

PRODUCING THE MOST PLANTABLE SEEDLINGS PER POUND OF SEED^{1/}

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FROM SEED TO SEEDLING

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Quality products are the results of the coordinated efforts of all portions of a production organization. The forest tree nurseryman is constantly striving to produce high quality seedlings. The methods which we use to grow and handle these seedlings in the nursery can be important factors that help determine successful plantation establishment.

How can we produce the most plantable pine seedlings per pound of seed? Let's take a look at some of the aspects of seedling production.

SEED

With the increased availability of high quality and genetically superior seed and the invaluable testing services rendered by the tree seed laboratory, the nurseryman today has a much better chance of producing the desired number of seedlings per square foot. However, we must take great care in computing our sowing rates. Success in achieving the proper density depends upon the rate at which the seed is sown.

Uniformity in the seedling beds is greatly increased by planting sized seed. Seedlings are more equally developed and the need for grading and culling is reduced.

SOIL PREPARATION

Good nursery soil management is essential to growing high quality seedlings. With the aid of soil testing and research information, we work to maintain good physical structure and condition of the soil. We protect our soil with mulches and cover crops and follow good fertilization practices. Due to the fact that soil characteristics among the nurseries are so varied, I am sure that the soil fertility programs that each individual nurseryman uses will differ considerably.

^{1/} Panel presentation. Papers of panel participants are included.

PROPER PLANTING TECHNIQUES

After the sowing rates have been computed, we must now make certain that the seed is planted accurately. We have found that it is beneficial to map out on paper a complete layout of the area to be planted. This way, we will know before going to the field exactly how many beds a given lot of seed will cover. This knowledge also enables us to keep close check on the planter setting.

A Whitfield seeder is used for planting our pine seed. The seed is sown eight rows to the bed at a depth of approximately one-eighth of an inch.

We are still using pine straw as a cover after planting. This method works extremely well, however, it is becoming increasingly difficult to obtain straw. I am interested in hearing comments from the other nurserymen relative to the type of cover that they are presently using. We require four loads of straw per acre. It is applied with a spreader at a depth of 1/2-inch. Our labor crew then spreads it evenly over the bed with a fork. This practically eliminates the necessity of having to go back over the beds at a later date to remove straw.

CULTURAL PRACTICES

After planting is completed, it is time to begin thinking about such things as watering, disease control, weeding, and fertilization.

A regular watering program is essential as soon as the seed is in the ground. We like to put on one-fourth of an inch of water every other day during the germination period. The period between planting and the first signs of germination is an anxious time for the nurseryman.

Fusiform rust is our most serious disease problem. Stringent efforts are necessary at Ridge Nursery to effectively combat this infection. A very rigid spray program is followed. We mix six pounds of Ferbam and two quarts of Wet-Aid per 200 gallons of water. This is applied at the rate of seventy-five gallons per acre. Although this amount may seem high to some of you, we have found that it is necessary in our area in order to achieve the control that we need.

For the past two years during the spring and summer, we have made weekly checks of the oak trees located around the nursery. Records were kept on the different stages of the telia formation. We also made notes on the general weather conditions for that time period. These records provide us with a good source of information for year to year comparisons.

We have been getting relatively good weed control results with a combination of weeding practices. Before planting, Treflan is applied at the rate of one pint per acre. This amount is effective for our nursery, because we have well-drained sandy loam soil. After planting, we spray with mineral spirits on a regular basis.

A few years back, we constructed a two-man mechanical weeding cart. This is used on a daily basis and it works exceptionally well for general weed control.

Of course, hand weeding is still very much a part of our operation. It is our only means of eliminating some types of weeds and grass.

My feelings are that some of us probably do not begin our top dressing program as early as we should. This could cause us to put on too much fertilizer too late.

On our first application of top dressing, we like to use Muriate of Potash. This promotes good root growth and gives the seedlings good color. Sometimes two applications are necessary to develop the root system to the stage where we can begin concentrating on height growth. Split applications of Ammonium Nitrate give us good height growth control.

Our seedlings are measured in the field every thirty days. This helps us to determine the amount of Ammonium Nitrate that we will use. Too much nitrogen applied too late can result in enormous stem growth. However, root pruning can stop this growth temporarily.

LIFTING AND PACKAGING

While lifting and packaging is not directly related to seedling production, it is one of the most important phases of our nursery operation. If the seedlings do not reach the landowner in good condition, then all of our efforts have been in vain.

Our seedlings are lifted with an agitator blade. Full power take-off speed is used on the blade, while the tractor is operated at the slowest possible travel speed. We believe that this method is better than the straight blade which we used in the past, because it enables our labor crew to pull more seedlings per day and it leaves more fibrous root system on the seedlings.

During the past shipping season, we designed and built a trailer that made it possible for us to lift, weigh, and package our seedlings directly in the field. The only phase of the operation that must be performed inside is sewing the top of the draft-polyethylene seedlings bags. I hope that in the near future, we might be able to come up with some type of generator operated sewing machine that would allow us to conduct our complete packaging operation in the field.

The field packaging method which we use is so mobile that when weather conditions make it impossible for us to work outside, we can shift our operation inside without any inconvenience.

The greatest advantage to the outside packaging, in addition to being faster, is that the seedlings are pulled out of the ground and packed into the seedlings bags in less than three minutes. Therefore, exposure is kept to a minimum. The bags are brought into the building immediately, where they are sewed and placed in cold storage. The controlled temperature in our cold storage room provides good protection for the seedlings until they are distributed to the planter.

We shall continue to search for ways to improve our production methods. By producing high quality seedlings, we can make a worthy contribution to the field of forestry.