FOREST SEEDLING NEEDS

Mosinee Industrial Forest

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Mosinee Paper Corporation has carried on an extensive reforestation program since the mid-1940's on its Industrial Forest in northwest Wisconsin. The experience of planting conifer seedlings has generally been positive. Many problems in planting have been encountered during this time and, hopefully, the solutions we've come up with will be helpful in the understanding that much of the success in the field originates at the nurseries.

MOSINEE'S CURRENT PROGRAM

Our present reforestation plan calls for planting seedlings on 1800 acres/year. This is an ambitious program, considering all but 150 acres is usually hand planted and the whole thing is done during a 5-6 week spring season. We are presently planting nearly 1007 2-year red pine seedlings. This stock is usually grown at the nursery at Hayward. Our forest lands are generally 50-60 miles from the nursery.

Future plans include the planting of jack pine seedlings in an increasing proportion. Since most of our lands have droughty sandy soils, red and jack pine are our two best alternatives, although we have a few small European larch plantings on converted aspen sites.

If one had to give a general description of the ultimate planting stock it would be a tree that was vigorous, easy to plant, stored well and guaranteed to survive. Since no one yet has come up with that ultimate stock, we have to satisfy ourselves with getting as close to it as possible.

SEED SOURCE CONTROL

We inherited a few thousand acres of jack pine plantings from the CCC and WPA planting programs. For the most part, those trees met all the criteria of that ultimate planting stock except for vigorous. This brings out the importance of seed source control. We believe that much of the problems associated with these plantings is the result of cone picking practices. Cones were picked from trees of poor form and vigor. Why? Because it was easy and quick. We can not afford to establish pine plantings that grow up small in size, susceptible to disease and limby as spruce.

In most cases this control rests with the organization running the nursery. As much attention needs to be paid to seed source control as soil fertility or pathogens.

SCHEDULING & STORAGE

The optimum schedule would be to have all trees lifted and packaged the same day they are planted. This is usually not operationally feasible so something less is settled on. Our people try to set up a twice weekly pickup schedule that puts trees in our refrigerated van the same day or day after lifting and calls for storage in the van no more than 3-4 days. Of course, inclement

weather or equipment breakdowns can quickly lay waste to the best conceived plan. Thus, flexibility is also an essential hallmark of a good shipping schedule. Fortunately, if the nursery and planting sites are relatively close, they will probably be influenced by the same inclement weather.

Storage at the nursery, even for one day, is critical. We like to see all stock kept in coolers. Obviously, this may not always be possible due to space. In some cases, where the weather is cool and overcast, the stock may be left out if protected by space blankets that reflect the sun's warm rays. But a sudden change for sunny, windy and dry conditions can adversely warm and dessicate the stock in a surprisingly short time.

As previously mentioned, we transport all stock in a reefer van. This unit is also used for storing stock. We have found that the Thermo-King type unit does as good a job dehumidifying the trees as it does cooling them. For this reason, we humidify the van with a garden sprinkler at least once a day.

PACKAGING

Over the years, we have been experimented upon by the Hayward nursery with many kinds of packaging systems. We still prefer the open-ended bundle or jelly roll. It stands up to the handling and wetness induced by the humidifying of the reefer van. The waxed boxes and polyethylene bags each had faults. The boxes stacked well until dampness destroyed rigidity. They were good in the field because they could be closed if all the trees weren't immediately used. The boxes were not as space efficient as the bundles. The bags did not stand up to wetting either, nor were they as tough when being handled. If a tear developed, they could not be reclosed. They were even less space efficient since they could not be stacked as high without incurring heating of the bottom bags. Both the bag and the box do have a niche though. The small landowner that hauls his stock in the trunk or even pickup truck would appreciate the cleanliness of either system. However, those of us picking up and storing 200M+ at a time appreciate the durability and space economies of the bundles. We do stack these four of five deep but use a criss-cross method that leaves air circulation space over much of the bundle.

TREE SIZE

Several things arise out of our planting methods that make tree size a concern. Unfortunately, a little bigger tree is easier to machine plant than that easily hand planted. It is also very important that bulk, non-graded stock used for hand planting with southern contract crews be as consistent in size and cull percentage as possible. This eliminates differences in culling that can cause excessive over or under runs when coming to the end of a 1.6 million tree order. It appears that with large trees orders, the trees actually come from fairly diverse beds which influence seedling size. Thus, a run of consistently large trees with few small ones for a period of two or three lifts may influence culling in the field if the run gets smaller afterwards. It is also as important that the people in the packing shed get the bundles as consistent in size as possible. This eliminates a lot of discord on the planting crews since most of them are paid by the thousand and the number of bundles planted is often the best check on production.

ROOT CONFIGURATION

Again, differences in planting methods often dictate the optimum root configuration. It is desirable for both hand and machine planting that carrot-type roots with few lateral feeders be avoided. However, on the other end of the spectrum we have the large, fibrous system that is almost impossible to deal with when hand planting. Yes, we can and do permit root pruning. The less of this that goes on the better since experience shows that the planter will usually err for too heavy a root prune. The medusa head root system is not so much a problem for machine planting except that it is hard to separate the individual trees from each other in the planting machine.

SUMMARY

The preceeding comments have been offered to help the nursery people here gain an understanding of how their practices can make a planting program more successful. After all, it's what is growing in that planting a few years down the road that is the acid test. The inseparable linkage from nursery to forest makes the two way communication of knowledge from forester to nursery manager and vice versa extremely important. If you and your user's aren't exchanging ideas and solving problems as a team, then the end product, the forest, is likely to come up short.