

Chemical Control/New Products

Codling Moth: Chemical Evaluations

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Several materials with codling moth activity were evaluated during the 1996 season on Bartlett pear. The materials tested were: bifenthrin, CM001, ryania, AC 303,630, and Agrimek. The trials varied in their design utilizing different application methods, spray timings, and plot sizes.

Bifenthrin (Brigade) applied at two rates to four, single-tree replicates with a handgun sprayer provided significantly better control of codling moth at harvest than Guthion in a three spray program. Levels of secondary pests, specifically twospotted spider mite and pear psylla, were generally low. Where bifenthrin was applied the seasonal levels of psylla adults and psylla nymphs were higher than the level in the untreated check but lower than in the Guthion treatment. The only significant difference in the level of beneficials was seen on the initial sample date following the first cover spray when the number of beneficials was higher in the check plot than in the bifenthrin treated plots.

Two formulations of CM001, an insect growth regulator, were applied by speed sprayer, three times, in an unreplicated plot. Both CM001 formulations provided fairly similar levels of control of codling moth but the control was substantially less than was observed in the Guthion treated plot. The same application timings were used for both Guthion and CM001, with the initial spray at 250 degree days after codling moth biofix. However, considering the IGR nature of CM001, an earlier application timing appears to be indicated.

In a 1.2 acre block utilizing mating disruption and oil for control of codling moth, different ryania programs were tested during the first codling moth generation. Plots were 0.1 acre in size, consisting of 75 trees, replicated three times; and the ryania, Ryan 50, was applied with a speed sprayer. The four treatments were: 1) two sprays of ryania with the timing corresponding to first and second cover, 2) first cover spray only, 3) second cover spray only, and 4) no applications. The ryania was applied by itself during the first cover timing but mixed with the third oil application at the second cover timing. The entire block was treated with Guthion at third cover. While there were no significant differences among treatments with respect to codling moth infestation, the level of infestation in the two treatments with the second cover application of ryania was between 25% and 45% less than the level in the two treatments without a second cover application of ryania.

Agrimek and three rates of AC 303,630 were applied once to four single-tree replicates at petal fall for control of pear psylla in the same block where bifenthrin was tested. When codling moth injury was observed after first generation, all treatments showed a significant effect with

Agrimek providing control statistically equivalent to the Guthion treatment.

| Treatment | Rate/acre | Percent codling moth infested fruit | |
|--------------|------------|-------------------------------------|--------------------|
| | | 1 st generation 7/10 | At harvest 8/14 |
| Brigade 10WP | 0.05 lb ai | 0a | 1a |
| Brigade 10WP | 0.1 lb ai | 0.5a | 1a |
| Guthion | 2.5 lb | 1a | 13b |
| Check | -- | 33b | 75c |

| Treatment | Rate/acre | 1 st generation | |
|-----------|-----------|----------------------------|--------------------|
| | | 7/9 | At harvest 8/12 |
| CM001EC | 1600 ml | 2.5 | 11.5 |
| CM001SC | 1600 ml | 2.0 | 9.0 |
| Guthion | 2.5 lb | 0.0 | 2.5 |
| Check | -- | 31.0 | 65.5 |

| Treatment and timing | 1 st generation 7/11 | At harvest 8/13 |
|--|------------------------------------|--------------------|
| No Ryania | 5.3a | 22.0a |
| Ryania 1 st and 2 nd cover | 2.3a | 13.0a |
| Ryania 1 st cover only | 5.7a | 23.3a |
| Ryania 2 nd cover only | 4.7a | 16.3a |

| Treatment | Rate/acre | 1 st generation 7/10 |
|--------------------------|-----------|------------------------------------|
| AC 303,630 | 0.15 lb | 14.5c |
| AC 303,630 with 0.5% oil | 0.15 lb | 12.5c |
| AC 303,630 with 0.5% oil | 0.20 lb | 14.0c |
| AC 303,630 with 0.5% oil | 0.25 lb | 9.5bc |
| Agrimek with 0.25% oil | 16 oz | 4.5ab |
| Guthion | 2.5 lb | 1.0a |
| Check | -- | 33.0b |

Means within a column followed by the same letter are not significantly different (P=0.05 Fisher's Protected LSD). Percentage data were subjected to arcsine transformation for statistical analysis. Nontransformed means are presented for comparison.