The Use of Herbicides in Nursery Management

By Roger Scott

"Thank you, Homer. In looking over the various weed conference reports for information to use in this speech, I found that most of the work has been done controlling undesirable' woody plants in forest work, and very little has been done in nursery crops in the nursery itself. There is some work going on in nurseries and several compounds are cleared for use in trees that are one or more years old. I don't believe we have quite enough information yet to recommend some of the materials we're working on to control weeds in seedbeds. We have materials available that work on foliage, and we also have materials that are taken up only through the roots of plants. Some of these weed killers work through the foliage and are taken up through the roots, also. Fortunately, some of the plants are able to tolerate the sprays we have and no damage is apparent from this, and other plants are able to resist the chemicals taken up from the roots or are able to break down the chemicals as fast as they're taken in by the roots. This, we hope, will

bring us closer to some weed control progress in nursery crops. We believe it is possible. We are moving very slowly on some of these chemicals because of the things we don't know about the chemicals-- not the things we do know. We do know that the time of application on these things has quite a bearing on the control of weeds as well as the effects on the crops treated. In some areas the winter annuals are the problem, and in other areas the spring germinating weeds are the problem in nursery crops. It is sometimes possible to spray plants in the dormant season and get no injury to the plants; whereas, the same treatment in the spring when the plants are growing fast would be fatal. And we know that the soil type and the amount of humus in the soil, just as Jack mentioned with his fumigants, make quite a difference in the amount or the rate of application of the herbicides. In muck soils, it takes nearly four times the amount of chemical to do the same job as you could do with one pound in sandy soil. That is, in general, the same weed control would be obtained in sandy soil with one pound, while your heavier sandy loams would probably take two pounds of chemical, your clays would take three pounds of chemical; and your mucks might take four pounds to do the same job. The finer the particle size, the more chemical you need and also in the high humus, just as Jack mentioned with his fumigants, the chemical is absorbed on the soil and cn the humus in the soil, and it's not available to the plants. We also know that the pH of the soil has some effect on the chemicals. We haven't done an awful lot of work on this yet and more study is needed in this part to fully evaluate the results and effects of the pH on the chemical. We also know that the amount of rainfall in the soil has a great effect on the chemical in the soil. You might say that through overhead irrigation you can control that, but that isn't entirely true because during the winter season there's considerably more rainfall west of the mountains than there is on the east side and the chemical is leached out more on the west side than it is on the eastern. We also know that certain weeds are not controlled by our chemicals, too, and that's a little discouraging at times when we think we have a chemical that will work and it's safe to use on the plants, but it couldn't take care of the weeds. From the information we do have on these chemicals, where we take the dosage rate that will kill the weeds which we're trying to control and also consider the safety of the plants, the situation is such that we can work from there. What we don't know fully is which plants will tolerate the chemical and which plants are susceptible to it. Now we found quite a big difference eve in the varieties of a given species. There's quite a bit of difference in the amount of chemical that one variety will tolerate over another. So, therefore, we're quite cautious in making blanket recommendations for the control of weeds even in a given species.

"We don't quite know yet what the best method of application of our weed killers would. be. Should we spray on the soil or place them under the ground about half an inch? Some of these chemicals need moisture to do the proper job. Of course, you can control that by your overhead sprinklers to some extent. That takes some of it out, but in another case we might use granular materials and this way we could apply it right over the plant which it might injure and at the

same time get a minimum amount of chemical on the plants that were treated. This might be worked out, too, by your sprinklers and the sprinklers might splash your chemicals from the granules back up on the plants, and we will lose the effect that we gained from that application. It's rather hard to say what the best method of application might be. The' other problem that bothers us is how long the chemicals will remain active in the soil. We have to have it long enough to take care of the weeds for the season or a long enough time anyhow to effect good weed control. Then,, with this same chemical, it could remain in the soil too long. We have that problem also. We tried to work on that problem; we tried to apply chemicals. What we would normally apply in three years we would apply in one year and then plant crops in that treatment. Well, this isn't exactly the right way to do it because some of that chemical is lost during the season, and so we're not getting a true picture, but we do get some indication of haw long or whether there will be a buildup in the soil and whether the danger is great or can be minimized. These are some of the questions that we can't answer about our chemicals. We do have a place in the nurseries where several chemicals are recommended in nursery crops, especially under irrigation pipes which are stationary and are there from year to year, also on the paths between your beds. And we also have several chemicals that are registered for trees that are one or more years old. There is a catch to that, too, because you might say they're one or more years old, but we shouldn't apply weed killer soon after transplanting. Plants that will tolerate the chemical when they're one year old would be killed if the chemical were applied right after transplanting. We should wait three or four weeks or until the plant becomes set and rootlets are growing. We hope that additional experimentation will be able to increase the amount of weed killer that we have under label now. It's only been about five years that we've been working on weed killers in forest nurseries. Although we've had 2-4D and some of the other materials on the market for fifteen years or more, our work is quite limited on forest nurseries. We have found, as Homer mentioned, that Propozine is quite a lot safer to use on forest nurseries than Simazine is. Our people in Switzerland found that out, also, as Homer did, and we hope that with some more experiment work we can get clearance for the use of Propozine. Simazine has been tested on two- or three- or four-year-old trees and is quite safe at five-pound rates on medium heavy soils. Up to ten pounds of Simazine has been safe on deodar cedars; ten pounds of Simazine per acre has been proven safe on Port Orford cedars; five pounds of .Simazine per acre (I'm speaking of actual rates, not the product as you apply it) has been safe on cypress; larch has been injured with five pounds per acre. Spruce shows slight injury at five pounds per acre and pines show slight injury at five pounds per acre. Douglas-fir will tolerate about five pounds of Simazine per acre, and sequoias are tolerant to five pounds. Yews will stand five pounds per acre.",

Homer Ward remarked: "This again points up the necessity of each nursery and each nursery soil receiving an actual trial, of these various materials to determine its acceptability.

What works very well on a **Tumwater series** might cause Vern McDaniels to go straight in the air with the heavy soil he has down there. But I would certainly urge that we continue to try and eventually we will, with the help of these people, come up with a good weed control. Now we've been faced with an everlasting problem of nursery fertility and fertilizer, what to use and what not to use and why we do it. We'll kind of drop a bomb on Todd Tremblay and ask him to tell us about it."