

HERBICIDES AND WEED CONTROL IN HARDWOOD SEEDLING PRODUCTION

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In the nursery production of pine seedlings, great strides forward have been made in cost saving methods. Hand labor, once so prevalent in the various nursery practices, has been drastically reduced or virtually eliminated. The use of mechanized equipment was adopted, mechanical implements were modified, and new apparatus was devised. Agricultural chemicals were developed and employed. All these innovations improved the performance of the nurseryman by getting the job done faster and at less cost.

The mechanisms and chemicals so successfully utilized in pine seedling production were found to be not always compatible with hardwood nursery production. Such equipment as the mechanically operated seed drill used to sow all kinds of pine seed was of no use in sowing the many kinds of hardwoods with their wide variety of shapes and weights. The chemical so successfully used for grass and weed control in pine seedling beds was found to be toxic to almost all hardwoods. This is the herbicide, mineral spirits, known by the many trade names such as Varsol, Stoddards Solvent, Naphtha, etc.

No doubt, later in this meeting, we will hear of steps taken toward mechanization in hardwood seedling production. At this time, I would like to review the various herbicides used at the Louisiana Forestry Commission nurseries.

HAND WEEDING

At the start of broadleaf hardwood nursery production, the only weed control used was hand weeding. This was a costly nursery practice. Cost figures of \$600 to \$1,200 per acre for hand labor were not uncommon.

Various herbicides were screened to affect weed control at a more economical figure.

CHEMICAL WEEDING

Mineral spirits.--Weeds and grasses have been controlled in bald-cypress, Arizona cypress, and sweetgum.

The same technique is used as employed in pine seedling beds. The early applications are 10 to 12 gallons of material per acre on a 2 sprayings per week schedule. As the season progresses, the rate is increased by gradual stages to 25 to 30 gallons per acre.

Methyl bromide.--Used in the production of cottonwood seedlings where production is limited to 1 to 3 beds. The material and cover are applied and removed by hand. Used as a pre-sowing treatment. Cottonwood seeds are sown in late May during the height of the weed germination period. Cottonwood seedlings offer no fight to weeds and are soon smothered out by competition from weeds.

Mylone.--A shotgun herbicide for all species of hardwood. Applied on pre-shaped beds in the fall prior to spring sowing. Very good results have been obtained with this herbicide applied to the surface of freshly made beds. The beds are irrigated immediately. The water carries the chemical into the soil where it can act. The water also provides a seal which prevents the material from escaping before it can act upon the weed seeds.

The rate is 550 pounds per acre and the cost for material is \$440 per acre.

Eptam.--This is another shotgun herbicide compatible with all species of hardwoods. It has resulted in very good control of seeds and grasses. It offers better control of nut or coco grass than many of the herbicides screened for nursery use.

It is applied in either the liquid or granular form. The rate is 6 pounds of technical material per acre. The cost for the material is approximately \$20 per acre.

Eptam is applied prior to bed preparation. After the soil has been disced and harrowed, the chemical is applied to the surface of the soil. If the liquid is used, it is mixed with water and applied broadcast to soil surface by the use of a spray rig. If the granular form is used, it is applied to the surface of the soil with a fertilizer distributor. The material is incorporated into the soil immediately by the use of a disc harrow or a roto-tiller. The more thoroughly the chemical is mixed with the soil, the better the results. Cross discing or cross roto-tilling is desired.

Water is applied using the irrigation system to provide a seal which prevents the material from dissipating before it has done its job. After a waiting period of 14 days, the treated area may be planted.

Eptam-Soybeans-Eptam seedlings.--Eptam combined with the crop rotation plan of the soil management program provides excellent weed and grass control at very low cost. This combination has led to reducing the nut grass problem. The Eptam is applied prior to sowing the cover crop, soybeans. The chemical retards the sprouting of the nut grass for 45 days or more. In 45 days, the soybeans have grown enough to provide shade to the soil surface that sets up conditions that are not conducive to nut grass emergence.

Before the seedlings are planted, the next year the area is again treated with Eptam.

This soil treatment of Eptam and soybeans has resulted in a reduction of nut grass population and consequently a reduction in the nut grass problem.

CONCLUSION

No herbicide has given complete 100 percent control of weeds and grasses. A certain amount of hand weeding still must be done. However, all of these materials have alleviated the hand weeding problem.

Technique of application is the key to success with herbicides. When applied correctly and under correct conditions, they will give the wanted results. Weather and soil conditions should be as desired. Temperature and moisture conditions are critical.

New and better herbicides are in use today or will be developed in the future. That is why we are meeting here today. To discover what is being done to solve the mutual problems of a nurseryman.

Forest tree nurserymen, as in the past, will accept the challenge of developing labor saving devices in the production of hardwood seedlings.