

## KNOWLEDGE OF SEED-ORCHARD PESTS SCANTY

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I have been invited to speak to you today about insect problems associated with the establishment and management of southern pine seed orchards.

Research is constantly developing improved methods of culturing and managing forests. Such advances frequently provoke a reaction by insects. Insects are always present, but many remain harmless until a change in the environment favors their increase.

New developments in the seed orchard program furnish an example. The crowns of trees from which cuttings are taken typically are infested by insects such as tip moth, gall weevil, pitch moth, midges, and small twig-borers known as Pityophthorus beetles. Most of these insects have little effect on forest trees and pass unnoticed upon the foliage. But when infested scions are grafted to the rootstock of potted seedlings, these same insects suddenly assume a prominent role by destroying the stem and terminal bud of valuable grafts.

The insect problem in grafted seedlings, however, does not stop at the nursery. After the grafts are outplanted, many additional pest species, such as sawflies, white grubs, aphids, scales, and colaspis beetles, readily attack them. Then, with repeated fertilization, root pruning, and mowing, the young trees increase in value, and their insect enemies become much more important than if these pests occurred in "run-of-the-mill" plantations or in young, natural stands.

What do we know about the habits and behavior of insect species that hamper success of the seed orchard program, and how do we go about controlling the pests?

Most orchardists are familiar with routine pest problems peculiar to their orchards and can handle them by standard direct control procedures. For instance, chewing insects, such as larvae of the tip moth, pine webworm, and the sawflies, can be controlled with DDT. The pitch moth and black turpentine beetle in trunks of trees skinned by mowers or damaged by tree shakers can be destroyed with benzene hexachloride. Sucking insects, such as scales and aphids, can be suppressed with malathion. And the timely application of systemics such as phorate or Di-Syston to the soil will make spraying unnecessary for most of them.

Orchardists have also learned several other things. During the growing season monthly inspections should be made for insect and disease symptoms. All seed orchards are not equally subject to infestation by the same insects. Insect and disease control should be carefully integrated into the entire orchard management plan. And, spray schedules cannot be followed haphazardly, but must take priority over other orchard operations.

Research and experience have taught us these and many other lessons about insect pests in seed orchards. But we know little about minor pests which may become important by attacking seed-orchard trees. We know nothing about how to control insects that attack potted seedlings, except perhaps to cull infested scions before grafting.

It is obvious that a vigorous research effort is needed on seed-orchard-insect relationships, including further intensification of cone and seed insect research throughout the South.