

THE RESPONSE OF LINER GROWN ORNAMENTALS TO SELECTED HERBICIDES. Michael W. Marshall and Bernard H. Zandstra, Research Associate and Professor, Department of Horticulture, Michigan State University, East Lansing, MI 48824.

Weed competition, especially for light and water, retards growth, delays development, and impacts the ultimate marketability of transplanted liner grown ornamentals. Preemergence treatments, such as oryzalin plus isoxaben, followed by hand-weeding have been frequent common production practices. In addition to herbicide cost, hand-weeding increases the labor cost for the nursery. More herbicide options are needed to reduce the expense of hand-weeding in liner production. Field studies were initiated at cooperator sites in 2006 located in west-central Michigan to evaluate weed control and response of liner grown ornamentals to various preemergence herbicides. Herbicide treatments included flumioxazin (sprayable formulation) applied at 0.29, 0.36, and 0.39 kg ha⁻¹, prodiamine applied at 1.68 and 3.36 kg ha⁻¹, isoxaben applied at 1.12 kg ha⁻¹, oxyfluorfen applied at 0.56 kg ha⁻¹, metolachlor applied at 2.13 kg ha⁻¹, dithiopyr applied at 1.12 kg ha⁻¹, mesotrione applied at 0.28 kg ha⁻¹, and an untreated control. Experimental design consisted of a randomized complete block with 3 or 4 replications with individual plot sizes of 1.8 by 6.1 m. The following ornamental species were evaluated including peony (*Paeonia officinalis* L. 'Rachel'), daylily (*Hemerocallis* 'Stella de Oro'), boxwood (*Buxus sempervirens* L.), and periwinkle (*Vinca minor* L.). Herbicides treatments were sprayed on April 14, 2006. Plant injury and weed control ratings were taken 4 and 8 weeks after treatment (WAT) on a 0 to 100% scale with 0 indicating no control or injury and 100 equal to weed or crop death. Periwinkle diameter was measured at 12 WAT. Plant injury, size, and weed control data were analyzed using ANOVA and means separated at the P = 0.05 level. Peonies and daylilies were severely injured at all rates of flumioxazin tested. However, both species eventually recovered and regrew by the end of the growing season. Oxyfluorfen (0.56 kg ha⁻¹) and prodiamine (1.68 kg ha⁻¹) treated peonies showed less than 13% injury at 2 MAT. Overall, isoxaben (1.12 kg ha⁻¹) plus prodiamine (1.68 kg ha⁻¹) and isoxaben plus metolachlor (2.13 kg ha⁻¹) were the safest treatments on peony and daylily. Horseweed (*Conyza canadensis* L.) and common groundsel (*Senecio vulgaris* L.) control was greater than 98% with oxyfluorfen (0.56 kg ha⁻¹), prodiamine (1.68 kg ha⁻¹), and flumioxazin treatments at 4 WAT. Boxwood showed very little injury or response to the combinations of oxyfluorfen, prodiamine, isoxaben, and metolachlor. In periwinkle, mesotrione provided excellent good to control of horseweed, common ragweed (*Ambrosia artemisiifolia* L.), spotted spurge (*Euphorbia maculate* L.), and common purslane (*Portulaca oleracea* L.) at 4 and 8 WAT with very low crop injury (<9%). Similar to peony and daylily, periwinkle was sensitive (>20% injury) to flumioxazin applied at the 0.29 and 0.36 kg ha⁻¹ rates. In general, flumioxazin (sprayable formulation) showed the greatest injury to herbaceous perennials, such as peony, daylily, and periwinkle. The other products tested may provide an excellent fit for common weeds encountered in liner production weed control and have low crop injury potential.