

DIFLUBENZURON RESIDUE: REDUCTION OF *DIAPREPES*
ABBREVIATUS (COLEOPTERA: CURCULIONIDAE)
NEONATES

W. J. SCHROEDER

U. S. Dept. of Agriculture, Agricultural Research Service
Horticultural Research Laboratory
2120 Camden Road, Orlando, FL 32803

The sugarcane rootstock borer weevil, *Diaprepes abbreviatus* (L.), is a pest of sugarcane and citrus in the West Indies and Florida (Hall 1995). Previous tests at the U.S. Horticultural Research Laboratory in Orlando indicated that the insect growth regulator diflubenzuron (1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)urea) significantly reduced the reproductive potential of *D. abbreviatus* when applied to citrus foliage (Schroeder et al. 1976, Lovestrand & Beavers 1980, Schroeder et al. 1980). The effect was similar to that reported by Moore & Taft (1975) for the boll weevil, *Anthonomus grandis* Boheman. Eggs from treated weevils had embryonic development but larvae failed to hatch. Micromite®, a commercial product containing diflubenzuron, was registered in Florida for use on bearing citrus (May 1995) for control of the citrus rust mite, *Phyllocoptruta oleibora* (Ashmead). In previous studies, diflubenzuron was applied to citrus foliage and *D. abbreviatus* adults were allowed to feed and oviposit on the treated foliage (Schroeder et al. 1976). This study eliminates feeding as a factor and limits the effect of diflubenzuron to the residue present on the leaf surface used as the oviposition site.

Adult *D. abbreviatus* were obtained from a laboratory colony maintained on artificial diet (Beavers 1983). Newly emerged adults (30 females and 10 males) were transferred to a 76 × 40 × 35 cm wood and screen cage with green beans and water. Sour orange, *Citrus aurantium* L., seedlings in 4 liter pots were maintained outside in full sun during March and April 1995 in Orlando, FL. The trees were sprayed to runoff with Micromite® 25W at 149 and 298 grams a.i./1000 liters with 1% 435-66 Citrus Spray Oil® (v/v) and water for the control trees. The rates represent one and two times the rate recommended for rust mite control. There were 10 trees for each of the 3 treatments. Five pairs of mature leaves were removed at random from each treatment, beginning 17 days after treatment and continuing weekly thereafter. The pairs of leaves were held together with a paper clip to form an oviposition site and the petioles were placed in a 30 ml cup filled with water. The cups were arranged at random in a 24 × 27 cm tray and placed into a cage with adult weevils for oviposition. There were 5 cups per each of the 3 treatments for each week. Leaves were removed after 4 days and each pair placed in a 100 ml vial for egg hatch (about ten days). Neonate larvae were counted for each treatment; the test was terminated after seven weeks. Arcsin square-root transformed data were subjected to ANOVA and means were separated by Student-Newman-Keuls multiple range test.

There were 3027, 1867 and 13,212 neonate larvae recovered from leaves treated with the 1×, 2× rate and control, respectively. This is an average 77% and 86% reduction for all time periods with no significant difference between the two rates ($P < 0.05$) (Fig. 1). Diflubenzuron affects reproduction of *D. abbreviatus*, and it should be used as part of an integrated pest management program. The citrus blue-green weevils, *Pachnaeus opalus* and *P. litus* have a similar life cycle and diflubenzuron may also affect reproduction for these species.

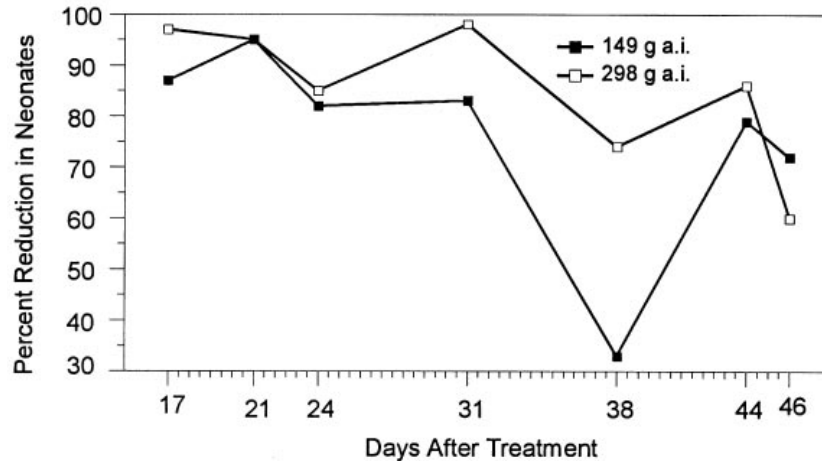


Fig. 1. Percent reduction in *D. abbreviatus* neonates from eggs laid on diflubenzuron treated foliage.

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SUMMARY

The insect growth regulator diflubenzuron (Micromite®) significantly affected the reproductive potential of *D. abbreviatus* for more than a month after application to citrus foliage.

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