PROMISING AGRICULTURAL CHEMICALS FOR WEED CONTROL IN SEEDLING NURSERIES

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To begin, I have one slide that summarizes briefly what Dr. Mason Carter has said about some pre-emergence herbicides used in forest tree nurseries. Shown above the line on this chart are six different tree species and four herbicides (DCPA, trifluralin, diphenamid, and norea) that have good possibilities for weed control in tree nurseries. The six different species tolerate these herbicides at fairly high rates.

Below the line are six more herbicides that show varying degrees of effectiveness. This report is based on a 3-year study at Auburn. There is much variation among the different tree species for tolerance to these herbicides. You can see here that Arizona cypress tolerates none of the latter six herbicides, all of which are generally considered to be herbicides toxic to broadleaved plants. Sycamore and Arizona cypress do not tolerate ametryne very well. Then, there is Eptam (EPTC) which shows up as a rather odd situation. The pine species tolerate it rather well; broadleaf species don't generally tolerate it, yet sycamore (a broadleaf plant) does. What this really points out, I think, is that you've got to know this information relating to species and varietal sensitivity if you expect to use these herbicides. There may be more information from other sources along this subject, however, these species are the only ones that have been checked out for tolerance to herbicides by the seedlings. We can look at this from another view. Arizona cypress appears to be a non-tolerant species for all herbicides. This may not be true with simazine or some of the other herbicides not reported as tested. There is probably some tolerance.

Sweetgum is probably the most tolerant species to all herbicides. Slash is next; then loblolly; yellow-poplar, and sycamore.

There are a number of different herbicides that these species will tolerate. Herbicides that are more likely to give you broadleaf control, on a pre-emergence basis, are more likely to cause injury or growth reduction to these tree species.

In a survey report, you indicated that you have weed problems, It's hard to tell what these problems are. Some of you said, "grasses." As indicated by the other speakers, there are even differences among the grasses as to their susceptibility or lack of tolerance to a given herbicide, the same as we have with tree seedlings. So you need to specify, or note precisely, what kind of weed or what species of plant is classified as weed species. You have the same thing among the broadleaves--just a general, lumped-together category, not naming specific plants. I'm ranking these weeds in terms of what I consider to be difficult to control weeds, with the hardest to control named first; morning glory, smartweed, ironweed, dog fennel, and Florida pusley--with Florida pusley being one of the easiest to control.

In looking back over the chart, I would say this: the four safe herbicides for tree species, in general, are on the top of the chart and are quite effective in control for the common broadleaf weeds, with maybe the exception of Florida pusley and dog fennel. We can also rank these four herbicides as to their ability to control various broadleaved species. Norea would probably be most effective if you don't get a complicating factor; Dacthal second, trifluralin third; and diphenamid would probably be the very weakest of these.

Among the herbicides on the bottom of the chart, simazine would be quite strong for weed control, but you have little tolerance among the tree species. Eptam would be second in this ranking; ametryne third; and diphenamid, again, would fall last and probably is the weakest of these herbicides for general broadleaf weed control on a pre-emergence basis.

We work with these herbicides in agronomic crops, both on a pre-emergence and post-emergence basis. When you start talking about post-emergence, I really wonder whether there is a place in tree seedling production for post-emergence herbicides for broadleaf control. It might be different for grass. I really don't know. Generally speaking, you can say that most of the post-emergence herbicides used in agronomic crops are effective. Not on a physiological or a morphological basis really, but more on the basis of site of application.

You have to get a height difference so you can selectively apply these post-emergence herbicides, with timing or state of development entering into the picture. I really don't know if there's anything I can say on post-emergence control of broadleaf species in tree seedlings, except that it would be difficult indeed to use this approach for weed control.