields, old abandoned fields, and stump pastures of marginal value. In fact, any land that will produce high quality Christmas trees will do. It is particularly advisable to plant Christ-

mas trees in parts of the state where few are grown. If conditions are right for growing trees, plantation-grown trees can easily compete with imported ones.

### Christmas Tree Species Recommended

Douglas fir (*Pseudotsuga menziesii*) is the most widely grown and most adaptable species of Christmas tree in the Pacific Northwest. Other species are also suitable and may thrive on your land. Consumer demand, geographic location, soil and climate determine which species you can grow most profitably. Before adding a new species, test plant a few trees and watch how they grow in their new environment. If they should not adapt, you will not have lost much time or money.

The following are some species from which you may choose:

The true firs (*Abies*), because of their characteristic uniform branching and formal appearance, often command the best price on the market. Many of them are high altitude trees that have been successfully established in only a few plantations at lower elevations. Alpine fir (*Abies lasiocarpa*) and Shasta Red fir (*Abies magnifica* var. *shastensis*) are two examples. It is wise to proceed slowly with these trees until they are more widely tested.

Grand fir (*Abies grandis*) grows intermingled with Douglas fir and is quite common. It is well liked and widely used in local areas. Both Grand fir and Douglas fir grow naturally in widely distributed areas of the Pacific Northwest. Other true

Douglas Fir



Shasta Red Fir



Grand Fir







Noble Fir



Silver Fir



White Fir



Colorado Blue Spruce



Scotch Pine



Austrian Pine



Western White Pine



Ponderosa Pine

firs recommended for Christmas tree planting in some areas of Washington and Oregon are: Noble fir (*Abies procera*), Silver fir (*Abies amabilis*), and White fir (*Abies concolor*). Noble fir and Silver fir are not recommended in Idaho.

The spruce (*Picea*) is another good Christmas tree species. Norway spruce (*Picea abies*) and Colorado Blue spruce (*Picea pungens*) will grow generally throughout the Pacific Northwest and develop into very fine Christmas trees in many soils and climates. They are naturally slow growing and develop uniform bushy crowns. The needles are stiff and prickly, which some people dislike, and the stiff branches make them difficult to bundle for shipping. However, about 15 per cent of our total national production is spruce.

Sitka spruce (*Picea sitchensis*) makes a nice Christmas tree. It will grow only in the fog belt along the coast and in some coastal valleys in western Washington and Oregon. However, northwest consumers have not as yet accepted the spruces as have those in the East and Midwest.

Scotch pine (*Pinus silvestris*) is widely used for Christmas trees in many eastern areas. It grows well in a great many northwest locations, and some producers plant many Scotch pine trees yearly for the export market. Scotch pine must be pruned to Christmas tree shape. The stiff branches make it hard to bundle for shipping. It is not yet accepted on our local markets.

Austrian pine (*Pinus nigra*) is not native but was imported from Europe. The long, dark green

needles appeal to some people. Because it grows fast and can survive on tougher planting sites a few are being grown for Christmas trees. Like the Scotch pine, the Austrian pine must invariably be pruned to Christmas tree shape. Naturally it grows to a rounded, rather bushy form. It does not bundle well for shipping because of the stiff branches.

The list of trees accepted on the market varies by areas, but the list is increasing. For example, Western White pine (*Pinus monticola*), Lodgepole pine (*Pinus contorta*), and even Western Yellow pine (*Pinus ponderosa*) are now finding some favorable localized markets. Some Washington producers have received premium prices for Lodgepole and White pine. Since all are native trees, they should be considered wherever the market will accept them. Both the White and the Lodgepole pine, given ample room, develop into well-balanced, uniform trees with a minimum of pruning. One serious drawback to White pine is its susceptibility to white pine blister rust. In areas where this disease is prevalent, large plantings of White pine have been a risky venture. Recently, control of blister rust has been achieved with an antibiotic, Actidione. This is a hopeful development that is being tested further.

When you consider a new species, list all its advantages and disadvantages. If the species is not locally grown, compare it to an established species like Douglas fir.

It's a good practice to plant Douglas fir interspersed with a few of the trial trees. The land

then produces a crop while you gain information and experience. If results are favorable, you can easily convert more land to production of the new species.

### Where to Get Planting Stock

You may get stock from one of the many commercial nurseries which raise some forest tree planting stock. Check with them on stock available.

The main sources of supply in Washington, Idaho and Oregon are the public nurseries. These are:

#### Idaho

College of Forestry Nursery  
University of Idaho  
Moscow, Idaho

#### Oregon

Oregon Forest Nursery  
c/o State Forester  
State Board of Forestry  
Salem, Oregon

#### Washington

Webster State Forest Nursery  
Route 4, Box 425-A  
Olympia, Washington

A number of private forest nurseries in the tri-state area can also supply planting stock.

As yet, few nurseries are producing Christmas tree planting stock from seed especially selected for this purpose. For this reason, growers may want to collect their seed from good local parent stock and establish their own nurseries or make arrange-

ments with a commercial nursery to grow it for them. The beginner, however, is wise to buy his trees. The request should always be for good Christmas tree stock of known parentage. Frequent requests for good Christmas tree stock may encourage nurseries to produce it.

### Prepare the Site

Whenever possible, prepare the site before planting. In the arid sections of the northwest, plow in the fall to remove annual weeds and conserve moisture.

On undeveloped land, excess debris may be reduced by controlled broadcast burning in the late fall. Some Oregon tree farmers go to considerable expense using bulldozers to bunch debris for burn-

A bulldozer was used to prepare this land for planting.





ing. Chemicals like 2,4-D and 2,4,5-T will kill weeds and brush. Under any circumstance, the necessary clearing is most economically done before planting.

In planting sites such as abandoned fields, the heavy sod, weed, and grass growth chokes out the tender, newly planted trees before they can become established. Without thorough site preparation, trees planted in the heavy sod and grass usually fail. Old fields and other thick cover also breed heavy populations of rodents like field mice and rabbits that cause heavy loss in new plantations. Old fields should be plowed, disked and harrowed as you would for a grain crop before trees are planted. Fields should be plowed deeply in early summer and lie fallow through the summer. If erosion is not a problem, disking and harrowing should follow in late September or early October. Fall rains will settle the soil before planting. Old fields prepared in this manner are ideal for machine planting. Cultivation for a year or two after planting is recommended. This controls the weeds and breaks up the surface crust to allow better moisture penetration. Cultivation needs depend on weed growth and soil characteristics. The objective is to keep the plantation weed free and the soil around the young trees loose while they are becoming established.

## When to Plant

West of the Cascades, planting from November 15 to April 1 is best. For areas east of the Cascades, early spring planting is recommended. Frost heaving can be a real danger east of the Cascades except where deep snows cover the ground all winter. In these areas fall planting can also be carried out.

Plant only during the dormant season when there is ample moisture and the ground is workable. The dormant season lasts from late autumn, after hardwood leaves fall, until new growth starts in the spring. In mild climates and at low elevations, you may plant during the entire dormant period if there is enough soil moisture. At higher elevations where deep snows remain on the ground until early summer, fall planting is a must.

Cool, moist or rainy weather is ideal for planting. In such weather, tree roots are not likely to dry out

during planting and soils are easy to dig and in good condition to receive tree roots.

## Planting Tools

There are two kinds of tools available to the tree planter—hand tools and machine planters. The kind of tool to use is determined mostly by the condition of the planting site, tools available, size of the job and the relative costs.

Hand planting is the most common method used in the Pacific Northwest. The hand tools used include the grub hoe or mattock and the round pointed shovel.

The planting bar or dibble is a hand tool commonly used in other sections of the country that warrants a trial on many of our deeper, less rocky soils. This tool is commonly used for farm plantings in Idaho. It is a heavy tapered blade 3 inches wide and 10 inches long attached to round handle about 2 feet long. With this tool you can make a slit by stepping the blade into the ground and pulling

Planting bars will speed planting on deep, loose soils.



back on the handle to open the slit. Then insert the seedling in the slit and hold it at the right depth while the bar is again stepped into the ground 3 or 4 inches back from first slit. Press the soil back against the tree roots by pushing forward and then pulling back on the handle. In the deep loose soils found on some planting sites this tool should work very well. Where it can be used it will speed up the planting of small trees.

## Planting Machines

There are two kinds of tree planting machines. One is mounted on a tractor's hydraulic system; the other is drawn behind the tractor. These are manufactured under various trade names. Other machines have been adapted by growers from old plows, subsoilers and vegetable transplanters. In operation, the planting machine opens a trench or slit in the ground into which the tree roots are set. Two wheels set at an angle follow and press the soil back against the tree roots.

Increasing attention is being given to the use of planting machines in the northwest and their use is being perfected through research and experience. In old fields of heavy sod and grass they still function best when the land is prepared first by plowing and disking.

## How to Plant

Planting young trees is no more difficult than setting out tomato plants, snapdragons, or pansies. Here are the important points to remember:

1. If possible, plant during cool, moist or rainy weather.
2. Keep the trees' roots constantly covered and moist at all times. When planting, carry the trees in a canvas bag or bucket containing wet moss, shavings or water to keep roots covered and moist.
3. Set the tree upright in a hole or slit large enough to hold the roots without crumpling or bending them. Spread out the roots in as near a natural position as possible.
4. Plant neither too deep nor too shallow. The planted tree should have all its roots well covered. This will be achieved when the tree is set to the same depth or about 1/2 inch deeper than it was in

the nursery. This is the point where the roots end and the stem begins. Usually at this point there is a slight swelling and discoloration known as the root collar. When the root collar is set a little deeper, not over 1/2 inch, it will be at the ground line when soil settles around the roots.

5. Use litter-free soil to cover the roots. Tamp well to assure close contact between soil and roots. Eliminate the possibility of air pockets in the root zone.

6. The correctly planted tree will resist a slight pull and feel solidly fastened in the ground. It should never pull out of the ground easily.

7. Water newly planted trees under droughty conditions. Where rainfall is very light—under 24 inches a year—or only seasonal, irrigation is necessary to establish trees and help them over the first one or two dry summers. Obtain the advice of forestry experts before planning a Christmas tree crop in such areas.

When you plant trees where rainfall is less than 24 inches a year, settle the roots with water at planting time or two or three times during the summer months of the first two growing seasons. Form a basin which holds 2 to 3 gallons of water around the stem of each tree. This will thoroughly soak the root zone. Infrequent thorough soaking is much better than frequent light watering. The object of irrigation is to provide enough water to keep the tree healthy and yet force it to extend its roots down to the available underground moisture.

| Number of Trees per Acre at Various Spacings |                |
|--|----------------|
| Spacing in feet                              | Trees per acre |
| 3 x 3  | 4,840          |
| 4 x 4  | 2,722          |
| 5 x 5  | 1,742          |
| 6 x 6  | 1,210          |
| 7 x 7  | 889            |
| 8 x 8  | 681            |

Use a spacing of 4 by 4 feet or less only when you have a market for small trees. If most of your trees must go as 6-footers, you likely will find a 5 by 5 foot spacing to be the minimum.

After planting, manage your trees just as the producer on natural land does. See pages 5 to 10. for cultural practices and protective measures.



# Harvesting Your Christmas Tree Crop

The objective in harvesting Christmas trees is to get the greatest number of high-quality trees each year from every acre. Cutting trees is actually a cultural practice. In cutting one, you make room for another.

If you depend on natural seed fall to restock the land and if you don't have a good seed source, let some trees reach seed-bearing age. Space these so that you will get a good spread of seed over the area. Consider prevailing winds in selecting the seed trees. Six well-spaced seed trees per acre are recommended, but it's good insurance to leave too many rather than too few.

In a plantation, the first trees cut may be stump cultured. New trees will develop while others are maturing. Except for planting or natural seed fall, this is the only way to get a new crop of trees on

A good quality Douglas fir Christmas tree, ready to cut.



the land. The first trees cut will be small trees that come out as thinning when your spacing is closer than 4 by 4 feet. These are 4- to 5-year-old trees, about 3 feet tall, that you may sell as table-top trees.

The most popular Christmas tree sizes range between 5 and 8 feet. The harvest should be flexible, and every tree judged on its own merits. Consider its readiness for market and its present value in relation to its value a year or two later if there is enough space for it to keep growing. Individual trees in the same plantation will vary greatly as to size, color, and shape. All sell best when they meet the standards of a good Christmas tree as described on page 3.

If possible, select and tag all trees than can be cut. Then, untrained cutters can easily find the trees during harvest. Tagging also offers you an opportunity to advertise.

Harvesting procedures depend on the method of sale. In selling standing trees, the buyer often does the cutting, yarding, and sorting. The owner should always retain control of the cutting to the extent of safeguarding his future crops. If you are near a good local market, you may cut your trees only as fast as they are sold in your retail yard.

Most farmers, however, sell wholesale through dealers with good established outlets and thus save themselves many of the worries of retail marketing. When trees are sold to a wholesaler, he sets the delivery date. Cutting should be done as near the delivery date as possible so that trees reach the market fresh.

## Cutting the Trees

The most common harvesting tools used in the commercial operation are the double-bitted axe, the short curved saw, and the large machete.

If the trees to be cut are not tagged by the seller the cutters must be able to select good, marketable trees. The cost of cutting and handling unsalable trees reduces the net profit on all trees. If unsalable

trees are left uncut, some may be made into marketable trees through cultural practices. This is especially important where the tree land is not fully stocked.

Experienced cutters can fell a Christmas tree with one swing of the axe. They bend the tree with one hand, putting the stem in tension, and swing the axe with the other.

Each tree cut should have at least 6 inches of clean stem below the intended bottom branch whorl. A good rule to follow is to leave about 1 inch for each foot of tree height but never less than 6 inches.

After the bases are trimmed, the trees are carried out to skid trails and bunched for pickup and delivery to a concentration area. There, they are sorted, graded, baled, and tagged. The average baler working in the concentration yard can bale 150 to 200 bales per 8-hour day. Use untreated binder twine for tying bales. The following is the approximate number of trees of various sizes per bundle: eight 2- to 3-foot trees; six 3- to 4-foot; four 5- to 6-foot; three 7- to 8-foot; two 9- to 10-foot; and one 11- to 12-foot or larger.

Harvested trees should not be baled until just before shipment. This prevents compressing and heating, which often results from long storage in the bales. Cut trees should be assembled and stored under cool moist shade to retard moisture losses. Treat the trees much as you would treat cut flowers. During warm days, an occasional fine spray of water on the trees will help keep them fresh and green. Standing them in a trough of water is even better and should be considered whenever possible.

## Selling Christmas Trees

Marketing Christmas trees can have many variations, but the five common steps are these:

1. Be sure of a market before cutting.
2. Cutting and collection.
3. Shipment to wholesalers.
4. Wholesale distribution.
5. Retail sale.

Each step adds to the cost of doing business and the risks assumed. Unless the small-scale producer sees a way to retail his trees locally, he usually



Bundles of Oregon trees being shipped to market.

takes advantage of the established facilities of concentrators and wholesalers doing business in his area.

A number of ways to market the trees are possible for the grower. Selling the trees on the stump at a set rate per lineal foot or per tree is perhaps the least trouble. Under this method the buyer assumes the cost of cutting, bundling and transporting to market. Sales of this kind should nevertheless be made under a written contract and then only to a financially responsible party. A sample contract form is shown on the next page. Payment in advance of cutting should be arranged and a definite agreement made as to the trees to be taken. A good practice is to mark trees to be cut. When this is done you can assure yourself a fair price by inviting bids from prospective purchasers. In advertising for bids, report briefly on quantity, quality, and species of trees you offer as well as the important conditions of sale. In making stumpage sales, supervise the job to see that contract requirements are being fulfilled.

Stumpage prices vary widely depending on demand, species, location, and quality. The price has ranged from 15 cents to \$3.00 per tree. The stumpage price to the land owner amounts to about 10 per cent of the consumer price. Price in the Pacific Northwest for 6-foot Christmas trees ranges from 25 cents to 65 cents per tree stumpage, 45 cents to 90 cents roadside, 70 cents to \$1.80 wholesale and \$1.00 to \$6.00 retail. The true firs average the best prices. Pines bring the next highest prices.



## Suggested Christmas Tree Sale Contract

I (or we) \_\_\_\_\_ of \_\_\_\_\_  
(name or names of purchaser) (post office) (state)  
 hereinafter called the purchaser, agree to purchase Christmas trees from \_\_\_\_\_  
(name of seller)

and \_\_\_\_\_ of \_\_\_\_\_ hereinafter  
(wife) (post office) (state)  
 called the seller, upon the terms and conditions hereinafter stated. This contract applies to the area described as follows: \_\_\_\_\_ State of \_\_\_\_\_  
(show subdivision, section, township, and range) (county)

- A. 1. Trees designated for cutting. \_\_\_\_\_ (Mark should be agreed upon.)  
(species)  
 2. Seller reserves right to cancel this contract if the contract specifications are violated by the purchaser.  
 3. Condition of sale: Payment shall be in lump sum in advance of cutting for the total estimated amount (or operator agrees to furnish bond for the total amount and pay for trees as cut).  
 4. The purchaser agrees to submit a performance bond or cash deposit of \$\_\_\_\_\_. This bond or deposit to be forfeited if the contract is cancelled by the seller as the result of contract violations committed by the purchaser.  
 5. Payments to be made by either stump or lineal foot, whichever is agreed upon. Purchaser to be released from performance bond when trees are paid for and slash is disposed of.

B. Obligation of Purchaser

1. Must determine boundaries of the contract area.
2. Agrees to accept full responsibility for trees cut outside of the contract area.
3. Agrees to waive all claim to the above described trees unless they are cut and removed on or before \_\_\_\_\_ (date).
4. To protect from injury, young growth and other trees not designated for cutting.
5. To use existing roads for transporting products or locate new roads only with the (written) consent of the seller.
6. To repair damage caused to ditches, fences, bridges, roads, trails, or any other improvements damaged beyond ordinary wear and tear.
7. Not to assign this agreement in whole or in part to another party without the written consent of the seller.
8. Agrees to pay for all trees cut except those non-marketable trees cut in process of road construction.

C. Stump Culture

Purchaser agrees: (1) When cutting in thickets to prune all branches from stump; (2) When cutting in openings to trim off all branches except one near top of the stump to be left for new leader.

D. Slashing

Purchaser agrees: (1) That all slash created by long butting, trimming, or any other operation, shall be lopped so as not to exceed eighteen (18) inches above the ground, or that he will pile and burn debris in clearing so as not to damage remaining trees; (2) A map designating sorting areas and road location shall be a part of this contract.

Seller agrees to grant freedom of entry to purchaser and his employees covered by contract.

In case of dispute over terms of this contract we agree to accept the decision of an arbitration board of three selected persons as final. Each of the contracting parties will select one person, and the two persons selected will select a third to form this board.

In witness whereof the parties hereto have set their hand and seal on this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

\_\_\_\_\_  
(witness)  
 \_\_\_\_\_  
(witness)  
 \_\_\_\_\_  
(seller)  
 \_\_\_\_\_  
(purchaser)

The following breakdown of costs in Christmas tree production may be a useful guide.

| Item                                   | Cost per tree | Per cent of total cost |
|--|---------------|------------------------|
| Stumpage to landowner                  | \$0.13        | 8                      |
| Cutting and yarding by cutter          | .25           | 14                     |
| Hauling, processing and loading        | .16           | 9                      |
| Freight                                | .15           | 8                      |
| Concentrator and wholesaler's services | .50           | 28                     |
| Retailer's services                    | .60           | 33                     |
| Total price paid by consumer           | \$1.79        | 100                    |

These percentages indicate an owner can realize 31 per cent of the retail sales price by doing his own cutting, yarding, hauling, processing, and loading.

Getting the trees to the market at the right time and in the right condition to sell is very important. Trees to be wholesaled should be cut and sold by December 10. Contract arrangements with buyers should be completed well before delivery date. Because Christmas trees are perishable, payment should be cash in advance.

Shipping trees to any dealer on consignment is risky. Before grade standards were established for Christmas trees, the tendency was to price the consigned quality trees at the lowest price. This was especially true when a market surplus developed.

Successful wholesale selling must include a knowledge of consumer demand. What sizes and species are most popular in the various outlets? Cut the variety of sizes and species to meet the consumer preferences in your market. A quality product to meet the public fancy and prompt, reliable delivery service to the retailer are the best ways to establish a good, lasting reputation.

One Oregon grower who has marketed his crop profitably over the past 20 years makes these suggestions for wholesaling.

1. Cut good trees! There are plenty of buyers who will take them as they come, like them, and pay for them.

2. Cash on the barrel head is the best credit policy.

3. Do not hold trees for anyone for any length of time without a substantial deposit. You may miss later sales, and your prospective buyer may buy from others at cheaper prices.

4. Advertise plenty and you will have plenty of buyers.

5. Accept no more orders than you can deliver. Help might fail you or bad weather intervene.

6. To market safely, time the cutting right. Cutting should not begin earlier than November 5. It should be completed and crop sold not later than December 10. Truckers want their trees arranged for and assembled by the last week of November or the first week of December. Late buyers want initial stocks for display by December 10. The big retail buying rush comes the last three weekends before Christmas.

## Christmas Tree Grades

United States standards for Christmas trees were established effective November 1, 1957, by the Agricultural Marketing Service. These are voluntary standards but they do establish a sound and practical basis for determining quality and price. The grades established apply to sheared or un-sheared trees of the coniferous species normally marketed as Christmas trees. Three grades were set. These are U.S. Premium, U.S. No. 1, and U.S. No. 2. Grades are based on density, taper, balance, foliage, and deformities of the tree. The following table shows requirements for each grade:

*Christmas Tree Grades*

| Factor      | U.S. Premium                | U.S. No. 1   | U.S. No. 2   |
|-------------|-----------------------------|--|--|
| Density     | Medium                      | Medium   | Light  |
| Taper       | Normal                      | Normal (flaring or candlestick if tree is otherwise U.S. Premium)                                | Normal (flaring or candlestick if tree is otherwise U.S. No. 1)                                |
| Balance     | 4 complete faces            | 3 complete faces   | 2 complete faces   |
| Foliage     | Fresh, clean and healthy    | Fresh, clean and healthy   | Fresh, fairly clean and free from damage   |
| Deformities | Not more serious than minor | Not more serious than minor (noticeable deformities permitted if tree is otherwise U.S. Premium) | Not more serious than minor (noticeable deformities permitted if tree is otherwise U.S. No. 1) |



## Retail Outlets

A tree farmer situated near good local markets may set up his own retail lot and sell directly to the consumer. In doing so he enters into direct competition with established firms such as large chain stores and other business establishments that use Christmas trees only as lead items for the Christmas rush.

Establishing a retail yard involves investment in licenses, space rental, light, water, business fixtures, and advertising. Trees must be sold to pay these costs. Good merchandising and salesmanship will help. The public will pay more for the best, so grade the trees and price on quality. Show customers the different grades. Good display to minimize handling, separation of sizes, of quality, and of species, good labels that advertise your quality trees at a price that appeals, ample space for doing business, and convenient access are very desirable features for the Christmas tree retail lot. Retail lot attendants should know Christmas trees and be good salesmen.

A good location for the Christmas tree lot is important. This is sometimes hard to find for such a short period as the 10 days to two weeks during which most trees are sold.

A grower who can retail his crop gets the best returns from it. Some of the advantages of retailing are that you—

- Learn firsthand what Christmas trees the public wants and how well the trees you produce measure up to these demands.
- Can stock freshly cut trees and cut only as fast as trees are sold.
- Can arrange and display trees to best advantage.
- Develop valuable public contact to advertise business and earn a good reputation.
- Can capitalize on specialties of the season—wreaths, cones, greens, special orders.

A good advertising plan will sell trees. Here are some suggestions for advertising slogans:

"A fresh quality tree for every home"

"Forest-fresh trees"

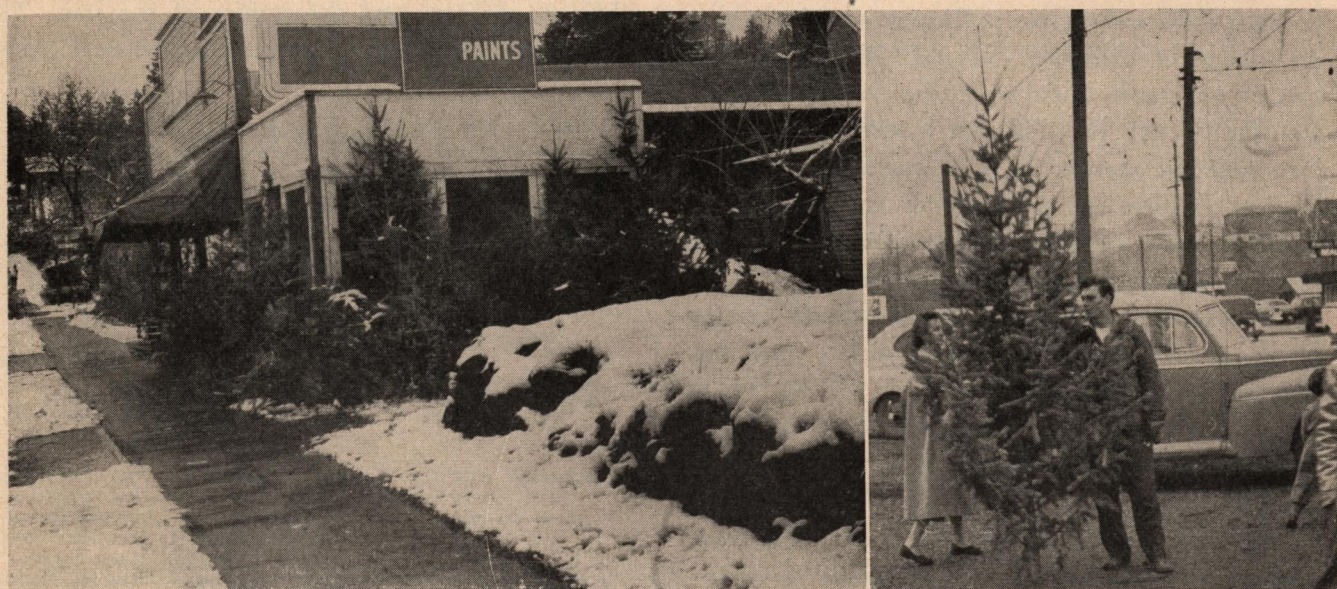
"Graded trees mean quality trees"

"Our quality trees are priced to fit every purse"

"Our trees are especially grown and cultured to meet high standards"

"Our trees are grown and harvested under approved forestry practices"

The Christmas trees at the left are on sale at a Spokane grocery store. The marketing period for Christmas trees is short—about two weeks. At the right, a homemaker selects a good quality tree from a well located and stocked lot.



## Specialties

Specialty innovations in Christmas tree retailing may offer special business opportunities. Some producers ship individually packaged trees by parcel post. They include with the tree in the moisture sealed package, a small number of cones and greens for sprays and wreaths. A package may not exceed 70 pounds or have a combined length and girth measure of more than 100 inches.

You may feature flat-sided trees at reduced prices. Placed against a wall or in a corner of a home, the flat side will not show.

Very often trees with an open side or missing or misplaced branch may be corrected by boring a hole and inserting a branch at the right point and angle to match the natural branches.

Many folks like to cut their own trees. Why not invite them to plan a family outing and come to the plantation to select and cut a premarked tree or perhaps any tree within a marked area? This has been tried with success, and for the plantation near a city, offers a cheap marketing method.

Another device is to take advance individual orders for a specific kind of tree to be delivered to the door.

Tagging plantation-grown trees with information about when they were planted and how they were cared for and harvested sells good forestry as well as the trees. The tag might read as follows:

*This is a Douglas fir. It is a premium tree from the plantation of John Doakes at Twin Firs, Idaho, managed and protected for your pleasure. With it come our Season's Greetings.*

*John Doakes Christmas Tree Farm*

The most effective way to fireproof a Christmas tree is to keep it forest fresh. Applied chemicals discolor the needles or cause them to drop and interfere with the natural fragrance of the foliage. To be fresh and fireproof, trees should be purchased freshly cut, kept fresh in the house by keeping the stem in water, and set in the coolest part of the

room. Before setting any tree up in the house, cut off a small section of the butt to remove the hardened resins that prevent the free intake of water.

## Painting Trees

Some people like their trees painted, either to match color schemes of their homes or to be used with no other decoration. Where demand exists this offers marketing possibilities. Most people, however, still prefer the natural fragrance and beauty of the trees. In either case, well-formed quality trees should be used. Painted trees last longer and are most fireproof if the moisture content in the foliage is kept constant by setting the tree in water. Replacing the moisture lost through evaporation prevents the needles from shrinking and the paint from cracking and flaking.

A recent process, snow flocking, is being widely used to increase tree sales. The process consists of blowing an adhesive mixture on the tree followed by a fluffy cotton or rayon material of different colors. Many homemakers prefer flocked trees made to match the color schemes of their homes. Sales of flocked trees are increasing.

## Laws and Regulations Affecting Christmas Tree Production

Most states regulate the harvesting of forest products and have certain requirements for out-of-state shipments of trees. The federal government or the states may impose quarantines as protective measures against harmful insects or diseases. Licenses are required for hauling between states as well as for hire hauling within states. The following regulations affect Christmas tree business in the Pacific Northwest:

### Idaho

1. *Growers hauling their own trees* can haul on their limited carrier license for truck. If hauling for others, they must get public carrier licenses. In crossing into other states, growers must comply with those states' licensing regulations.
2. *No inspection or clearance is necessary* to ship cut Christmas trees out of Idaho.



## Washington

1. *Out-of-state shipment of Christmas trees and greens requires a special license costing \$10.* Make application to the State Director of Licenses, Olympia, Washington. No one can accept Christmas trees for shipment outside the state unless the shipper exhibits the necessary license.
2. *Report of Shipment.* Within 30 days after January 1 each year all licensed out-of-state shippers are required to submit reports subscribed and sworn to before legal authority, covering the number of trees or pounds of greens shipped or transported out of the state during the license year. The name of the person or corporation from which the trees were acquired must be given. The legal description of the property where the trees were cut and the destination of shipments are also required.
3. *Forest Practices Act.* The Forest Practices Act embodies certain rules and regulations regarding harvesting permits, slash disposal, and seed tree requirements. Every woodland owner should be familiar with these. Specific requirements of this act as they apply to Christmas trees are available from any local office of the State Division of Forestry.

## Oregon

1. *Persons hiring out or owning trucks* which are used to haul trees from lands other than their own must have a special license. These are obtainable at the Local Public Utility Commission Office.
2. *Farmer-owned trucks with "F" plates* cannot be used to haul trees to markets in the state from their own lands *unless* the trees have been raised as a specific farm crop. Unless trees are intentionally grown as a crop they are not so considered in Oregon.
3. *No special license is required* for taking the trees to California in vehicles bearing Oregon farm plates. For hire trucks going into California must obtain permits from the State Board of Equalization at Sacramento, California.
4. *Before any trees are cut commercially*, a harvesting permit must be obtained from the State Forestry headquarters.
5. *California inspection stations may request bills of sale* certifying ownership of trees coming into California.

A more detailed report on regulatory measures affecting the cutting, transporting and marketing of Christmas trees and boughs grown in Washington and Oregon was recently issued by the U.S. Forest Service in Portland, Oregon. Copies of this report are available from the Forest Service.



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*raising  
Christmas trees  
for  
profit*

