

Evaluation of the Effects of Micromite (diflubenzuron) on Forktailed Katydid

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Katydid have become a serious pest of San Joaquin Valley citrus since growers switched from using broad spectrum organophosphate and carbamate insecticides to soft pesticides such as Success for citrus thrips and Esteem for California red scale. For the moment, growers have coped with the katydid problem by tank-mixing small amounts of an organophosphate (Lorsban) or pyrethroid (Danitol, Baythroid) insecticide with their Success thrips treatments. This helps to reduce the spring katydid population but does not completely solve the katydid problem.

The fall katydids are uncontrolled, and egg laying is heavy during that period resulting in heavy emergence of nymphs the following spring. In addition, broad spectrum pesticides such as pyrethroids are hard on springtime natural enemies needed for other pests. Micromite (diflubenzuron, Dimilin) is a recently registered insect growth regulator that appears to have good activity on katydid nymphs and is relatively safe for natural enemies. During 2005 we conducted a detailed greenhouse study to determine the effect of Micromite on eggs, nymphs, and adults.

During spring 2005, Walt Bentley's research group (Kearney Ag Center) collected more than 1,000 1st instar katydid nymphs from a peach orchard in the Ivanhoe area. The nymphs were reared in cages on grape vines in the greenhouse at Kearney and used for the pesticide testing. Grafton-Cardwell's research group treated ½ of the branches of grapefruit trees in a greenhouse with 6.25 oz Micromite and caged groups of five 1st and 2nd instar katydids or five 4th and 5th instar katydids per branch. Mortality was assessed after 3, 7, 10 and 14 days. Mortality of the younger instars did not occur until the katydids molted, about 7-10 days after treatment, but there was 100% mortality of these stages. Mortality of older instars was less than 100% and required 10-14 days, however, the few survivors of the treatment did not mature into the adult stage. These data indicate that Micromite is slow acting, but very effective in killing katydid nymphs, especially younger stages.

In the next set of experiments, adult katydids were allowed to deposit eggs in untreated grapefruit leaves. The leaves were then treated with 6.25 oz Micromite, and egg hatch was observed. There was no significant effect of Micromite on egg hatch. These adult females were then caged on grapefruit leaves that had been treated with Micromite. Micromite did not kill the females nor prevent them from laying eggs. Micromite did have the effect of reducing the hatch of these eggs by about 30%.

Katydid eggs were flagged in November 2004 in a young commercial mandarin orchard in Kern County. Half of the eggs were treated on 8 Dec 2004 with Micromite 80WGS at 6.25 oz/100 gallons field rate using a 1 liter hand-sprayer, and leaves were sprayed until wet. The other half of the eggs were left untreated. Eggs were examined for hatch during Jan-April. During the 31 Mar and 15 April samplings, katydid began to emerge and the eggs hatched just as well from the Micromite treated leaves as the untreated leaves.

We conclude that the best use of Micromite is in the spring, when the majority of nymphs have just emerged. Micromite has no effect on adult katydids or their egg-laying and only slightly affects egg hatch. It should be used prior to petal fall, since it is somewhat slow acting (7-10 days).



2nd instar katydid killed by Micromite as it molts.