



Postemergent Oxalis Control in Container Grown Crops with Diuron.

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Nature of Work: The markets for nursery crops demand weed free container grown plants. Using labor for weeding of containers is expensive. With increasing costs and declining profit margins, growers have been forced to search for nontraditional methods to reduce costs. Consequently, a paradigm shift has occurred for growers, in that they are willing to accept limited crop injury from herbicides to control weeds. Particularly if the resultant injury is early in the crop cycle, and the crop completely recovers in a short time period. In the past growers demanded that herbicides have broad-spectrum control and crop safety. However, growers are now interested in herbicides that have tolerance in a few crops or that control a major weed problem, i.e. bittercress, spurge, or oxalis (1,2). A 1990 survey of nurserymen reported four weeds that were considered very difficult to control in containers, with oxalis (*Oxalis sp.*) being among those weeds (4). While pre-emergent herbicide application programs provide adequate control of oxalis, no method is 100 percent effective. Commonly, container-grown plants may have serious infestations of oxalis when emerging from over wintering and require hand weeding (3). Therefore, new methods of providing postemergence oxalis control would greatly benefit growers.

On April 19, 2002, at the Center for Applied Nursery Research, five landscape species in trade gallon containers (*Camellia japonica* 'Professor Sargent', *Buxus sempervirens*, *Ilex crenata* 'Compacta', *Juniperus conferta* 'Blue Pacifica' and *Phlox subulata*) along with separate trade gallon containers containing oxalis weeds only (2-5 cm tall and not flowering) were treated with diuron (Direx 4L) to determine crop tolerance and postemergent oxalis control. Treatments included four rates of diuron (0.25, 0.50, 1.00, and 2.00 lb ai/A) and a non-treated control. There were ten replications per treatment arranged in a completely randomized design with the species grouped separately. At the time of treatment the landscape plants were in a state of active growth. Treatments were made with a CO₂ backpack sprayer calibrated to deliver 40 gallons per acre. The sprays also included a 0.25% (v/v) non ionic surfactant. Data collected included crop injury ratings at 7, 14, 21, 60, 140 days after treatment (DAT) and oxalis weed control at 7, 14, 21 along with oxalis shoot fresh weight at 21 DAT.

Results and Discussion: Oxalis weed control was excellent. By 21 DAT the 0.5 lb rate had provided 79% control and the 1.0 and 2.0 lb ai/A rates had provided complete oxalis control. Shore juniper plants were not injured by diuron at 21 DAT; however, by 60 DAT shore juniper plants treated with the 1.0 and 2.0 lb ai/A rates exhibited slight and moderate injury respectively. By 140 DAT all

juniper plants had completely recovered except those treated with the 2.0 lb ai/A. By 21 DAT holly, camellia and boxwood were moderately injured by diuron. Injury symptoms ranged from chlorosis, necrosis and defoliation. Also by 21 DAT, phlox had severe injury and death. At 60 and 140 DAT holly, camellia and boxwood treated with the lowest rates had begun to slightly recover. Plants treated with the 1.0 and 2.0 lb ai/A rates remained in the same state of moderate injury. Oxalis weed control was excellent. By 21 DAT the 0.5 lb rate had provided 79% control and the 1.0 and 2.0 lb ai/A rates had provided complete oxalis control. Our previous crop tolerance and weed control research with diuron showed several landscape crops have tolerance if the crop plants are not actively growing, such as in late fall or early spring.

Significance to the Industry: These data indicate that good to excellent postemergent control of oxalis can be achieved with diuron rates of 0.5 to 1.0 lb ai/A. Crop tolerance is poor once plants have started to actively grow, with the possible exception of shore juniper. In other tests at Auburn University applications made to dormant to semi dormant selected ornamentals has resulted in greater safety. Diuron is not currently registered for use on landscape crops. However, the manufacturer is seeking registration through the IR-4 program. More research is needed to determine tolerance of other landscape crops to diuron.

Literature Cited

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