

SPRING PLANTING BY THE FOREST SERVICE

With the total rainfall during the growing season considerable above the normal, and favorable spring weather, which permitted a large amount of early spring planting, the tree planting in District 4 of the Forest Service was more successful in 1913 than any previous year. At the end of the growing season reports were received from the supervisors of the thirteen forests on which planting was done as to the number of plants then living. This varied with different classes of stock, being relatively higher, 86 per cent, for the plants which had grown one year in the seed bed and two years transplanted than for any of the five other classes of planting stock used. For the plants grown two years in the seed bed but not transplanted, of which more was used than any other, 82 per cent survived the first season and the same percentage of the plants four years old, having been grown two years in the seed bed and two years as transplants. Of each, the two years in seed bed and one year transplanted, and also three years in the seed bed and two years transplanted, and also three years in the seed bed and two years transplanted, 76 per cent survived the first summer, while of the three year old not transplanted the number living at the end of the fall was 70 per cent.

Forest examiner James M. Fetherolf, who has charge of the planting work in this district, states that the prospects are excellent this spring both as to moisture and weather conditions. At the Pocatello nursery, where at an altitude of 5,200 feet it is possible to begin work from two to three weeks earlier than at the two Wasatch Forest nurseries whose altitude is above 7,000, distribution of planting stock has been begun. From this nursery, of yellow pine, 46,000 are to be shipped to the Cache forest, at Logan, 25,000 to the Weiser, 10,000 to the Sawtooth at Hailey, and 5,000 to the Minidoka at Oakley; of Douglas fir 42,600 are to be shipped to the Cache, making a total of 88,600 to that forest and a total spring distribution from the Pocatello of 128,600 plants.

From the Cottonwood nursery, 50,000 Douglas fir and 10,000 blue spruce plants will be taken for planting on the Wasatch forest. From the Beaver Creek nursery, 10,000 lodgepole pine and 65,000 yellow pine plants will be taken for planting on the Wasatch. 540,000 yellow pine plants will be shipped from this nursery to the following forests: Cache, 75,000; Fishlake, 141,000; Manti, 124,000; Uinta, 100,000; Weiser, 50,000; Minidoka, 50,000.

45,000 yellow pine and 20,000 Douglas fir plants grown in the Flower nursery will be planted near by in the Sawtooth forest.

The favorite planting tool is a double-bitted mattock with blades 10 inches long and with this, by the common method, the hole is dug and the clods pulverized; the little tree is then inserted and the dirt firmed about it. An average of 700 trees, properly planted, is a good day's work for two men, and, when working in pairs, one man digs the hole while the other carries and plants the trees. Good records for speed have also been made by large crews working in five-man teams. Two men dig holes, one man places the trees in the holes and two men following spread out the roots and firm the dirt about them.

The so-called "slit method" of planting used exclusively on the Targhee Forest for three successive years with good results, was introduced last fall

on a less extensive scale on the Minidoka, Pocatello and Manti forests. The results of this planting will be closely observed and compared with planting done by the old method. Besides being cheaper, it has advantages on account of which it may become advisable to adopt it generally, especially where the soil is deep, of fine texture and free from boulders.

The hoe man, with one stroke, drives the mattock into the soil up to the handle, then with an upward pry he lifts the soil and draws it toward himself, thus creating an opening several inches wide ahead of the mattock. The planter inserts a heavily puddled plant into this opening which operation is facilitated by a quarter twist of the stem of the plant. He also pushes the top to the side of the mattock, thus bringing the tree into an upright position and away from the foot in firming. The mattock is then withdrawn and the soil naturally falls into place. It is firmed by the heel of the digger, while the planter sets a tree for an adjacent digger. In this way one man carries the trees and plants for two diggers. Any sod or litter is removed before the mattock is driven into the soil.

The average cost of planting in this district including the expense of growing the trees and their transportation to the planting site is from \$10 to \$12 per acre, with an average of 800 trees to the acre, or from \$13 to \$15 per thousand trees.

As soon as the spring shipping has been completed, the work of preparing and planting the seed beds at the nursery will be begun. In the case of western yellow pine, this is largely done in the fall. The seed does not germinate until spring, but is then ready and appears from three to four weeks earlier than the seed sown in the spring, thus taking advantage of the early excellent moisture conditions and gaining a longer growing season. The seed, which was formerly planted in drills is now sowed broadcast, and this is a most particular task, requiring skill and experience. Having calculated the exact amount of seed necessary to produce the number of plants desired the beds are marked off so that by gauging the amounts of seed to the small compartments, even sowing is obtained. The seed is covered by scattering fine dirt over the beds and this is sometimes raked lightly and firmed by rolling.

Lath screen providing half shade is required for fir, spruce, and lodgepole pine, but not for yellow pine.

The seeding of small compartments with a given quantity of seed is essential even with a nurseryman of long experience, because of the dif-

ferent size of the seed used, as well as different percentage of seeds, from year to year, that will sprout. For example, of the Engelmann spruce there are 69,000 seeds to the pound of which 64½ per cent of the quantity to be sowed this spring are fertile. Of the yellow pine seed from northwest Utah there are 19,000 seeds to the pound, of which only 36½ per cent can, according to previous testing of seed, be expected to produce trees. The yellow pine seed from the Payette forest, in central Idaho, is larger, however, there being 12,000 seeds to the pound, of which 43½ per cent are fertile. Next smaller in size is Douglas fir seed which runs from 29,000 to 40,000 seeds per pound, the Engelmann spruce and lodgepole pine are some what similar in size, running from 70,000 to a little over 100,000 seeds to the pound.

The sturdiest plants are required to endure the protracted periods of summer in which there is no rain, as well as the action of frost and other hardships of winter. Since a tree depends much upon its roots to gather plant food in soluble form from the ground, thrifty growth of roots is essential, and these can be stimulated by transplanting. When the little trees are one or two years old, they are taken out and "threaded" into notches in a board and then carried and placed in almost exact spacing in a transplant bed.