

A REALISTIC LOOK AT SEED ORCHARD PEST CONTROL

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In my original outline for this presentation I had listed t "Current Seed Orchard Control Recommendations." I felt this would be a real eye opener and keep the audience on the edge of their chairs as they endeavored to glean from me some exciting new information. The sad fact is that I would be just echoing the data already in published form or the information presented at past meetings.

Unfortunately, the outlook is dim. I have no such information to give for future concrete recommendations that will work in all seed orchards in the South. You might consider me a pessimist; however, I would rather consider myself a realist.

Control recommendations in the past have met with varied success from year to year and from orchard to orchard. It is no wonder we have met with such a frustrating chronicle of control efforts, or should I say noncontrol. Let's consider some of the varied parameters we are confronted with.

Geographic.--Over 90 percent of our seed orchard insect and disease control studies have been restricted to northern Florida. While we are all aware of obvious differences in development of insects, disease organisms, and plants at various latitudes and altitudes, we have used variations of these controls all the way up into Virginia and west to Texas and from the coastal plain to mountain regions. Not only should we expect timing differences in life cycles in these distant areas, but we must also expect new species of organisms with entirely different life habits and behaviors.

Pesticide formulation.--You name it and it's been used--DDT, BHC, Guthion, thimet, bidrin, malathion, toxophene, chlordane, etc., etc. In addition, we have the following formulations of each of the above at our disposal: emulsifiable concentrates, wettable powders, and granular materials--these may or may not be applied with spreaders or stickers or both.

Application.--Here we have an arsenal of different devices such as hydraulic sprayers, mist blowers, speed spreaders, fertilizer spreaders, flit guns, and squeeze bottles. Each device comes with a complete spectrum of nozzle orifices, operating pressures, and dosages per unit time. Seed orchard foremen sometime have no other alternative than to make use of the equipment available. This can be most frustrating in instances where controls call for 20 grams of granular phorate applied to the soil and the only application equipment available is a super deluxe mist blower.

Environmental.--Old man weather not only can wash out a picnic or ball game, but can literally wash away a full day's spraying. We constantly seem to be the victim of the 10 percent chance of scattered thundershowers. On the other hand, granular systemics can fail to get into a tree by the lack of moisture. In addition, wind can carry spray, dust, or granules away from the intended recipient and deposit them harmlessly (that is for the target pest) on the surrounding countryside or harmfully on the operator.

Tree species and site.--What could be more compounding to an already complex matrix of parameters than a consideration of site? What is the soil type--sandy or sandy-clay? Is it high in organic matter? These questions are particularly important when considering the use of systemics.

Another variable is the tree species. For instance, preliminary evidence suggests that the systemic phorate does not work in control of tip moths on shortleaf pine but when the same dosage is applied at the same time in the same location to loblolly pine, good tip moth control is achieved.

Now that you are no longer on the "edge of your seats" and are relaxed or numb, let's look at the brighter side.

First of all, I do not mean to belittle the past research efforts on seed and cone pests or, for that matter, anyone's efforts in controlling such pests. In the research field we have made great strides in the knowledge of biology of seed orchard pests and orchard managers have made a herculean effort at pest control. What I have tried to do is point out the multitude of problem areas that are present when considering the control of some 15 insect and disease pests which attack some 10 tree species throughout the entire southern region of the United States. It is no wonder that we have problems.

The next statement you have heard time and time again. That **is**, "Insect and disease control should be carefully integrated into the entire seed orchard management plan." What this means is that in addition to your duties as forester, geneticist, public relations man, accountant, and engineer you are expected to be an entomologist and pathologist.

Our past experience should have taught us that pest control in seed orchards is not going to be a one-shot deal. Likewise, no single pesticide compound is likely to be the answer.

I submit that future seed orchard managers should consider managing seed orchards on an integrated control basis. That is, not just using a spray schedule of BHC or other pesticide, but the incorporation of other techniques which ultimately will reduce a pest population or reduce its biotic potential. These would include, in addition to pesticides, light trapping, sanitation, isolation strips, microbial pesticides, chemosterilants, baits, selection of resistant clones, and parasites and predators. Considerable success has already been experienced with this approach in apple and citrus orchards in Canada and the United States.

The main point of this approach is that we don't put all our eggs in one basket as we have annually done with each new "ultimate pesticide" that comes on the market.

COMMENT (Zobel): I have one comment to make on systemics. It seems that we are using systemics more and more, and everyone keeps worrying about the danger to humans. There is another angle to this. We must watch the danger to fish and wildlife, particularly if there is a run-off. For example, if you have put out thimet and a heavy rain follows, the thimet can wash into a nearby pond resulting in a lot of dead fish. Potential of danger to humans is always present, but there is also the danger of destroying fish and wildlife.