

4. Producing High Quality Stock, Melvin Coonrod; Chairman

Field Planting Stock Used in Region 4

By Melvin Coonrod

"We start off producing high quality stock, I guess. Field planting stock used in Region 4 is very good stock. It comes from Region 6. Region 4 didn't get into this planting game until about 1954. We've been planting since that time. This year we started a nursery. We've had considerable help from Region 6 and Region 2. As a result, we do have some trees growing, but let's get back to this planting the kind of field planting stock used. First, we always like to use live stock. We find that that is very essential. So we start in at the nursery with the cooperation of Region 6. They've been lifting

our stock and bundling without sorting. They've kept it damp and in cold storage in good condition until we've picked it up. When we send our trucks after the planting stock, we have our trucks enclosed with canvas which I think is **contrary** to most practices. **We** try to keep the sun off; we try to keep the wind off. We bring our planting stock right into a snowbank, plow the furrow with a tractor, put the warm trees into it and cover it over. In the process of chilling, the snow melts away from the trees and the trees are in **more or less** an igloo. We then tunnel into the side **and** take the trees out as we plant them. We have held trees **in** this manner from March until the middle of June. First, we'd better back up here. We were attempting to find out if we could plant in **June, when we** normally have rain, and get survival. So we took 5,000 trees, buried them **in the** snowbank, covered it over with some burlap, old kapoks, pine boughs, and fir boughs. The snow had long gone from all the area, and we dug into that on the fifteenth of June. The snow was still around the trees, so **we** took them out and planted them. The **year 1958 was unusual. We** had rain **in** July and rain in August. *We* had 100 percent survival on that **particular** plantation which **was** the only one on which we had that high of survival. **We** didn't **learn we** could wait in a dry year and plant. We did find out that we were taking proper care of the trees. The next thing, after we get these trees alive into the planting area, we put up a tent or a canvas to shade the trees and the sorting is done at that place. The tops interest us only slightly. We want to make sure we have the terminal tip and that the top **is in** proportion to the root or vice versa . We want a **bigger root** and not too much top. Of the trees that we've obtained from Region 6, a very small percent has been culled because of tops. Now we come to the **root and** because of the, dry conditions **in** the Intermountain area we will insist on a long root. In studies back in 1930, they determined that the soil moisture available to a planted tree during drought **periods was** down 16 inches.. We can't plant 16-inch roots, so we go in and we plow furrows. We plow those furrows this summer and we plant next spring. We vary them from six to ten inches, according to the slope of the hill on which we plant. We get a certain amount of sloughing and firming up over the winter, and in the spring when we plant, our depressions are from six to eight inches. We plant a root from ten to twelve inches into the ground at the bottom of this furrow. The soil moisture level drops very little because of this furrow and as a result we have a portion of the roots down in the ground that's moist. When **we followed this** practice of planting longer roots, we had as high as 99 percent survival at the end of the first year. Generally, we planted 2-1 stock. Each year we planted along with that **some 2-0 stock for comparison**. In years when we got rain the last of June, our 2-0 has come through as good as our 2-1. In a dry year, which is not abnormal, we do get a falling-off of our 2-0's. Our survival is around 88-89 percent compared with 98 to 99 percent. We haven't **been able to** determine yet whether we're smart or not in planting 2-1's consistently, because of the **difference in** cost of transplant stock, but maybe these 2-0's will be doing our job. The fact is that if we knew as much as we don't know, we'd be a lot smarter as far as Region **4** is concerned.

Three years ago Frosty sent us some spruce for the Cache Forest. They came by plane. We took them out and gave them to the Forest when we had **snow on** the ground. There was no follow-up until that fall. On the first day of **planting we had** 75 percent survival. The second day of **planting it** had dropped down. On **the third, fourth,** and fifth day, it **was down to 37** percent. We tried to determine why **it dropped each** day. The same people did the **planting. The site** preparation work was all the same. There was very little difference in elevation and site **and quality. We feel** that it was the heeling-in that made the difference. On this Town Creek **planting that was** started **in** 1954, we planted some area without any site preparation.. We stripped some with **the bulldozer;** and on other **areas we stripped** the brush with the bulldozer and plowed the furrows. The year 1954 **was a very wet year and** where we had stripped, **our survival was** about 96 percent. Where we had stripped and plowed, it was 99 percent. Where we planted without site preparation work at **all, survival came** out 84 percent. At the end of the fifth year, we **made a 100 percent survival** count. Our stripped and plowed furrows had 95 percent survival; **our stripped** had 86 percent and where we **hadn't** done any site preparation, it **dropped down to 39** percent. There was quite a variance in vigor between the different trees and each type of planting. Usually, where there **hadn't been** any site preparation done at all, if we had any opening in the brush or grass, we found better trees. Where we **had** stripped we found ups and downs, and the same thing where we had stripped and plowed. A year ago some soil men started taking some soil samples and found that we had three **different types of soil.** We had sandy loams over loamy sands, sandy loams over loams, and loams over clay loams. The type of soil was not significant; it was entirely' depth of the soil that we had. Where we **have up to 21 inches of** soil, the average height of the trees was 20 inches. When we went to 20 to 36-inch soils, our trees went to 29.5 inches average. When we went up to **50 inches,** our trees went to 57.5 inches tall. Where we had less than 12 inches of soil, we didn't have any survival unless the granite was completely decomposed. We started out in this granite soil trying to find the way to plant. After taking care of **the stock** and making sure it was alive, culling for root length, and planting the furrows with 2-1 stock, we had good survival. Then we started planting in other types. We have a lot of basalt soils. We had better vigor **in** the basalts. We can't get very much higher survival. It's still running around 96 to 97 percent at the **end of the fifth year.** We went into Nevada where it was extremely dry, and **we're getting** the same type of success there. Then we went to the Dixie Forest where we have an entirely different soil which is the limestone formation. We tried to put the planting machine into the ground, and we couldn't work it after we **plowed the furrows. We couldn't get** a shovel into the ground. So we got a subsoiler and pulled it through and planted trees. Of 5,000 trees that were counted last fall by the junior foresters on the forest or **in** the region, they found 50 dead ones. So we thought we were pretty smart. We got some soil men down the other day. They find that, even though it looks as though we have unlimited soil, very much in depth, the roots of the trees that exist there are **only** growing in horizons A and B which varies in depth from 12 to 30 inches on the normal

sites down to 50 on the best sites. The leaching out of the limestone aligned in the soil caused the calcite formation. **On** top of the horizon C, there's subsoil and we penetrated that. None of the natural growing trees have extended themselves into that horizon C. Evidently, that calcite is very toxic to the roots with pH around 8 or 9. Our trees **are** still growing, but where we have **any** clays at all in that soil, it's sealing in and our subsoil is about eradicated. As a result the trees are **starting to** yellow at the end of the second year. We were there last week and learned this. We've also planted at Las Vegas on a site that was extremely dry last spring. We used the Holt plowed furrows, culled our trees the same way, and planted them. We didn't receive any rain on those trees until the fourteenth day of July, with air temperatures of 117 degrees.

"I'm not going to report on survival. I've been afraid to ask, but we have **an** excuse. If there's no survival, it's an unusually dry year. If there is survival, we have all the techniques."

Question:—"Is this ponderosa pine?"

Answer: "It's all ponderosa pine. Well, we've done the same thing on the Toiyabe in Jeffrey pine and have the same success.. The only **plantation in** the region where we have 100 percent **survival** at the end of the fifth year is **ponderosa** pine from the Boise National Forest that we **planted on** the Jeffrey pine site on Toiyabe. That's the only place the ponderosa pine trees are putting on tremendous growth. They're growing **from 22** to 25 inches terminal growth each year. We've had such good luck with ponderosa pine that we branched out **and** started in planting spruce. Region .6 shortchanged us a little bit. They haven't given us spruce roots 12 inches long or even 10 inches long. We plowed the furrows a little deeper; and so far we have but one site where we've done site preparation work and planted the spruce, and it looks good. That was done this spring. **Normally**, our loss will begin to show up in September. I was there the first of August and at that time there was just an occasional tree we found that had died. To date, we haven't had any luck at all in planting spruce. As I said, this is the first time we've gone into site preparation work. We planted one area of Douglas-fir on the Ashley Forest in Utah in the spring of 1956. We were able to get some Douglas-fir trnsplants from the Monument Nursery in Colorado and I'm glad we couldn't get any more. They only charged us \$40 a thousand for them. They were 3-1-1. We had 100 percent survival on them. They were planted in furrows under aspen by Boy. Scouts. We planted some 1-1 stock which Region 6 grew for us. The average length of the roots was 9 inches and the top above ground was about 3.5 inches. Survival was 92 percent on that at the end of the fourth year. Top vigor hasn't been too good because of rodents. We planted them in a spot where we hadn't done much site preparation work. It **was** heavy ceanothus. We plowed through with cultivator plow and planted trees and the rabbits didn't leave the area. We got good survival with the shorter root with the shorter top and deep furrow. We've been using the planting machines for the last two years in Region 4. The smaller trees work better. We still plow the furrow the depth of which is

dependent on the slope. If the slope is around 20 percent, we try to hold about a 6-inch furrow. As we go up the hill and get steeper, **we throw** up more of a furrow trying **to get more dirt on the** lower side and tend to equalize the level of the planting machine **in** coming around. We've planted on slopes with an actual measurement of 51 **percent with the planting machine. We've had** several upsets. A year ago, **Charlie Rindt and Monk DeJarnette** and some of **the boys were over.** We took them around for one day showing them **where we planted,** how stable our **machines were and** last we led them up to show them the **machines.** There was a **machine on its side. So now we are** limiting the area on which we operate to 45 percent, and we still upset them; but it's usually operator trouble.

"On hardpan areas, **when we pulled** the subsoiler through, we pulled **it at 24 inches in** the ground. The ground shaped out for about two feet and mounted up **in** the center about six inches. During the summer on this area **we got a 3-inch downpour. There wasn't one drop of** water lost; it all puddled in the area. **That** helped to seal, **any portion** of this subsoil zone that was in the clay. **Last week we dug channels or trenches across the** planted rows where we didn't have the clay, which was probably only about two or three percent of the area.' You could still pick out the area that the subsoiler pulled. **There would be the** narrow neck and the round spot at the bottom. The roots penetrated clear down in the bottom of this thing and followed laterally in the direction of the subsoiler. On the sides where **the subsoiler** had been pulled through, you couldn't chop with **an axe. And of course,** it's dry you know, too, but the trees **are** still alive and still look good except where **there is clay.** We don't know how long that subsoiler effect might make itself evident. The soil technicians think maybe from 10 to 15 years. Probably by that time the roots themselves will tend to keep the ground open."