Herbicides for Conifers: What's New[1]

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Abstract.--Of recent interest to conifer nurserymen are the preemergence grass herbicides, with Poast (sethoxydim) and Fusilade (fluazifop-butyl) currently registered for use on conifers. Information about these herbicides and herbicides for yellow nutsedge control is discussed. Split applications, applications with low carrier volumes, and a new publication on backpack sprayers are also mentioned.

CHEMICALS

Postemergence Grass Herbicides

Introduction

The so-called "new grass killers" are currently receiving a lot of interest. They are not so new anymore, and are more commonly referred to as postemergence grass killers. Poast (sethoxydim) and Fusilade (fluazifop-butyl) are currently registered for use on non-bearing crops, including conifers. Another herbicide in this group is Verdict (haloxyfop-methyl--also known as Dowco 453). Verdict is not yet registered for use on conifers, but probably will be registered for this use in the future. Other graminicides you may have heard of include Assure, Hoelon, and -Whip. These herbicides are active at fairly low rates (less than 0.5 pound active ingredient per acre), and kill both aboveground and belowground parts of the plant after being translocated to root and shoot meristems. They exhibit varying degrees of soil activity, with Fusilade having one of the shortest periods of soil activity (less than one month) and Verdict having one of the longest (up to one year). Newer versions of these graminicides will probably have even greater soil activity and persistence. Most of the information that follows on these herbicides will concern Poast and Fusilade.

Selectivity

Even though these herbicides are grouped together, they each exhibit a different chemistry and selectivity. To decide which of these herbicides to apply, you need to know the grass species that you are trying to control. Recent work in western Oregon has shown that certain herbicides are more effective against certain grass species (Brewster, 1984). For example, Verdict was more active against annual bluegrass than Poast or Fusilade, and Poast and Verdict control Italian ryegrass better than Fusilade. Fusilade however, is best for control of quackgrass. In general, Verdict is the most active herbicide of the three on young (4-5 leaf or 1-2 tiller stages) grasses. Some other work has shown however, that Poast may be more active on older grasses than Fusilade (Whitson, et al, 1985). None of these herbicides are effective against broadleaf weeds, rattail fescue or the fine fescues, and control of perennial grasses may take more than one application to get the desired result.

Additives

In applying these chemicals, READ THE LABEL CAREFULLY. The recommendations for crop oils and surfactants vary, depending on the chemical and the crop species. These additives are needed to increase plant uptake of the herbicides, especially under adverse conditions. Some of the crop phytotoxicity attributed to these herbicides, particularly when applied under warm and humid conditions, is thought to be due to the crop oils. If you suspect a problem, try treating a small area without the use of crop oil, another small area with the additive alone, and a third area with the herbicide plus the additive. The grass control will not be as good, but you may be able to determine if the additive is causing the phytotoxic effect. For further information on testing herbicides in nurseries, consult Sandquist, Owston, and McDonald (1981).

Mode of Action

These herbicides are translocated to the grass meristems within one to two hours of application, but obvious visual symptoms do not appear for at least two weeks. A few days after application however, the newest leaf should detach easily, and a longitudinal section of the stem should show discolored meristematic tissue at the newest node. As with most herbicide applications, these herbicides are most effective on smaller grasses. It is also important that the grasses be actively growing and unstressed by moisture, mowing, or other herbicide treatments, as these chemicals are translocated within the plant and require an intact plant to be most effective.

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Crop Phytotoxicity

Reported problems with these chemicals include possible phytotoxicity due to the crop oil. Use of these graminicides prior to the application of a broadleaf herbicide in some horticultural crops has resulted in damage to the crop due to greater uptake of the broadleaf herbicide by the crop. Tank mixes with broadleaf herbicides in horticultural crops have shown reduced activity, possibly due to reduced herbicide uptake (William, 1984).

Yellow Nutsedge Control

Yellow nutsedge is a weed of increasing importance. Recent work by Pereira (1985) has concentrated on the control of tuberization rather than control of top growth. If glyphosate is used to control this weed, it should be applied earlier than previously thought for greater control of tuberization. Another herbicide for nutsedge control is Dual (metolachlor). Two or more years of Dual applications were found to give good control in fruit orchards. If a serious infestation is present, you may need to rotate into a crop for which Dual is registered (corn, beans, some ornamentals) to eliminate the nutsedge.

Oregon State University Nursery Technology Cooperative (NTC)

The Nursery Technology Cooperative (NTC) began screening experimental herbicides for bareroot nurseries in May 1984. The screening program has five phases, each with its own objective:

I. International Plant Protection Center (IPPC) Multicrop Screening Program Objective: To provide phytotoxicity information on experimental chemicals and to aid the selection of promising chemicals for further screening.

II. Greenhouse Screening
Objective: To obtain more information on phytotoxicity and timing of application for chemical weed control methods.

III. First-Level Nursery Screening
Objective: To evaluate new weed control treatments, primarily for crop damage and secondarily for weed control.

IV. Second-Level Nursery Screening Objective: To further investigate crop damage, weed control, economics, and specific concerns such as residual effects in the soil.

V. Operational Trials
Objective: To refine the weed control method and obtain more economic data before operational use.

The current NTC screening program involves phases I and II. Our major crop emphasis so far has been Douglas-fir and ponderosa pine. We will begin screening on other conifers in October 1985. The first phase III experiments are planned for Spring 1986.

As promising, non-phytotoxic chemicals are identified in phases I-Ill, the NTC will proceed with phases IV and V, culminating (we hope) in new product registrations.

APPLICATION TECHNIQUES Application Monitors

Improperly calibrated application equipment can lead to costly mistakes. Applications with backpack sprayers and granule spreaders are especially prone to overapplication. Recalibrate the applicator at least once a year. For additional insurance, computerized application monitors are also available ($1500-$2000) and are especially useful for getting better results from applications using low carrier volumes or with herbicides that are applied at very low rates.

Low Carrier Volumes

Low carrier volumes have been found to enhance the herbicidal activity of Poast, Fusilade, and Roundup (glyphosate) (William, 1985; Buhler and Burnside, 1984). Most of these herbicides are applied in 20 or more gallons of water per acre, usually to improve coverage. Weed control with all three herbicides however was found to be better with 10 to 15 gallons of water per acre, perhaps because the individual droplets were more concentrated. When using such low carrier volumes, 80015 or micromax nozzles and emitters are needed.

Backpack Sprayer Comparisons

Nurseries that use backpack sprayers may be interested in a new publication that compares various types of backpack sprayers (Fisher and Deutsch, 1984). This report analyzes 37 different kinds of sprayers. Recommendations of one sprayer over another are not given, but desirable and undesirable features of different sprayers are illustrated.

Split Application

The earlier-mentioned work by Pereira (1985) on nutsedge control and a recent paper by South (1985) have found split applications of herbicides to be more effective than applying the whole recommended dose at once. South notes that the lower dosage, more frequent applications don't let the weeds get too large, and that the smaller weeds are easier to control. More frequent applications of Goal (oxyfluorfen) allow a chemical barrier to be maintained on the soil surface. A drawback to this technique, especially with Goal, is that timing is critical in avoiding crop phytotoxicity. Getting good coverage can also be a problem.

Conclusion

It is always good to keep up with the latest information, but it is also important to prevent and anticipate any weed problems before they

occur. Remember also that repeated use of a single herbicide may create more problems than it solves due to the development of resistant weeds or a shift in the weed population to weed species that are tolerant of the herbicide. It is important to use a combination of techniques to have the most efficient and economical weed control.

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