

Pome Fruits—Chemical Control

Codling Moth in Pear

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The purposes of this plot were to 1) compare field effectiveness of various organophosphate chemicals and different rates of the pyrethroid Asana; 2) evaluate Asana-*Bt* tank mixes for synergistic effect on CM, and 3) evaluate nonconventional programs including *Bt* and horticultural spray oils in a 3- or 6-spray timing schedule.

The trial was conducted in a 1.5 acre block of 30-year-old Bartlett pear trees. Spray applications were made to 4 single tree replicates and treated to runoff with conventional high pressure handgun equipment. Timing of application for the 3 spray programs was as follows: 1st, biofix plus 250 degree days; 2nd, 28-30 days following the 1st; and 3rd, about 250 degree days following biofix of 2nd generation. Chemical treatments applied 6 times used the above schedule plus an additional application approximately 100 degree days following each of the conventional timings. Evaluation of CM damage was made following predicted egg hatch of the first generation (July 22) and at harvest (August 26). At both times 50 fruit/replicate, 200/treatment, were examined for side or calyx larval entries. Population densities of the twospotted spider mite (TSM) and the pear psylla (PP) were evaluated on 2 occasions, July 11 for PP and August 12 for the TSM, by selecting 20 leaves/rep from each treatment.

Results

Conventional program comparison. The 3 OP chemicals tested, Guthion, Imidan and Lorsban, all provided about equivalent control of the CM as recorded at the end of 1st generation and at harvest. The infestation recorded in these treatments ranged from 1.5-2.5% and was somewhat higher than expected based on similar studies conducted in previous years. Control obtained with Asana was excellent using either the 0.01 or the 0.03 lb rates but decreased in effectiveness when used below label rates (0.0025 and 0.005 lbs ai). Both Guthion and Imidan appeared to stimulate populations of the twospotted spider mite while the higher dosages of Asana provided excellent control. Similarly, the 3 higher Asana rates provided good pear psylla suppression.

Asana-*Bt* combinations. There was no significant difference in CM infestation between treatments containing the low rates of Asana, 0.0025 and 0.005, used alone and these Asana rates used in combination with 0.75 lb formulated Javelin. Thus we could not detect any synergistic effect of this combination as has been reported with some other lepidopterous pests.

Nonconventional programs. In this trial we evaluated Javelin *Bt* and MVP *Bt* in a 3- vs. 6-spray program for CM as well as the horticultural spray oil Orchex 796 in a 3- and 6-application schedule. Evaluation on July 22, after the 1st CM generation, indicated excellent

control with both Javelin or Orhex 796 following either the 2 or 4 sprays that had been applied at that time. At harvest on August 26 codling moth infestation averaged over 20% in both Javelin treatments, and 8%, and 2% in the 3- and 6-oil treatments, respectively. Basically no codling moth suppression was measured in plots receiving the MVP *Bt* treatments. Application of either 3 or 6 Orhex oil sprays also resulted in excellent control of the pear psylla and the twospotted spider mite and no phytotoxicity was observed in these multiple oil plots. Surprisingly, both Javelin and MVP used in the 6-spray program significantly lowered pear psylla densities as measured on July 11 after the first 4 applications.