REGULATION OF SEEDLING GROWTH AND DORMANCY

CLYDE L. GEHRON 1/

WORKSHOP OBJECTIVE

The objective of this workshop is to discuss ways and means of regulating seedling growth and dormancy. This encompasses most of the nursery practices, as they each directly or indirectly affect seedling growth. This means we can discuss any of the nursery problems or practices you may wish to bring up. However, I have listed a few of the broader topics affecting the subject. Unless you specifically request others, we will take each as listed and continue from there.

I know each of you nurserymen have encountered problems for these subjects and also have found solutions. A workshop is designed to have rapport between all constituents. For this to work, each of you will have to participate by giving your thoughts and ideas.

As I look at this group I realize there are many here that have as much or more nursery experience than I. So with your help and cooperation, I think we can get down to the basics for these discussions and come up with some conclusions helpful to us all.

WHAT ARE PLANTABLE SEEDLINGS?

First, what is our objective? It's to produce a seedling that will transplant, live and grow. This brings up the question of what constitutes a plantable seedling. Generally, the consensus was the seedling grades should be adhered to and smaller seedlings should be culled. However, some comments indicated the smaller seedlings had a better top/root ratio.

Several comments were made about seedling size being determined for planter convenience - larger stock for machine planting; smaller stock for hand planting; a certain size for one planting machine and another size for a different type machine. Survival and growth rate should determine the type of seedlings that we produce in the nursery.

The final discussion point concerning a plantable seedling was that research should tell us what is the best seedling for field planting. This information should establish the optimum seedling grades to use as our nursery standards.

LENGTH OF GROWING SEASON

The next topic was length of growing season. Most of the states plant slash and loblolly pine during April and May; earlier for shortleaf, Virginia and longleaf pine. Summer heat seemed to be a limiting growing factor for shortleaf and Virginia pine. Longleaf pine needed a longer growing season to get necessary root collar diameter.

1/ Clyde L. Gehron, Superintendent, Beauregard Nursery, Louisiana Forestry Commission

Other comments: If planting is held too late, the seedling will be too small before summer heat sets in. The weather needs to be warm enough to germinate seed.

SEED BED DENSITY

Hardwood: Many problems here with many unknowns and not much indication of what is satisfactory for any species. Help is needed in this area, and perhaps research can come up with some answers.

Slash and loblolly pine: Most nurseries are planting for a density between 25-30, with one saying 32 and another 35.

The lower densities usually produced larger, stockier seedlings. In some instances this was not the case, and lower densities produced smaller seedlings. The specific incident cited was when smaller seedlings were grown at lower densities, using orchard seed.

The majority of the group agreed a density ranging from 25-30 consistently produced a large plantable type seedling.

SOIL MANAGEMENT

The next topic of discussion was soil and its fertility. This opens the door to the whole scheme of nursery practices as soil is the growing medium for the seedling.

It is important that a nurseryman become as familiar as possible with his nursery soil. You can never know too much about your soil.

Each nursery should have complete records showing the soil capabilities, what the optimum conditions are, and what has actually been done to the soil. These records should be complete and kept on an annual basis.

All nurseries seemed to be using crop rotation. Some were on a 1-1 and others on a 2-2 year rotation. In most instances, the cover crops were applied during the off-year or years, with additional organic matter being added.

The crops stated as being used were sorghum, sudex, corn and rye grass. Organic matter being added was sawdust and bark. Both were worked in during cover cropping periods. Winter cover crops were limited as they presented problems of where the next seedling crop was to be planted. It is often hard to get the soil prepared in time for planting.

Top dressing comment: Don't force seedling growth during fusiform rust infection period by fertilization, as this could possibly increase infection.

Fertilizing comment: Fertilize by prescription from soil analysis.

SEEDLING DORMANCY

The last topic discussed was seedling dormancy. The question asked was: "When is a seedling dormant?" The reply was: "Possibly a southern pine seedling never actually gets completely dormant." There is a machine (an oscilloscope) that will register when a seedling is dormant, and this will be demonstrated during the field trip. The machine develops a pattern that shows on a screen and determines if the seedling is dormant, dead or active.

Comment on dormancy in oak and sweetgum: They are slow to defoliate and often hold their leaves until February. Seedlings with leaf retention often die back 1 or 2 inches and sometimes even to root collar.

The suggestion was: Research should experiment with defoliants such as those used on cotton and make recommendations if proven successful.

Pruning: One nursery top prunes all species. Others said they fall pruned longleaf followed by irrigation. Most said they laterally prune at lifting. Others said they were vertically and laterally pruning at lifting.

Pruning comments: Most hesitate to top prune. At times we prune the new growth one or two times. It lets the smaller seedlings catch up and doesn't harm the others.

A good lateral pruner is needed - perhaps research can develop.

CONCLUSIONS

The nurseryman is continuously working and experimenting to improve nursery practices. It is evident that research can help if our needs are presented in the correct procedure. Perhaps with this combined effort, beneficial results can help future production.