

1. Termination Report:

In 2003, initial studies were begun to compare the effectiveness of different insecticides and sprayable pheromones in orchards in western NY that had unacceptable damage from oriental fruit moth larvae. Treatments were compared in 5 orchards: (1) Imidan 70W, 4 lbs/A. (2) Avaunt 30 WDG, 5.0 oz/A. Warrior SCP, 5.0 oz/A. (3) Sprayable formulations of Oriental Fruit Moth pheromone (3M Corporation and SUTERRA) applied at 2.0 oz/A during the first spray and 1.0 oz/A in subsequent, sprays, and (4) Sprayable pheromones applied as in treatment (3), except that Avaunt 5.0 oz/A was also applied as a tank mix in the first two sprays. Initial sprays of all programs including pheromones were applied about 175-200 DD after the second flight of OFM had begun. Then, three subsequent sprays were applied in all of the insecticide plots at 10-14 day intervals. The initial spray in all plots was applied ca. on July 16 and the last sprays were applied during the last week in August. Infestation levels in the weekly fruit samples in all of the treatments in most of the blocks remained below 1 % until the end of August. Damage was higher in almost all of the treatments when fruit was evaluated just before harvest in early October, and this late season injury was presumably due to late season activity of the oriental fruit moth. Even though some infested fruit was observed in most of the treatments, except in the Warrior plots, control was generally commercially acceptable except in one Imidan plot, which had almost 16% damage, and in the plots receiving only early sprayable pheromones on two of the farms. Warrior, was the most effective insecticide treatment, followed by Avaunt, and Imidan. The integrated program of Avaunt and sprayable pheromones was slightly more effective in protecting fruit than the programs using pheromones alone during the early part of the season. Studies were conducted in 2004 to evaluate multi-tactic management programs integrating mating disruption and improved timing of IPM-compatible insecticides in large-scale plots in grower orchards. Three different oriental fruit moth control programs were tested in 10 grower orchards in western NY: Seasonal mating disruption, Optimum chemical control, and a Monitoring program based on fruit sampling and pheromone trap catches. All three programs provided excellent control of fruit damage except in one "high risk" orchard. No late season damage was observed in any of the test plots from during the 2004 growing season. Oriental fruit moth development was later than normal in NY apple orchards during the 2004 growing season, and the Pennsylvania DD model did not accurately predict activity. Mating disruption may eliminate a need for special chemical control sprays against oriental fruit moths except in very high risk orchards. Pheromone monitoring traps can be useful in determining the need and timing for control sprays but additional work is needed to test this concept. Monitoring fruit on trees during the season can accurately detect low levels of damage in time to apply appropriate control sprays, but the technique may be too laborious for consultants or growers to use.

2. Impact

During the last several years, apple growers in western NY have had numerous loads of apples rejected because of infestations of oriental fruit moth larvae. Although most of these growers have been able to control this pest during the last two years, many of them

have reverted to applying sprays on a calendar basis every two weeks throughout the season. They have also used multiple sprays of broad-spectrum materials such as synthetic pyrethroids that are not compatible with integrated pest management programs because they are quite toxic to beneficial insects. If growers in NY continue to use these control tactics it will eliminate the utilization of current IPM systems for control of mites, intensify the proliferation of development of insecticide resistance by populations of oriental fruit moth, and increase growers pest control costs. These studies were begun to attempt to develop more IPM compatible management systems for these pests that will lead to a reduction in unnecessary sprays and utilize other control tactics such as mating disruption that will enhance the possibility of biological control.

3. Publications:

Reissig, H., A. Agnello, and J. Nyrop. 2003. Grower trials for control of internal lepidoptera in western New York. Proceedings 79th Cumberland-Shenandoah Fruit Workers Conference, Winchester, Virginia.

Reissig, H., and D. Combs. 2003. What is this hole in my apple? Insecticide effectiveness against the New York internal lepidoptera complex. Proceedings 79th Cumberland-Shenandoah Fruit Workers Conference, Winchester, Virginia.

Reissig, H., A. Agnello, and J. Nyrop. 2004. Progress in developing more IPM compatible techniques for controlling oriental fruit moths infesting apple orchards in Western New York. P. 4. Western Orchard Pest and Disease Management Conference. Conference Abstracts, 79th Annual Conference, Portland Oregon.

Combs, D., and H. Reissig. 2004. Comparison of different spray schedules for control of oriental fruit moth in New York apples, 2004. P. 17. Western Orchard Pest and Disease Management Conference. Conference Abstracts, 79th Annual Conference, Portland Oregon.

4. Patents:

None