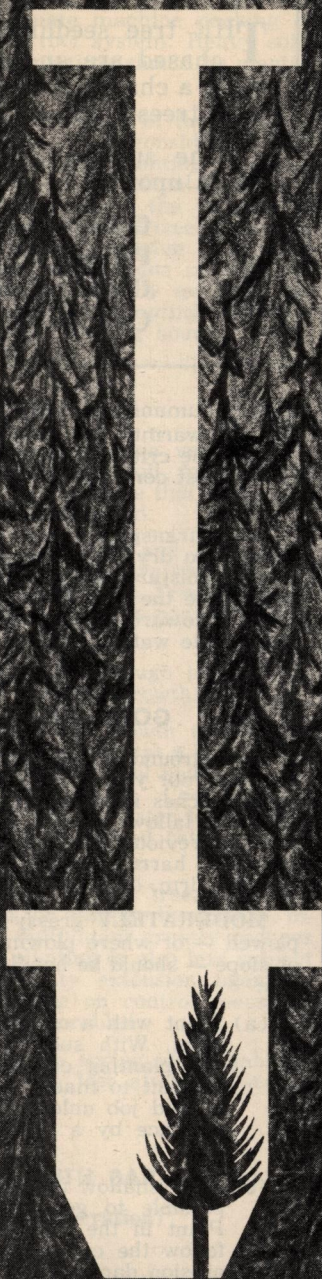


PLANT YOUR TREES RIGHT



PNW Bulletin No. 33

Revised April 1963

THE tree seedlings which you have purchased are an investment. Give this investment a chance to return a profit by planting your trees right.

The success of your tree planting depends upon—

Good Ground Preparation
Prompt Care of Your Trees
Correct Planting
Care After Planting

LIKE humans, trees must have food, water, air, light, and warmth for survival. Of these factors, water is usually the critical one in survival of your trees. Drought is the most common cause of death of newly planted tree seedlings.

Trees transpire water continually. If the root systems become so dry that they are not able to supply the necessary moisture for transpiration, the plants will die. Following are the keys to successful tree planting. They are directed toward the number one thing needed for survival—available water.

GOOD GROUND PREPARATION

Good ground preparation is necessary to conserve moisture for your young trees. Planting in heavy sod or dense weed patches is wasted effort. Dry land fields should be summer fallowed, and irrigated areas should be fall plowed previous to planting trees. The ground should be disked or harrowed early in the spring so you will have a clean, firm, and moist seed bed at time of planting.

MODERATELY grassy or weedy areas that cannot be plowed — or where plowing is inadvisable because of soil or slope — should be handled by one of the following methods:

- Plant with a machine that has a scalping attachment. With such a machine, ground preparation and planting can be done in one operation. It is difficult to machine plant on steep ground and do a good job unless contours have been prepared in advance by a bulldozer or by the Holt type disc plow.
- Plow shallow furrows to scalp off the grass if it is possible to get equipment on the planting area. Plant in the furrows. The plowed furrows should follow the contour as nearly as possible to lessen erosion damage and to conserve moisture.
- Scalp or clean an area 24" to 30" square and plant in the center of cleaned area.

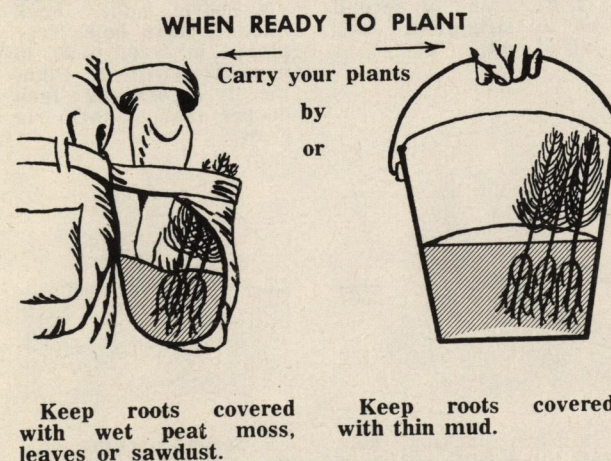
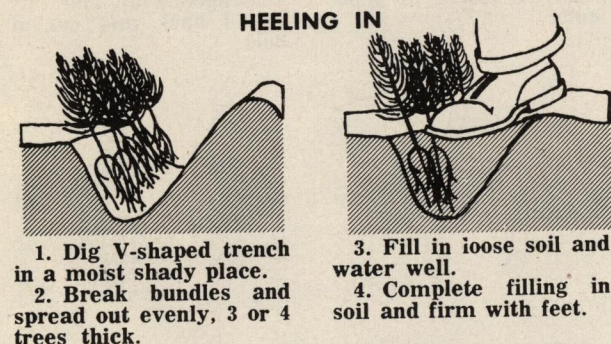
This bulletin was prepared by Frank H. Pitkin, College of Forestry Nurseryman, and Vernon H. Burlison, Extension Forester, University of Idaho in 1959 and revised in 1963. The revised manuscript was approved by Charles R. Ross, Extension Forestry Specialist, Oregon State College, and Knut Lunnum, Extension Forester, Washington State University, and by other technicians in the Pacific Northwest.

PROMPT CARE OF YOUR TREES

A tree out of the ground is like a fish out of water; the longer it is out, the less chance it has of living.

Be sure the tree roots are not allowed to dry out or be exposed to warm temperatures from the time the trees arrive to the time they are planted. Exposure of root systems to drying conditions—sun or wind—is the cause of many planting failures. If planting is possible within a week after you receive your trees from the nursery, they may be left in the original package for transporting to the planting area. Pour water in the end of the package or submerge in water briefly to keep the roots moist and store the package in a cool place.

If planting is to be delayed, the trees should be unpacked and "heeled-in."



CORRECT PLANTING

There are a number of methods and tools used to plant trees. How you plant is for you to decide. Whatever method you use, these instructions should be followed closely.

1. **Keep the roots moist.** Keep the root system covered and moist from the moment the plants are taken from the shipping bundle or from the heeling-in trench until they are planted. Any suitable container (bucket, bag, or planting tray) can be used for carrying the trees during the planting operation. In whatever container that is used there should be

enough wet material around the roots to prevent their damage through exposure. Never carry a handful of trees exposed to the sun and wind. Take one tree at a time from the carrying container and plant it immediately.

2. **Plant at the right depth.** Your trees should be planted at least as deep as they grew in the nursery. A color change on the stem above the root system marks the former soil line. If your trees cannot be cultivated, it is well to plant them ½-inch deeper than they formerly grew. Trees that are to be cultivated should be planted at their former depth. Otherwise, through cultivation they are apt to become too deep.
3. **Get the roots in a natural position.** Be sure the planting hole or slit is large enough in width and depth so the root system will not be crowded or doubled up. In slit planting, push the tree down to the bottom of the slit, then with a shaking motion, raise it back to the correct level. This helps to arrange the roots in as natural position as possible.
4. **Firm the soil around each plant.** While holding the tree in an upright position at the correct depth, bring loose, moist soil in around the root system. Do not let dry soil or surface litter fall in around the roots for it will damage or kill the tree. When the slit or hole is filled with moist soil press it down firmly. Placing a layer of loose soil or fine material around the tree to act as a mulch, this will conserve soil moisture.
5. **Select natural protection on wildland plantings.** On sites that become hot and dry in the summer, try to choose a protected spot for each seedling. "Dead" shade—the north and east sides of stumps and logs—is good. Next best is partial shade offered by brush or fern. Continuous dense shade is unfavorable to survival and growth.
6. **Right spacing is an important item in planting trees.** Seedlings are small and the tendency is to plant them thicker than they need to be to give the result sought. Forest land plantings are usually spaced no closer than 8' x 8', unless early thinning for Christmas trees is planned. Straight Christmas tree plantings are ordinarily 5' x 5'; however, the spacings may be 4' x 4' if trees under 5' height can be marketed. Irrigated farm woodlots should be spaced 8' x 8' unless early thinning is planned. Dryland woodlots should have a 9' x 9' to 12' x 12' spacing. Windbreak rows should be at least 16' apart on irrigated land and 20' on dryland. Evergreen rows should be 18' from the nearest broadleaf row. Plant windbreak shrubs and small trees 3' to 6' apart within the rows, tall broadleaf trees and evergreens 12' apart.

The tools most commonly used for hand planting seedling trees are shovel or spade, planting bar, planting hoe, and mattock. The shovel or planting bar is very satisfactory for planting small to medium size stock on cultivated land where there are no obstructions in the soil. The planting hoe works especially well for small stock on wildland plantings where the soil is soft and quite moist. A mattock or shovel is the best tool for large planting stock and for sites where rocks, roots, or pieces of turf in the soil make the other planting tools inadequate. The diagrams on pages 6, 7 and 8 illustrate how these tools are used in tree planting.

Machine planting is practical only when soil and soil moisture are favorable to adequate machine packing of the ground around the seedling root system. Heavy soils which are wet or sticky at planting time should be planted by one of the several hand methods.

The size of the planting, the condition of the site, and the availability of a planter are the main considerations in determining whether or not to use a planting machine. Machine planting usually gives better survival than hand methods on sites that are favorable for the use of the machine. If the job involves less than 2000 trees, machine planting very likely will be more expensive than hand planting. On large planting jobs, a machine usually will cut planting costs. Hand planting generally averages between 500 and 800 trees per man day. Planting machines ordinarily range from 600 to 1000 trees per hour.

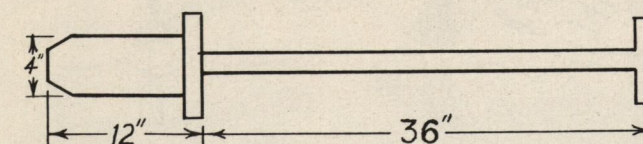
CARE AFTER PLANTING

The first two years after planting is a very critical period for young trees. Survival and soil moisture go "hand in hand." Any practice or procedure that will maintain good soil moisture should be followed.

1. Keep your planting free of weeds and grasses by **SHALLOW** cultivation when weeds are small and by the use of pre-emergent herbicides. Tree plantings should be clean cultivated as long as equipment can go through the trees.
2. Water irrigated plantings often enough to keep the soil moist and the plants in active growth.
3. Use herbicides to reduce weed growth in the tree row. Some herbicides can be applied at a rate as low as 3 to 5 pounds per acre over top of newly planted seedlings with very good results. Contact your county extension agent or local forester for the best chemical to use and the method and rate of application for your area.
4. Keep livestock and poultry out of tree plantings. Examine your trees often for damage by disease, insects, or rodents. Clean cultivation greatly reduces the rodent risk. A clean planting is also less subject to fire damage. Your county extension agent or forester will give you advice on control measures and on any special planting problem.
5. Replace all missing trees the spring after planting. Usually very few plants are lost after the second year.

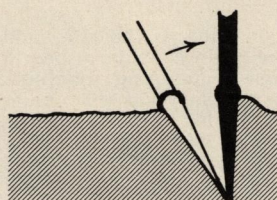
SLIT PLANTING WITH BAR

(Usually a two-man operation)

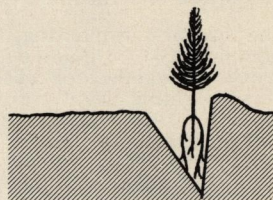


Planting bar. Blade of ⅜" armor plate, drawn and sharpened

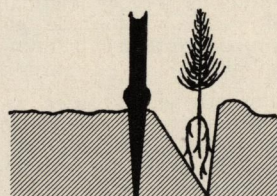
SLIT PLANTING WITH BAR (Continued)



1. Insert bar at angle shown and push forward to upright position.



2. Remove bar and place seedling at correct depth.



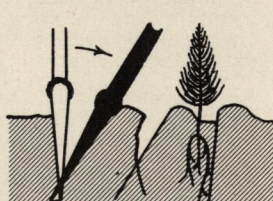
3. Insert bar 2 inches towards planter from seedling.



4. Pull handle of bar towards planter firming soil at bottom of roots.



5. Push handle of bar forward from planter firming soil at top of roots.



6. Insert bar 2 inches from last hole. Push towards tree.



7. Fill last hole by stamping with heel.

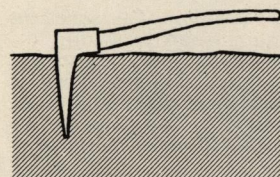


8. Firm soil around seedling with the feet.

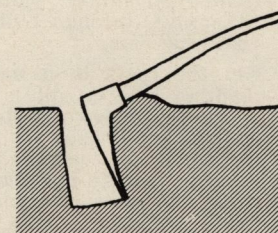
(6)

HOLE PLANTING WITH PLANTING HOE OR MATTOCK

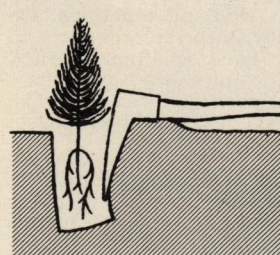
(Usually a one-man operation)



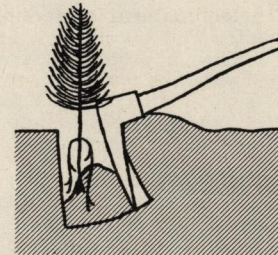
1. Swing hoe to get full vertical penetration.



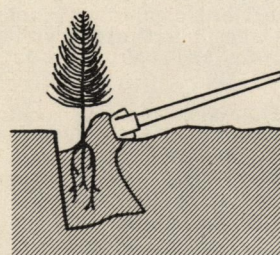
2. Lift handle and pull to widen hole.



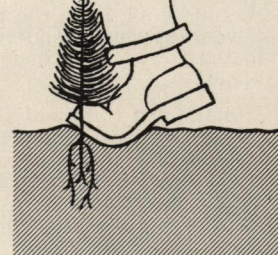
3. Place seedling while using hoe to hold back soil.



4. Use hoe to pack soil at bottom of hole.



5. Use hoe to pack soil at top of hole.

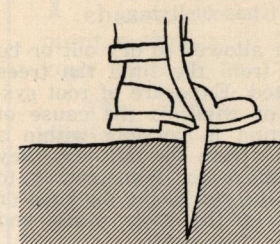


6. Firm soil around seedling with feet.

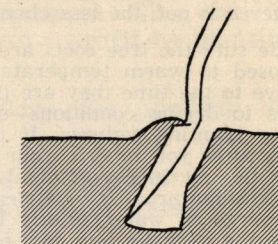
(7)

HOLE PLANTING WITH SPADE OR SHOVEL

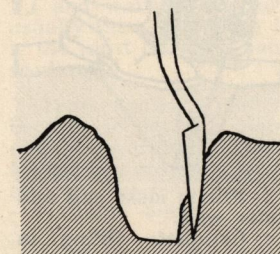
(Usually a two-man operation)



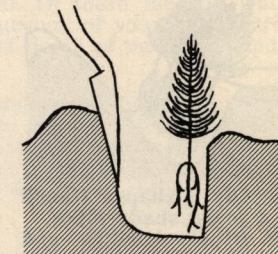
1. Shovel in position for starting planting hole, blade reversed, perpendicular.



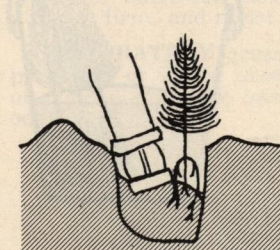
2. Shovel handle pushed forward, bottom of hole opened up and dirt pulled back and out of hole.



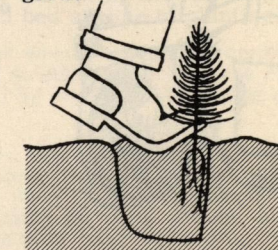
3. Beginning of second cut to straighten back wall of hole.



4. Shovel pulled back making clean hole. Tree placed in hole, roots in normal position. Plant the tree one-half inch deeper than it formerly grew.



5. First packing, hole half filled with soil, tree in proper position, heel used in tamping.



6. Second packing, hole completely filled. Surface covered with mulch of loose soil.

(8)

Published and distributed in furtherance of the Acts of May 8 and June 30, 1914, by the University of Idaho Extension Service, J. E. Kraus, director; and the U.S. Department of Agriculture, cooperating. 10M-5-63.

Published and distributed in furtherance of the Acts of May 8 and June 30, 1914, by the Washington State University Extension Service, C. A. Svinth, director; and the U.S. Department of Agriculture, cooperating. 10M-5-63.

Published and distributed in furtherance of the Acts of May 8 and June 30, 1914, by the Oregon State College Extension Service, F. E. Price, director; and the U.S. Department of Agriculture, cooperating. 4M-5-63.