

Variation in Sensitivity of Azaleas to Herbicides

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Azaleas differ in their susceptibility to pre- and postemergence herbicides. Treflan (trifluralin) and Surflan (oryzalin) reduced shoot and root growth of certain cultivars. Surflan decreased stem diameter and strength of 'Hino Crimson' and 'Snow'. Image caused foliar injury on the cultivars tested, whereas Poast and Vantage, sethoxydim formulations, did not. Damage caused by other herbicides was cultivar dependent.

INTRODUCTION

Azaleas differ in their susceptibility to herbicides. Many cultivars have been screened for tolerance to the postemergence herbicides Ornamec (fluazifop) and Vantage (sethoxydim) (Derr, 1987; Frank et al., 1987). Certain red-flowered cultivars are sensitive to Ornamec (Gilliam, 1987). Thus, differential susceptibility exists among red-flowering cultivars as it does among all azaleas. Plants generally recover from foliar damage caused by postemergence herbicides such as Ornamec (Derr, 1987). Increased flowering in the spring following application of Ornamec has been reported for the sensitive cultivar 'Hino-crimson' (Gilliam, 1987). All cultivars tested are tolerant to Poast/Vantage (sethoxydim) (Derr, 1987; Frank et al., 1987).

Some ericaceous plants are sensitive to dinitroaniline herbicides. High rates of Surflan and Treflan girdled the stems of *Leucothoe* (*L. fontanesiana*) (Ahrens, 1979). High rates of Surflan and Barricade (prodiamine) restricted growth, root development, and marketability of azaleas (*Rhododendron* 'Kirin' [syn. 'Coral Bells'] and *R.* 'Formosa') (Singh et al., 1981).

Due to differential plant tolerance, Casoron (dichlobenil) is labelled for use only on kurume, mollis, hardy hybrid types, and hardy native azalea species (Ahrens, 1966).

MATERIALS AND METHODS

Screening of pre- and postemergence herbicide products was conducted for a number of years at several sites in North Carolina. Herbicides were applied three times at 8-week intervals, with final evaluations in October of each year (30 days after third application). Granular herbicides were weighed out on a per plot basis and applied manually with a shaker jar. Liquid treatments were applied over the top with CO₂ backpack sprayer and 8003LP nozzles delivering 25 gpa at 20 psi.

RESULTS AND DISCUSSION

Some dinitroaniline herbicides decreased shoot and root growth of certain azaleas (Ruff, 1989). Surflan decreased stem diameter and strength of 'Hino

Crimson' and 'Snow' and affected cellular organization of stems at the groundline. These abnormalities may be involved in the phenomenon known as groundline breakage.

Image (imazaquin) caused moderate to severe foliar injury on the cultivars tested. Damage caused by Pursuit (imazethapyr), Basagran (bentazon), and EC and DG formulations of pendimethalin was cultivar dependent. Poast with or without crop oil and Vanatage were not injurious. Flame azalea (*R. calendulaceum*) was more susceptible to herbicides than evergreen and semi-evergreen types (Skroch et al., 1991).

Due to the diversity among azaleas, tolerance to a particular herbicide must be determined for each cultivar individually.

LITERATURE CITED

- Ahrens, J.F.** 1966. Trials with dichlobenil and diphenamid for controlling weeds in container-grown nursery stock. Proc. Northeastern Weed Sci. Soc. 20:232-236.
- Derr, J.F.** 1987. Response of azalea (*Rhododendron obtusum*) cultivars to sethoxydim and fluazifop-P. Weed Technol. 1:226-230.
- Frank, J.R., C.R. Krause, and C.E. Beste.** 1987. Effect of three herbicides on the foliage of kurume azaleas. J. Environ. Hort. 5:55-62.
- Gilliam, C.H. and D.C. Fare.** 1987. Is fusilade safe for red-flowering azalea cultivars? Amer. Nurseryman 166(1):105-106.
- Ruff, D.F.** 1989. Growth response of five cultivars of azalea and stem anatomy of 'Snow' as influenced by selected herbicides. M. S. thesis, N.C. State Univ., Raleigh.
- Singh, M., N.C. Glaze, and S.C. Phatak.** 1981. Herbicidal response of container-grown rhododendron species. HortScience 16:213-215.
- Skroch, W.A., S.L. Warren, and L.B. Gallitano.** 1991. Herbicide tolerance of selected ericaceous species J. Environ. Hort. 9:196-198.