

THE CHRISTMAS TREE INDUSTRY

By

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OREGON STATE COLLEGE  
CORVALLIS, OREGON



## PART I. - INTRODUCTION

### Objective

It is the purpose of this paper to show the possibilities of growing trees for the Christmas tree market. It will also be a means of utilizing the submarginal land that exists on most of the farms in the United States. Furthermore, it is the purpose of this paper to show the means of control that the Forest Service has adopted to regulate the cutting on their property to curb waste and unsound cutting practices,--a program that might well be adopted by the private land owner.

### Historical Background of the Christmas Tree

No one seems to know exactly where or when the Christmas tree became a part of the Christmas festivities. Old paintings indicate that Christmas trees were used as early as 1200 A.D. However, the Christmas tree did not make its appearance in this country until shortly after the outbreak of the Revolutionary War. The Hessian soldiers brought the custom with them from Germany.

The first Christmas tree was said to have been sold in New York City in 1821. Since that time the selling and growing of Christmas trees has become a \$10,000,000 industry. Today approximately nine million Americans purchase Christmas trees each year at Christmas time.

### Present Conditions

The business of supplying this demand represents the wildest speculative market in existence. Speculation is wild and crazy against the day that looms ominously ahead: December 24th. The trees must be sold by that afternoon, or they become a negative value.

Men engaged in the Christmas tree business start getting ready for the Christmas tree rush in the early part of July. They send field men out to buy trees from Farmers and timber owners. For the big wholesaler's trade it takes a month to buy all the trees necessary.

Once the trees are bought, the matter of Christmas trees is forgotten until about October 15th. The agent or the wholesaler himself, will go out in the field again to hire cutting crews. The trees are cut and bundled on the premises then hauled, and stored in a damp moist place so as to keep the trees green and fresh. When the time comes the trees are shipped to the railroad sidings, where they are loaded on to railroad cars--450 bundles to the car.

By this procedure, dealers sink fortunes in trees before a single sale is made. First, they must pay the farmer, then they pay their axemen--\$4.00 a day or if by piecework, five cents a tree.

The best that a tree will bring on the market is 50¢ to \$4.00. If the market that year does not become overcrowded the Wholesaler makes a good profit, but if too many trees are shipped, there results a loss in money not to



mention several hundred thousand trees that would have made lumber if left to grow unmolested. Last year over 100,000 trees went to waste in New York City alone.

### Trends Toward Conservation

There is no means at the present time to curb the waste in the cities, but there has been made some helpful steps on the part of the States and the United States Government to stop promiscuous cutting of Christmas trees on land over which they have jurisdiction.

No attempts were made to regulate the cutting of Christmas trees until after the turn of the 18th century. Thanks to some of our forestry minded state governments, city governments and the Forest Service, Rules and Regulations have been put into effect to stop wanton waste of young production.

For example, the City of Denver, Colorado, has solved the problem of destructive cutting of Christmas trees. Through the intensive efforts on the part of the Denver Chamber of Commerce, and the cooperation of the local Forest Service, they have instigated the "Certified Christmas Tree." The public were asked to cooperate in putting a stop to the ever increasing waste attached to the present system of cutting and marketing of Christmas trees. The public was asked to buy only trees that had a certified tag attached. Each tag had the following message printed upon it: "This tree brings a Christmas message from the great

outdoors. Its cutting was not destructive, but gave needed room for neighboring trees to grow faster and better." This program greatly stabilized the local market, and at the same time, made the public more forestry minded. Furthermore, it brought about a scientific removal of the Christmas trees so that a benefit to the remaining trees was attained instead of haphazard removal that is generally practiced by the average individual.

#### Methods of Controlled Cutting

In 1929 the Eldorado National Forest opened up an area for Christmas tree cutting. The Shasta Red Fir that grows on this forest is in great demand on the San Francisco market. Its natural silvery color, and even branches make it a perfect Christmas tree.

Before the best means of cutting control was found, several methods were tried and found unsuccessful. They first tried marking the trees to be cut and then let the purchasers cut their own trees. This proved a failure because un-marked trees were cut, and many wasted. The second method was to hire their own crew of cutters, and mark only the trees not to be cut. The result was a poor quality tree to the purchaser.

The most successful means of cutting and handling the trees was to mark the trees to be cut, hire their own cutting crews, and deliver the trees out to the road where they were counted and bundled.



To cover the expense of cutting, marking and bundling  
the Forest Service charged as follows:

1.	1-3 feet	\$0.05
2.	4-10 feet	.25
3.	11-15 feet	.50
4.	16-25 feet	1.00
5.	26 feet and up	5.00

## PART II. - THE CHRISTMAS TREE GROWER

### Cutting Restrictions are Favoring the Grower

Slowly but surely, regulated cutting of Christmas trees is putting an end to wasteful methods of utilization, and at the same time bring about a more orderly market.

These control measures are also favoring the Christmas tree grower. It is becoming more difficult for the buyer to obtain his trees for practically nothing. Once he was able to bargain with the land owner and get the trees for a song, but now he must bargain with a more intelligent type of seller who is just beginning to realize the worth of his forest to his farm and community. Under these conditions it makes it possible for the Christmas tree grower to compete with the buyer or wholesaler on even terms. In many cases the grower has the advantage because his trees are usually superior in quality. They were set out evenly spaced to give ample room for their trees to grow into well shaped trees--symmetrical, branches evenly spaced--a type of tree difficult to find growing in large amounts in their natural habitats.

### The Christmas Tree Plantation

The raising of Christmas trees as an extra cash crop for the farmer has many favorable aspects. The initial investment is not too great but what most farmers could plant an acre or more without investing too much capital for too long a period. As compared with most all other forest crops,



the time between the planting and harvesting of Christmas trees is comparatively short; three to six years and not over 11 years. It takes 80 to 150 years to grow a timber crop. Moreover, since the establishment of the state nurseries and the Clark-McNary bill, transplants can be obtained with little difficulty. The transplants can be purchased for \$2.50 per thousand, on the average for 2-0 stock (two years in the seed bed and no years in the transplant beds). The price, however, will vary with the respective states.

In the Eastern part of the United States the growing of Christmas trees is becoming a thriving industry. The close proximity to large centers of population has given the growers a ready market for their products. Transportation costs are low; a factor which puts the western grower at a disadvantage to a certain extent.

This does not mean, however, that the Pacific Coast grower cannot compete with the East. Here land is much cheaper, taxes lower, and the longer growing season at low altitudes influences the trees to reach a merchantable height in a shorter length of time. Moreover, the Pacific Slope is the natural range of the Douglas Fir--a tree that is hard to surpass for beauty.

#### Species to Plant

The kind of a tree to plant is: one that is attractive for Christmas use, is suited to the locality where it

is to be grown, and capable of making good growth. The ideal Christmas tree is symmetrical, with a dense, compact crown, possesses sufficient stiffness of branches to hold up decorations, and is fragrant and retentive of its foliage when brought into a warm room. The spruces and firs combine many of these qualities.

The species planted should always be one that is indigenous to the territory in which it is planted. Or if it be an exotic one, it should have become well acclimated to that particular area.

In the New England and Lake States, the Balsam Fir (*Abies balsamea*), White spruce (*Picea glauca*) and Norway spruce (*Picea abies*), are planted mostly for Christmas tree purposes. The Southern States use the Red Cedar (*Juniperus virginiana*), and in the Northwest, the Douglas Fir (*Pseudotsuga taxifolia*) and the Lowland White fir (*Abies grandis*)<sup>sp.</sup>

#### Where the Plantation Should Be Located

The ideal location for a Christmas tree plantation would be in a locality where wild or natural-grown trees are scarce. However, such localities are confined to the Eastern states. Rapid modes of transportation tend to overcome adverse locations making it possible for the Western grower to get his trees to centers of large population.

In choosing a location, soil must be taken into consideration. The better the soil, the quicker the trees will grow to a merchantable height. The grower, however, must try to strike a "happy medium." Trees grown too fast will



have too great a distance between nodes, thus spoiling the tree as far as Christmas trees are concerned.

This, however, will not generally be the case. Good soils could be planted to more profitable crops, so the plantation will probably be limited to those areas that cannot be profitably farmed. North slopes grow the best trees in most cases, and the location should be chosen with this thought in mind. Trees planted on North slopes avoid the direct rays of the sun, and there is less chance of the ground drying out too early in the summer. Under these conditions it is also easier to get the stand established. There is apt to be a high mortality rate of the seedlings if they are planted on South exposures, especially if moisture is the limiting factor.

#### Kind of Stock to Plant

The better plants you secure for your plantations, the better results you will obtain. Poor plants result in a greater loss of plants, and a longer period before the trees are large enough to harvest.

Four-year old transplants have been recommended, but this type of stock is difficult to secure. Two year old stock is usually easier to secure, and not nearly so expensive. It is the opinion of the author that the difference in the time when the four year old transplants will reach a merchantable height and the time required by the two year old stock is not sufficient to warrant the additional

expense of the four year old stock. Furthermore, the large developed crown of the four year old tend to cause rapid evaporation of large amounts of water. The roots not being developed enough to supply the amount of water necessary to avoid desiccation result in a high mortality rate.

#### Care of Planting Stock

Regardless of the type of stock used, special care must be exercised in planting conifer stock. When the trees are received from the nursery, they are packed in moss to keep the roots from drying out. Special care must be taken to keep the roots moist up to the time they are planted in the ground.

If the trees are not to be planted at once they should be heeled-in soon after their arrival from the nursery. They can be kept in this manner for a month or more. When the time comes to plant the trees they should be taken to the field with their roots wrapped in wet sacks.

#### Method of Planting

It is the general practice for each man in the crew to take a bundle of 50 trees with a sack wrapped around the roots. The transplants are removed one at a time; planted-- and at no time should the roots of the trees be exposed to the sun's rays for any length of time.

#### Planting Procedure

On the Pacific slope, most of the planting of trees is done with a shovel or grub-hoe. The heavy soil in this re-



gion will not permit the use of the planting bar,--an implement used in light sandy soils.

Using either the shovel or grub-hoe, remove the grass and brush from an area of three square feet around the hole in which the tree is to be planted. This is done to reduce the competition by preventing the grass or brush from choking out the tree later on. Make the hole deep enough so it will not be necessary to ball the roots up to plant the tree at the proper depth--the proper depth being the same depth the tree was planted in the nursery. This ground line is usually visible on the stem of the transplant.

Next, place the tree in the hole--then scoop dirt that is free of debris around the roots. When the hole is nearly filled, pull the tree gently upward to straighten out those roots that may be kinked. Then place the thumb and forefinger at the ground line and proceed to finish filling in dirt up to that point. If the tree is planted any deeper, height growth will be lost because the tree is expending its energy to grow more roots on that portion of the stem that was covered up.

The dirt should then be packed firmly around the tree to prevent the ground from drying out. This is usually done by placing both feet close to the stem of the tree, and by placing your weight first on one foot and then the other, tamping the dirt down firmly. Care must be taken not to injure the stem of the tree.

### Time to Plant

At low altitudes where danger of frost heaving is not serious, the transplants can be planted in the fall after growth has stopped or early in the spring.

Trees planted too late in the spring do not have a chance to become established, and as a consequence many of the transplants will die due to lack of moisture.

In regions where there is little rainfall during the summer months, this is especially an important factor. If it happens to be an exceptionally dry season, and the transplants have not become established too well, the percentage of survival will tend to be low. In many cases it will be necessary to replant the area the following fall or spring.

### Spacing

Proper spacing is essential to the development of well-formed trees. The objective being to insure plenty of light for each individual tree so that it will grow into a well-rounded tree.

Spacing of the trees will vary somewhat with the objectives of the grower. If the grower intends to take out every other tree, and leave the remaining stand for fuel and saw-timber, 3x3 foot spacing has proven to be satisfactory. When every other tree is removed, there will remain 538 trees per acre, spaced 9 feet apart.



On the other hand, if the owner's sole objective is to raise Christmas trees, then 3x3 or 4x4 spacing are both recommended. 4x4 spacing is recommended where there is plenty of land, and the owner wishes to cultivate his plantation.

3x3 rectangular spacing requires 4,840 transplants, and 4x4 rectangular spacing requires 2,722 transplants.

#### Preparation of Area to be Planted

The amount of work that must be done on the area depends upon the condition of the area. Large amounts of slash should be removed or it will greatly hamper planting, and also encourage insect attacks. Excessive amounts of brush growing on the area should be removed or it will tend to crowd out the young trees before they have a chance to become established.

Breaking up the ground by plowing is not generally necessary unless the plantation is to be established upon an abandoned field, where plowing can be done easily and inexpensively.

#### Care of Plantation

No intensive care is necessary. Stock should be kept out of the plantation for the first two years, as a precaution against injuring the young trees. Light grazing can then be carried on in the area provided that it is not over-done, or there are no signs of the stock injuring the trees.

Stock should be kept out of the area when the ground is wet. Otherwise, they will tend to pack the ground, causing poor aëration of the soil, and a consequent drop in growth-rate of the trees.

Where the land is not too rocky or steep, it has been found that cultivation will increase the rate of growth appreciable. An experiment conducted at Michigan State College of Agriculture and Applied Science showed cultivated Norway spruce to be 59 percent taller at the end of four years, than trees that were not cultivated.<sup>1</sup>

Cultivation three or four times each summer for the first two years is usually sufficient. Thereafter, the cutting of large weeds and briars which appear to be choking the trees may be of benefit. Plantations may be cultivated at odd times when other farm work is not pressing.<sup>2</sup>

1. Michigan Agricultural Experiment Station special bulletin 145, Christmas-Tree Plantations.
2. U.S.D.A. Farmers' Bulletin No. 1664, Christmas Trees As A Cash Crop for the Farm.



### PART III. - HARVESTING AND MARKETING PROCEDURES

#### General Considerations

The care and growing of Christmas trees are two of the important phases of the industry, but just as important is the marketing of the product. This is one phase that has been sadly neglected in the past, and it is time that it should be given some consideration. Hap-hazard harvesting methods, and also selling methods are in many cases encouraging waste, and a poor product to the consumer.

#### Harvesting Procedure

The first thing to do is to find a market. Don't cut any trees until you are sure that they can be sold. Christmas trees are not a perishable commodity as long as they are in the ground, but once they are cut, they have to be used within a short time unless steps are taken to preserve the trees by placing them in some type of cold storage.

The next step is to determine the trees that are economically and silviculturally ready to cut. The trees that are to be cut will depend upon the objectives of the owner, whether he is cutting the trees to improve his woodlot or if he is planning to use his land solely to cut and grow Christmas trees.

Cutting Christmas trees from a wood lot the Forest Service recommends the following procedure:

1. Find a market for Christmas trees of the species which are growing on your land.
2. Go through the woodland carefully, pick

out and mark the most vigorous specimens of trees. These should be allowed to remain to form the mature stand of timber.

3. Mark for removal as many inferior trees as there is suitable market for. Cut them carefully to avoid damage of the remaining trees.
4. Remove them carefully from the area and market them according to instructions from the buyer to avoid any cause for dispute.

Cutting Christmas trees from a Plantation, the following procedure is recommended:

1. Find a market for the trees.
2. Go through the plantation and pick out the type of tree that will give you the highest return on the market.
3. Mark the trees to be cut with a red piece of cloth.
4. Mark de-formed trees if there is a market for boughs for special decorative purposes.
5. Reserve those trees that show promise of growing into an exceptionally well-formed tree. Leave these trees to sell to Churches, lodges and similar organizations when they are larger. These trees can be sold at \$1.00 per foot.
6. Cut the tree off square at the butt so that it will stand up properly when it is fastened on to a stand.
7. Use a hand saw on the larger trees and pruning shears on table sized trees.

### Harvesting Live Trees

At the present time there is an increasing demand on the part of the public for live trees. This demand has brought new problems of marketing and new methods of harvesting. Large nurseries in the Eastern states have built



up a good thriving business--orders being placed by their customs three to four months ahead of time.

The Living Christmas tree has an added advantage to both the buyer and seller. The buyer has a tree that not only serves as a Christmas decoration, but also the tree can be planted in his yard to become a shade or decorative tree.

Since live trees are sold when they are two to three feet high, this means that the grower does not have to wait over three to five years before he can harvest his crop. The "cut" Christmas tree took from six to eleven years before it was large enough to market.

The harvesting of "Live" Christmas trees, involves a slightly added expense. More care and time is required in removing the trees from the ground than just cutting the trees off. Special care must be taken in removing the trees from the ground to insure a good root system. The better the root system, the better will be the chances of the tree to live. If the tree grows, the grower will acquire for himself a new customer, and he will probably have a repeat order for the next season.

To keep the tree growing, until it is planted again, the roots are wrapped in moss and enclosed in a burlap bag. These trees are known to nurserymen as "B. and B. Evergreens." To market them, the protected roots are placed in 1 or 10 pound lard pails, depending on the size of the tree. If the

box or can, can be painted an attractive color, it helps to sell the product.

### Instructions to Customers Regarding Live Trees

As an added precaution, and to give the live tree a better chance of living, instructions should be sent with the trees telling the customer, the amount of watering that is necessary to keep the tree alive. Also how to keep the tree in his basement until such time as the ground is in shape to plant the tree. The instructions should precaution the customer not to place the tree in a room where the temperature is too high.

It has been found by actual experiment, that ~~Live~~ Christmas trees can be kept in the basement of a house for a period of two to three months if necessary without causing any harm to the tree provided that it is kept watered and in a cool place.

### Some Methods of Storage Before Shipment

In instances where Christmas trees must be cut two to three weeks prior to shipment, steps must be taken to retain the moisture contents of the trees at the same level prior to cutting. If this is not done, a subsequent loss of foliage will take place before shipment or soon afterwards.

One simple and inexpensive method of storage is to place the cut trees in the shade, and cover them with leaves. The leaves are moistened down, and kept damp by



repeated waterings if necessary. This method has proved to work satisfactorily provided the air temperature is not too high. Too rapid evaporation will take place under these conditions, making repeated watering operation too expensive.

Another method of storage, is to place the trees in a stream. Although this method is the least expensive it can be used only when the stream is free of debris and the water is very clear, otherwise, the foliage will collect dirt if they are partially submerged.

In California, the Forest Service, found that placing the trees in cold storage plants was the best means of preserving the trees until they could be marketed. The low humidity, and high temperature, of that region was the possible cause of the failure of the other methods tried.

#### The Possibilities of Two Crops from One Stump

Experiments are being made to find if it is possible to grow two crops of Christmas trees from one planting. It has been found that by leaving one good limb on the stem of the tree, that this limb will straighten up in 2-3 years and produce another tree.

The trees are cut several feet above the ground, leaving only one branch on the stem. This branch should be only a few inches from the top of the stem, so that the tree produced will not be restricted to the growth of branches only on one side due to the presence of the old stem.

However, this practice has a definite draw-back. There is a great possibility that the resulting tree from the old root system will grow too fast. This will result in a considerable distance between nodes, thus spoiling the beauty of the tree. Where the soil is poor enough to counteract this tendency of rapid growth, the soil is of such a poor quality, that it is difficult to get the trees established on such an area.

More study will have to be done on the small scale before this method can be recommended to the grower. It has great possibilities, however, and should be studied thoroughly before it is abandoned.

#### Expected Returns

The returns per acre will vary widely with each section of the United States. Where the Plantation is located close to large centers of population the returns per acre will be above those farms that must ship their trees over long distances.

The expense of establishing the plantation will vary according to the amount of work required to get the land ready to be planted, the cost of transplants, and the rate of wages paid for help.

The following example is the result of an actual experiment conducted by the author. This example is given to show the expected returns from a Christmas tree planta-



tion and the expense items involved in establishing a plantation.

Cost Required to Establish Plantation

1. 3000 2-1 transplants @ \$2.50 per thousand	\$7.50
2. Removing brush and logs	6.00
3. Planting 2.5 acres	9.45
4. Fencing (2 sides)	<u>18.00</u>
Total . . . . .	\$ 41.25

Cost per acre . . . \$16.25

(Above items include labor @ \$.20 per hour with exception of item no. 1)

Estimated Returns at the end of Six Years

Gross Profit:

Trees Planted	3,000	
5% deducted for loss	<u>150</u>	
Total trees sold . . .	2,850	
2,850 trees @ \$.30 F.O.B.		\$855.00

Net Profit:

Cost required to establish plantation	\$ 41.25	
Interest on investment @ 4% compounded annually	10.93	
Taxes on $2\frac{1}{2}$ acres @ \$1.00	15.00	
Cost of Marketing	<u>20.00</u>	
Total deductions		<u>87.18</u>
Profit on $2\frac{1}{2}$ acres at the end of six years		\$ 767.82

Profit on  $2\frac{1}{2}$  acres for one year      \$127.97

Profit on 1 acre for one year              51.19



### SUMMARY

Over a period of 118 years the Christmas tree industry has grown from the selling of one tree in 1821 until the present time when approximately 9 million Christmas trees are sold each year, representing the sum of ten million dollars.

It has only been in the last twenty years, that a portion of these nine million trees were removed with a constructive consideration in mind--the remaining trees. Conservative policies of the cities, state and national governments are slowly but surely putting an end to the wasteful methods of harvesting and selling of these trees.

As a result of this conservation movement, it has fostered a new industry in America which is helping to build up and utilize sub-marginal land which exists on many farms--the growing of Christmas trees. To further this conservation movement, the practice of selling "Live" Christmas trees which are planted by the consumer to serve a useful purpose, instead of the "Cut" Christmas tree ending its life in the ash-can shortly after Christmas.

Owners of woodlots are beginning to realize the importance of good management, and are using the Christmas tree market as a means of disposing of undesirable species or the trees resulting from thinnings, that originally went to waste.

As the forests retreat from the large centers of population, the Christmas tree industry will increase in importance. The Forester of today and tomorrow will have to acquaint himself with the problems of the industry so that he will be better able to solve these difficulties. He will have to be able to administer the growing and cutting of Christmas trees on those areas set aside for Christmas tree growing on the National Forests, and to serve in an advisory capacity to those plantations located on private land. He must be able to advise wisely or he will lose the respect of the general public. Private owners are going to look to him for help more and more.

There are still many wasteful practices in the Christmas tree industry. There are still many problems to be solved to promote the growth of better trees. Marketing practices have been almost entirely neglected. These problems are a challenge to the Forester of today. Many improvements have been made in the utilization of our forest crops, but an enormous amount of research and study is yet to be done.

Public opinion has made the first steps in conservation; it is up to the Forester to carry on.



APPENDIX

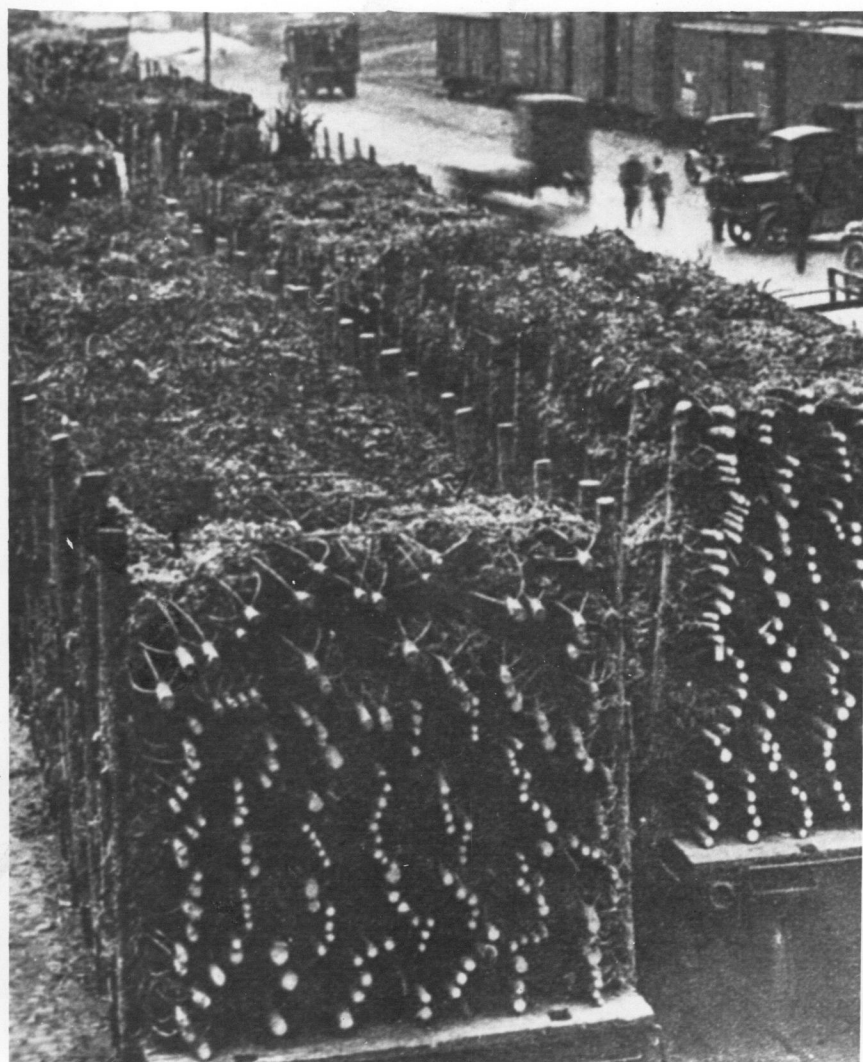
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Christmas by the Carload.





A



B



C

Desirable species for Christmas-tree planting: A, Norway spruce; B, blue spruce; C, white spruce.

(Farmers' Bulletin No.1664)



A

B

C

Desirable species for Christmas-tree planting: A, White fir; B, deodar; C, eastern red cedar.

(Farmers' Bulletin No.1664)





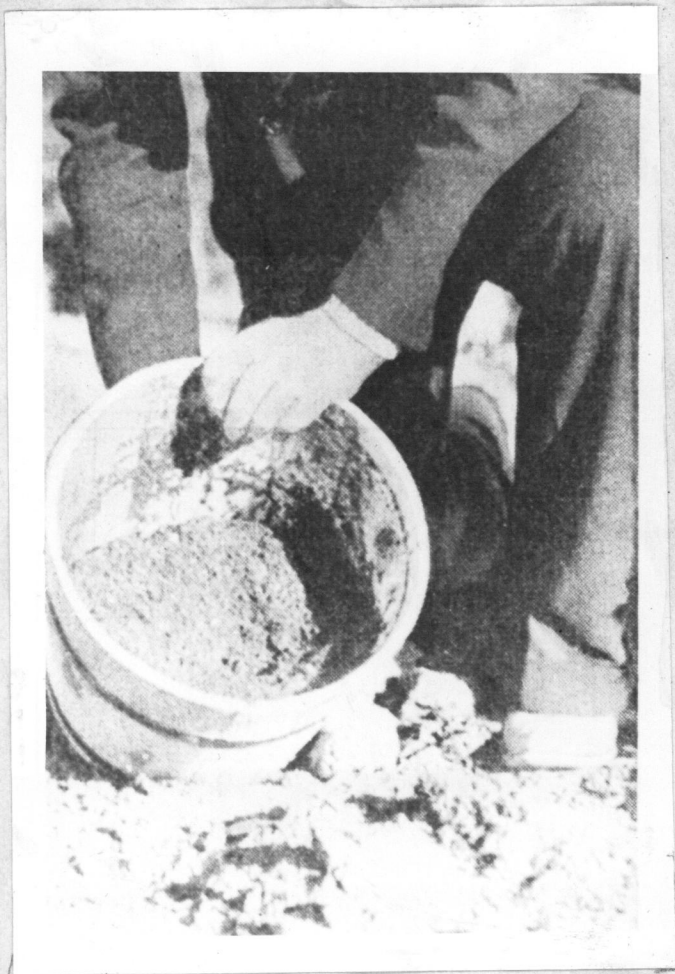
Your Living Christmas Tree.

(1)

Carefully select your tree at the nursery. Dig around it to leave 90 percent of the roots in a ball of earth.

(2)

Wrap the ball carefully in burlap, fastening edges securely (nails will do).



(3)

Put damp peatmoss in bottom  
of wooden bucket.

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(4)

Pack ball firmly in bucket with  
peatmoss, filling all spaces to top  
of bucket.



(5)

Tree-filled bucket can be carried  
easily in one hand. Water it when home.





(6)

Place it on cardboard box which has been strengthened with sticker tape, and cover well with Christmas wrapping-paper secured with nails pushed thru into soil and moss. If the tree isn't neglected or isn't kept indoors too long, it will thrive when set into the garden. But prepare a place for it when the soil isn't frozen; then cover the spot with a thick coating of leaves.