

W. B. Manlove

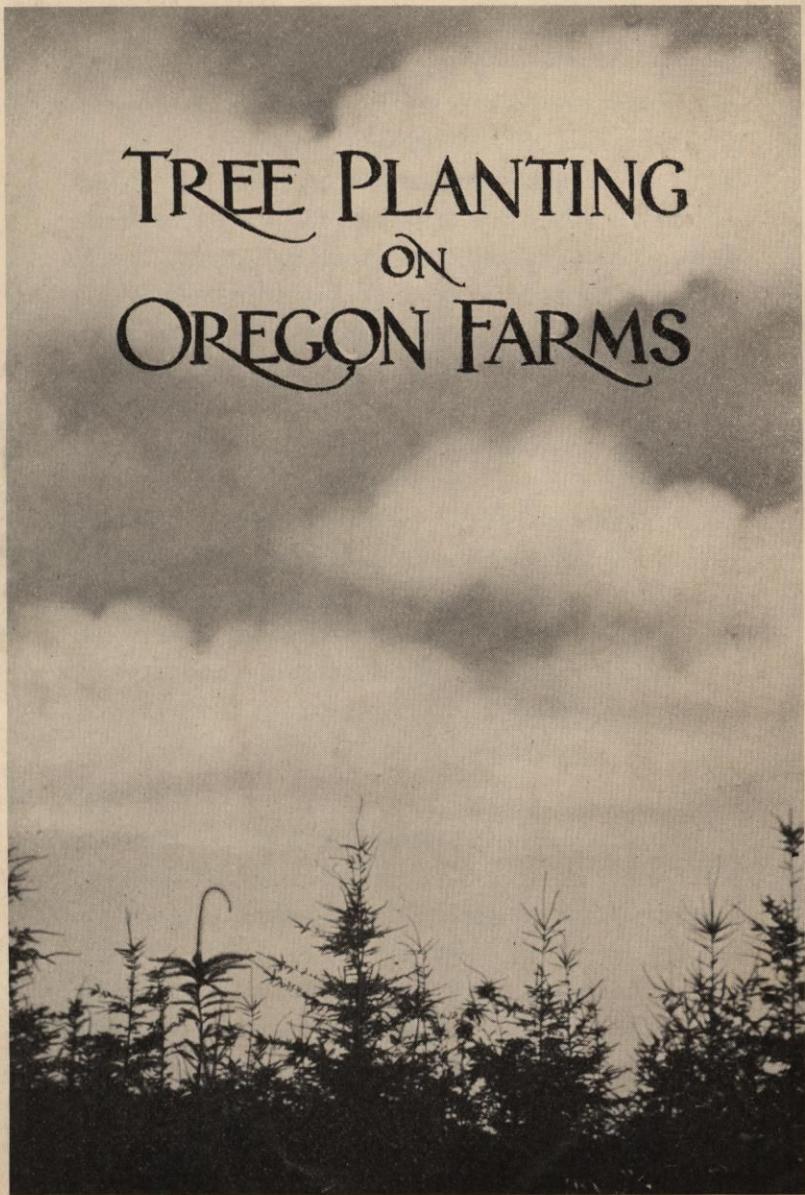
OREGON STATE BOARD OF FORESTRY

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**TREE PLANTING
ON
OREGON FARMS**



The Nation's Woodpile

Viewing the forestry situation in the United States from a national standpoint, it is decidedly evident that the great virgin forests of the country are rapidly disappearing. Foresters estimate that the nation is using timber four times as fast as growth reproduces it. A mathematician is not needed to show that a continuation of this rate of utilization, with no speeding up of production, will leave the nation's woodpile in a sadly depleted condition within a few years. Within a period of 75 years of national life, the great forests of the Northeast and of the Lake States have been cut out and the pine forests of the South are rapidly disappearing. For a few years the Pacific Northwest will lead the nation in lumber production. Where the timber supply of the United States will come from after the harvest of the great timber crop of Washington and Oregon, is the forestry riddle of the nation. Feeble attempts are being made to solve this riddle, but putting 450,000,000 acres of land, good for nothing except to grow timber crops, on a continued production basis, is a man-sized job.

Since the dawn of civilization, wood has been numbered among the necessities of the human race. There is nothing to indicate that it will not continue to be a necessity. Seeing to it that a wood supply, adequate in amount to meet the needs of the people, easily falls in the list of those things which the nation is obligated to do under the "promote the general welfare" clause of the preamble of the constitution of the United States.

Tree Planting on Oregon Farms

By

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Objects of Planting

The State of Oregon has a greater interest in tree farming than any other state for the reason that it has more standing timber than any other state. In no part of the United States does timber grow better or faster. The timber business, next to agriculture, is the principal wealth-producing and labor-employing industry in the commonwealth. With 10,000,000 acres of strictly forest land, privately owned, and with more than 45,000 workers employed in the industry, the state is vitally concerned in the continued use of its forest lands in growing timber crops.

The individual farm owner in Oregon has several good reasons for planting forest trees or for giving intelligent care to those now on his land. It is true that Western Oregon farmers have been obliged to give a lot of time to land clearing. The land had to be put in shape for tillage and for pasture. More than 75 years of slashing the forest to clear land for agricultural purposes has tended to create a state of mind to the effect that the forest is an obstacle to progress and that all forest lands are agricultural in character. The first was true, to a limited degree, but the second belief has been too generally acted upon. Millions of acres of forest land throughout the nation have been cleared for agriculture which should have been kept growing trees. In particular, the Oregon farmer should give careful consideration to the quality of his forest land before he embarks on the expensive business of clearing it.

A woodlot of adequate size, properly managed, is a perpetual guarantee to the farmer against fuel shortage. While fuel wood is plentiful and cheap in Western Oregon, there is no assurance that this condition will continue. Firewood was plentiful and cheap in New England, New York and Pennsylvania 60 years ago, but it is scarce and expensive now. The same was true in the Lake States 40 years ago, but in the greater part of the region it is a luxury fuel now. Other fuels may be available, but cordwood, grown on land otherwise waste and cut by labor otherwise unemployed, is quite likely to be the cheapest fuel material available for the rancher's use.

A properly managed woodlot never decreases in volume. The cut of one year is replaced by the growth of the year. Every year an addition is made to the value of the ranch property by the addition of new wood

material. Using land of little or no value for tree growth is good business sense. It makes an addition to income out of something which would otherwise be a liability.

Windbreaks and shelter belts, where these are needed, not only produce valuable wood material, but they may be made to protect the home building from unpleasant winds, shelter the stock, and keep drying and destructive winds from cultivated fields. Finally, trees properly arranged and cared for, add greatly to the livability of a homestead and hence, to that extent, add to its real value.

The Oregon Forest Nursery

As a part of its forestry program, the Federal Forest Service is endeavoring to promote tree planting among the farmers of the nation. An act of congress, known as the Clark-McNary Law, provides, among other things, that the Forest Service will cooperate with any state, on a 50-50 basis, in producing tree stock for distribution among the ranchers of the cooperating states. Under this act, the State Board of Forestry and the Forest Service have established what is known as the Oregon Forest Nursery. The nursery is located seven miles north of Corvallis on the West Side Highway. It is under the general supervision of the State Board of Forestry. A trained nurseryman is in immediate charge. At present the nursery has a capacity of about a million trees annually. About half that number are now being produced.

Since the distribution of tree stock from the nursery is limited by law to the State of Oregon, only such stock is produced as is likely to be suited to the different conditions existing in the various agricultural regions of the state. In the list of conifers emphasis is placed upon the native western yellow pine, upon European larch, Norway spruce, Scotch



One-year-old black locust.

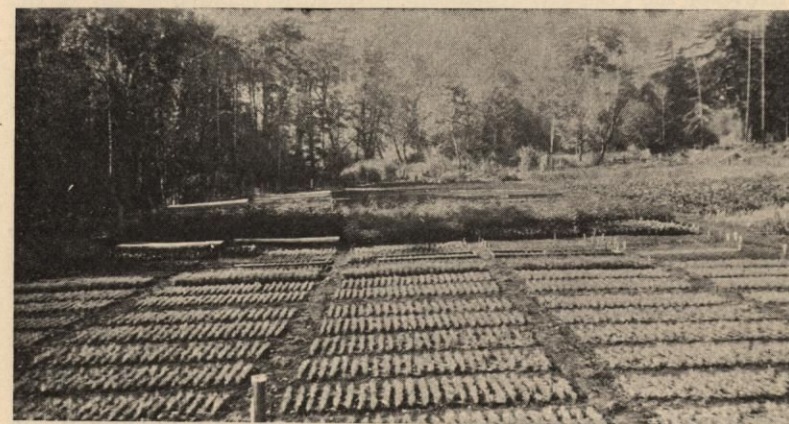
pine, Douglas fir and Port Orford cedar. Black locust, Chinese elm, green ash, and Russian mulberry are among the principal broadleaf trees grown. Small quantities of other species are grown for experimental purposes. In particular, it is hoped that some tree peculiarly suited to Eastern Oregon conditions may be found by trying out hardy species imported from foreign countries.

What Species to Plant

Northwestern Oregon is one of the best timber producing sections of the United States. With reasonable care all of the trees listed will grow in this territory. In other parts of the state, where there is less rainfall, care must be exercised in making selections of planting stock. A rancher can afford to experiment with a few trees because failure means a comparatively small loss, but he should be certain that the tree stock used is suited to his situation if plantations or shelter belts are to be established.

WESTERN YELLOW PINE (*Pinus ponderosa*). This is one of the hardiest native trees of Oregon. It is a rapid grower, produces good fuel wood and saw timber and, because of the density of the foliage when grown in the open, is admirably suited to shelter belt planting. It will thrive in Eastern Oregon in any place where trees can be made to grow. Test plantations have been made at the Moro branch station with surprisingly satisfactory results. It does exceptionally well in the Willamette valley, especially on sandy, gravelly soils. It deserves much greater consideration as an addition to the list of desirable trees for farm planting than people are inclined to give it.

BLACK LOCUST (*Robinia pseudoacacia*). Among the broad leaf trees for farm planting black locust easily holds first place. While it makes the best growth on deep, moist soils, it will endure under very



Seed beds showing conifer seedlings.

adverse conditions. People are familiar with it largely through open grown specimens and are apt not to be favorably inclined to it because, under these conditions it is short boled and decidedly limby. In properly spaced plantations, however, it produces a straight stem comparatively free from limbs. Because of the durability of the wood it makes an excellent fence post material. For this use it compares very favorably with western red cedar. The tree is especially recommended for planting in Eastern Oregon but it should not be neglected on the west side when the production of post material is a consideration. It will respond particularly well if reasonably good moisture conditions can be maintained. To show what can be done with this tree, a Twin Falls, Idaho, rancher produced on an 18-year-old plantation, 3,290 fence posts per acre with an estimated net value of \$976. This is a net annual income of over \$33 per acre, figuring money at 5 per cent compound interest. Good fence post material, under fairly good conditions, can be produced in from 12 to 15 years.*

DOUGLAS FIR (*Pseudotsuga taxifolia*). This is the wonder tree of the Pacific Northwest. It is the great general utility tree of the region more volume and greater values than any other tree. Its rapid rate of height growth makes it desirable for shelter belt planting. The wood has a comparatively high fuel value and the small stuff, six to eight inches in diameter, can be made to last as fence posts from 15 to 20 years when given an inexpensive preservative treatment. Studies of second growth stands of Douglas fir, made by the Forest Service, show that under average conditions a 40-year-old plantation will yield 60 cords of wood per acre. A 10-acre plantation, properly handled, should produce at least 15 cords of wood per year, enough to meet the fuel needs of the average farm home.

PORT ORFORD CEDAR (*Chamaecyparis lawsoniana*). This tree is a native of the Coos Bay region but is suited to planting in any of the moister situations west of the Cascades. It should only be planted experimentally east of the mountains. The wood has a high value under any conditions where durability is desired. It lasts remarkably well in contact with the soil and hence makes a good fencepost material. Its growth rate is comparatively rapid. Due to the beauty of the tree and to the density of the foliage this tree is particularly recommended for shelter planting within the range above indicated.

CHINESE ELM (*Ulmus pumila*). This is an importation from China, the first introduction having been made in 1908. It is particularly adapted to dry situations and is consequently recommended for planting in Eastern Oregon. Its growth rate under favorable conditions is rapid. The tree branches generously, a habit which makes it desirable for shelter belt planting.

*(Footnote. Bulletin No. 2, "Black Locust and How to Grow It," by F. G. Miller, School of Forestry, University of Idaho.)

RUSSIAN OLIVE (*Elaeagnus angustifolia*). This tree is probably the hardiest of the broad leaf species which might be recommended for planting in dry situations. It is normally small but under favorable conditions will attain a height of 35 to 40 feet. Its branches are numerous and rigid. In close plantings the branches will remain low and are dense enough to turn stock. The silvery color of the leaves makes the tree attractive for ornamental planting. This species should never be planted for fuel purposes nor in situations where other trees will grow. It may properly be regarded as a "last resort" tree.

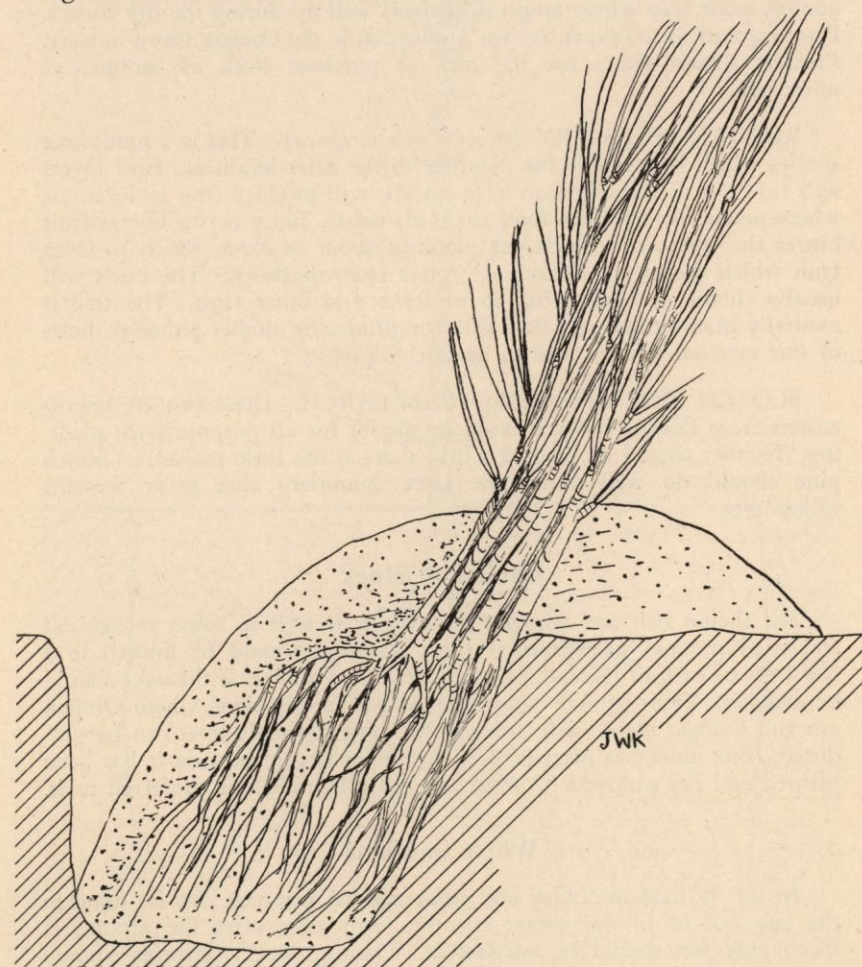


Fig. 1. Indicates proper method of heeling in. Should be done when there is some delay in planting the trees.

BLACK WALNUT (*Juglans nigra*). Due to the fact that a few trees of this species, planted by early settlers in the Willamette valley, have recently been sold at high prices for furniture stock, considerable interest in planting this tree has been manifested. The black walnut demands a deep, rich soil with plenty of moisture to make a satisfactory growth. It should never be planted in dry situations though it will do well anywhere in Eastern Oregon where desired soil and moisture conditions can be provided. There are many places on ranches west of the Cascades where this tree could be profitably planted. It will do well along streams and on moist flats where moisture remains well up during the dry season. Planting stock is too expensive for production in the Oregon forest nursery. Planters should either use the nuts or purchase stock of commercial nurseries.

RUSSIAN MULBERRY (*Morus alba tartarica*). This is a hardy tree species which is desirable for planting in the drier localities. Bird lovers will find it a desirable tree to have since it will produce fruit in locations where practically no other food for birds exists. Since it is a liberal fruit bearer the tree can be used for planting about orchards which produce fruit which the owner desires to protect from the birds. The birds will usually choose the mulberries in preference to other fruit. The tree is naturally branchy and not desirable for producing timber although posts of this material have proved to be fairly durable.

SCOTCH PINE AND EUROPEAN LARCH. These two are importations from Europe and are excellent species for all purpose farm planting. Neither should be planted where there is too little moisture. Scotch pine should do well under the same conditions that favor western yellow pine.

Choice of Stock

For shelter belt and woodlot planting it is well to select recognized and tried species. Experimental farm plantings should be limited to a few trees of each of the species being tried out. As a rule the oaks should be avoided. Their growth rate is too slow. In situations where Oregon ash and Oregon maple will thrive other more desirable trees can be produced. Box elder has been favored by some, largely because it has been planted and has survived. Almost any other tree is to be preferred to it.

When to Plant

In the Willamette valley and coast regions planting may be done in the late fall or in the winter months. Any time after the ground is thoroughly wet should be satisfactory. Planting stock, however, should not be moved from the nursery until the plants are thoroughly "hardened off." The leaves should have fallen from the broad leaf trees and both

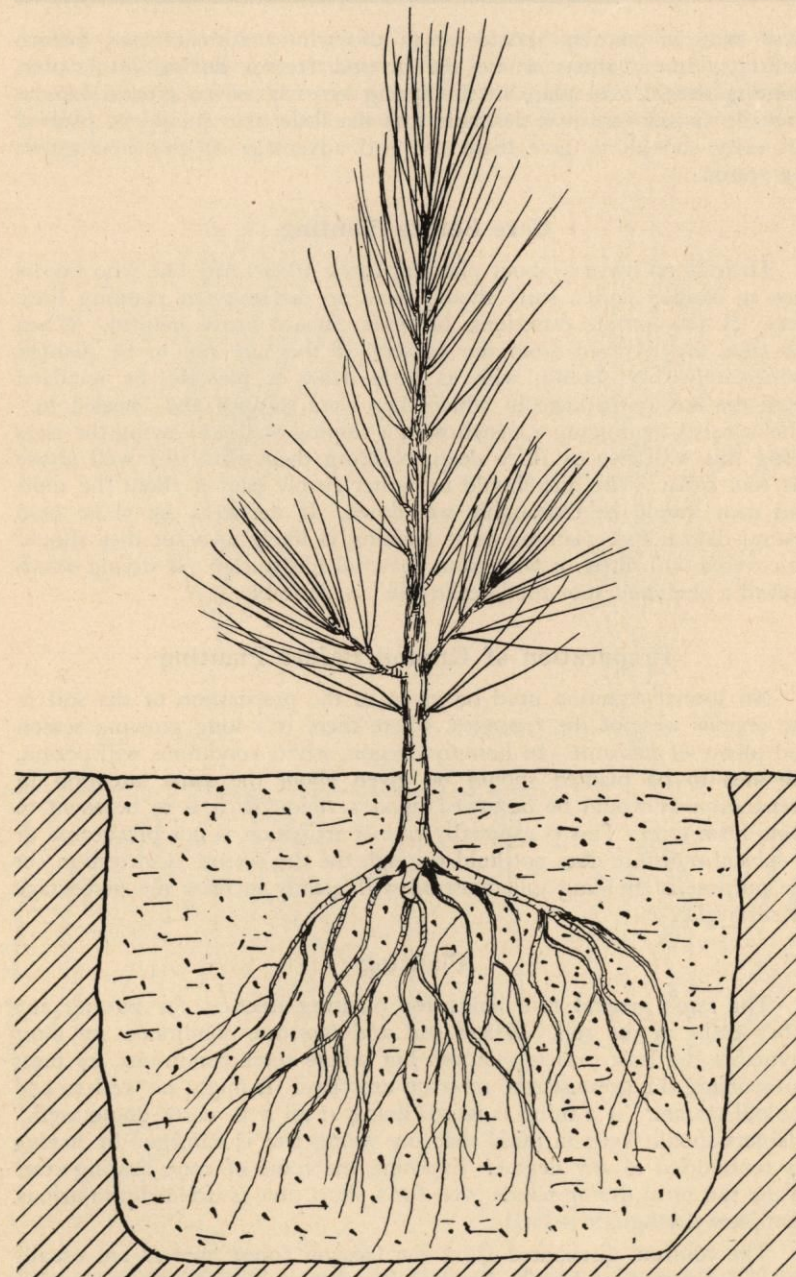


Fig. 2. Proper method of planting. Roots spread and dirt well above root collar.

these and the conifers should be in the winter dormant state before planting. In situations where the ground freezes during the winter, planting should take place in the spring as early as the ground can be worked. In any case it is desirable that the little trees should be planted out early enough to give them the full advantage of the first growing season.

Care Before Planting

There is no mystery about planting forest trees. Any one who knows how to handle garden stuff should have no difficulty in planting little trees. A few simple directions, however, should prove helpful. When the trees are received from the nursery, if they are not to be planted immediately they should, with as little delay as possible, be removed from the box or package in which they were shipped and "heeled in." This consists of digging a trench with a sloping wall and laying the trees along this wall two or three deep, covering them with dirt well above the root collar. The dirt should be rather firmly packed about the roots and then should be thoroughly wet down. If the trees are to be held several days before planting or if freezing is likely to occur they should be covered with litter or with some material like burlap. If drying winds prevail a sheltered spot for "heeling in" is desirable.

Preparation of Ground Before Planting

No special attention need be given to the preparation of the soil in the regions west of the Cascades, where there is a long growing season and plenty of moisture. In Eastern Oregon, where conditions will permit, the area to be planted should be given about the same attention in preparation as would be bestowed upon a field which is to be sown to some farm crop. This is especially true if irrigation is not practicable or if subsoil moisture does not hold through the dry season. Cultivation for the purpose of holding soil moisture will greatly increase the percentage of survivals.

Planting

The same general rule holds for planting trees as for putting any other plant in the soil. Where soil and moisture conditions are most favorable the least care is required but where these conditions are most unfavorable the greatest care must be exercised. It might be well to add the old maxim, "if a thing is worth doing at all it is worth doing well." Planters should keep in mind that any young tree is damaged by having its roots dried to any degree. Exposing the roots of cone bearing trees to the sun or to drying winds even for a short time is decidedly injurious. Complete drying out is fatal.

The conifers distributed from the Oregon forest nursery are usually small and hence can best be handled in a bucket containing enough thin

mud to cover the roots. Another quite satisfactory method is to carry 25 or 30 plants rolled in wet moss with a burlap sack about them. The broad leaf trees are hardier than the conifers. Unless it is unusually hot or windy a wrapping of a thickness or two of wet burlap will be sufficient to protect the roots.

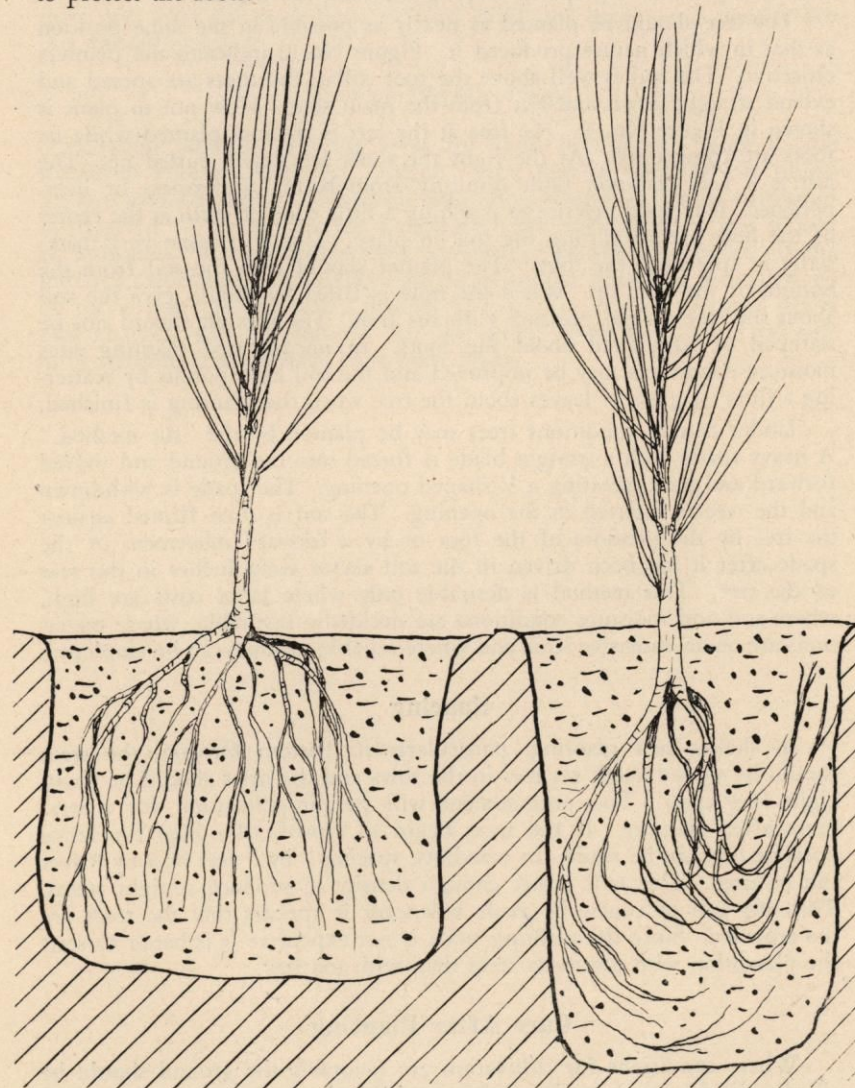


Fig. 3. Improper planting. Tree to the left is too shallow. The one on the right has roots folded back and crowded.

In planting, a heavy hoe, a mattock or a shovel may be used. The tool selected will of course be adapted to ground conditions. A two-man crew is usually most efficient in planting. One man prepares the ground while the other carries the trees and plants. A heavy garden trowel will assist the planter in properly shaping the hole for the tree.

The tree should be planted as nearly as possible in the same position as that in which nature produced it. Figure No. 2 indicates the planter's objective. The soil is well above the root collar, the roots are spread and extend straight down and out from the main stem. How not to plant is shown in Figure No. 3. The tree at the left is shallow planted while its roots are compressed. At the right the roots are shown curled up. The last is a very common fault resulting from haste, carelessness or inexperience. It is good practice to pinch up a little cone of earth at the center of the hole before putting the tree in place. This will assist very materially in spreading the roots. The planter should firm the soil from the bottom of the hole up. When the hole is filled he should give the soil about the tree a final pressure with his foot. The ground should not be stamped or hammered about the roots. In uncultivated planting sites moisture conditions may be improved and the soil kept porous by scattering a litter of grass or leaves about the tree when the planting is finished.

Under certain conditions trees may be planted by the "slit method." A heavy spade with a straight blade is forced into the ground and moved forward and back, creating a V-shaped opening. The spade is withdrawn and the tree is inserted in the opening. The soil is then firmed against the tree by the pressure of the foot or by a forward movement of the spade after it has been driven in the soil six or eight inches in the rear of the tree. This method is desirable only where labor costs are high, where soil and moisture conditions are decidedly favorable, where operations are on an extensive scale and where reliable planters can be employed.

Spacing

In shelter belt planting, particularly in Eastern Oregon, the trees should be spaced about six feet in the rows and the rows should be about eight feet apart. This arrangement will permit cultivation for several years after planting. If the trees begin to crowd, thinnings for fence posts or fuel can be made. In woodlots, spacing 7 by 7 feet or 8 by 8 feet can be used. This will insure enough density to produce straight stems. Thinning can of course be made whenever it appears that the trees are too crowded. Since the planting stock is not expensive it is better to start the plantation with too many trees than with too few.

Care After Planting

Where conditions for cultivation are favorable the ground should be tilled until the trees are thoroughly established. As far as possible stock should be excluded from planted areas until the tops are well above reach.

Stock will browse broad leaf trees and may thus deform or kill them. In addition to this, the packing of the soil by the stock injures the roots, keeps the needed air from penetrating the soil and prevents the free flow of surface water into the ground. Of course if the planting is primarily for stock shelter, then normal growth rate will need to be sacrificed for their use, after the trees have attained sufficient height and density for this desired purpose.

How to Obtain Trees

Oregon ranchers, desiring trees for farm use, should write to the School of Forestry, Corvallis, Oregon. Time may be saved by describing the site where planting is proposed, indicating whether it can be cultivated or irrigated. If the rancher has a preference for certain species, this should be indicated. When possible trees are shipped by express, collect. If the purchaser does not live near an express office the trees will ordinarily go by parcel post. In this case a deposit sufficient in amount to cover parcel post charges, will be required. In any event, no money should be sent until definite arrangements have been made.