

RAMP 2009 – Progress Report, New York

1. Outputs:

- A full-season Reduced Risk (RR) pest management program was implemented on 5 grower participants' farms, consisting of sampling and monitoring-based decision making together with the use of selective pesticides to control arthropod pests. Pheromone traps were maintained for key insect pest species, fruits and foliage were sampled for infestation by pest and predator insects and mites, and fruits were inspected for disease and insect damage at harvest.
- A predictive Apple pest management website was “beta-tested” by a group of 16 NY apple growers located in all of the major NY apple production areas. At each site, a 10-20 A planting of apples was monitored for crop and pest status throughout the season, and a nearby weather station provided daily temperature data for crop and pest developmental predictions. Degree day (DD) information based on historical records or user-entered biofix data included: start, peak, or progress of the oviposition or egg hatch period; start, peak or end of the pest's 1st, 2nd, etc., flight; first occurrence of adult or larval feeding, foliar or fruit damage, or mines. Insect traps were checked weekly to monitor flights, and weekly fruit inspections starting in July assessed larval feeding damage by leafrollers or internal feeding caterpillars. Insect monitoring results were reported weekly to the grower or consultant for their use in determining appropriate reduced-risk management decisions in the blocks. Web predictions were compared with population trends observed in the field for as many of the pest species as was possible.

2. Outcomes/Impacts:

- The full-season RR program implemented on 3 of the 5 growers' farms gave clean fruit levels of 93.9–97.9%; late-season OBLR accounted for the largest category of insect damage (1.0–1.3%) on two of the farms and rosy apple aphid (1.2%) on the third. Crops on the remaining 2 farms were severely damaged by hail, so a reduced pest management program was implemented in these orchards; overall "clean" (non-insect damaged) fruit ratings were 83.1–87.9%. Late OBLR damage ranged from 0.9–3.8% in these blocks. Smaller amounts of damage in all blocks were caused by tarnished plant bug (0.3–3.4%), and one of the hail-damaged blocks suffered 10.1% apple maggot injury. Where available, fruit grown on the same farms using conventional practices was 91.4–98.9% clean, with damage being caused by tarnished plant bug (0.6% max), and obliquebanded leafroller (0.7% max). Apple scab was problematic in all cases (4.0% max in the RAMP plots; 8.4% max in the Standards).
- General accuracy of the website's prediction of first catches: The observed first trap capture occurred within the period predicted by the website (AM and OBLR, although predicted range was broad) or overlapped the ends of the prediction period (OFM and CM). Main sources of error in the predictions were: 1) traps set out too late for accurate biofix; 2) trap check interval too long to precisely note flight trends; 3) target populations too low to verify predictions' accuracy; 4) some predictions based on limited historical data; 5) insufficient weather station coverage to give representative data.

3. Publications:

Agnello, A. M., A. Atanassov, J. C. Bergh, D. J. Biddinger, L. J. Gut, J. K. Harper, M. J. Haas, H. W. Hogmire, L. A. Hull, L. F. Kime, G. Krawczyk, P. S. McGhee, J. P. Nyrop, W. H. Reissig, P. W. Shearer, R. W. Straub, R. T. Villanueva, and J. J. Walgenbach. 2009.

Reduced-risk pest management programs for eastern U.S. apple and peach orchards: A 4-year regional project. *Am. Entomol.* 55: 184-197.

Agnello, A. 2009. Evaluations of low-labor pheromones for mating disruption of tree fruit pests. Pages 31-33 *In Proc. 2009 Empire State Fruit & Vegetable Expo*, Syracuse, NY.

Agnello, A., and H. Reissig. 2009. Mechanically applied pheromone products for mating disruption of codling moth and oriental fruit moth in apples. *NY Fruit Quarterly* 17: 3-8.

4. Participants:

A) PIs – **W. H. Reissig**, oversaw setup and maintenance of large-plot OBLR trials, including fruit and foliar inspections and (for all main output areas) harvest damage assessments

A. M. Agnello, oversaw setup and maintenance of full-season RR trial and mating disruption trials, including trapping, monitoring/sampling, and (for all main output areas) fruit harvest damage evaluations.

B) Other workers – D. Aguilera, A. Blackburn, J. Mattick, K. Wentworth: provided technical field and lab support, including plot setup, trap maintenance, foliar and fruit sampling, harvest evaluations, data entry.

5. Collaborators: Consultants: J. Eve, Naples, NY; J. Misiti, Lyndonville, NY

Cornell Cooperative Extension: D. Breth, Regional Fruit Specialist, Albion, NY; K. Iungerman, Regional Fruit Specialist, Ballston Spa, NY.

Grower Cooperators: R. Endres, Fruition Farms, Sodus; C. Hance, Hance Fruit Farms, Pultneyville; J. Knight, Knight Fruit Farms, Burnt Hills; M. Maloney, Burnap Fruit Farms, Sodus; D. Oakes, Lyn-Oaken Farms, Lyndonville.

6. Training or professional development: N/A

7. Target Audiences: NY tree-fruit industry, including growers, consultants, Cornell Cooperative Extension, packers, and distributors; crop protectants manufacturers; fruit marketers and consumers

8. Efforts:

Development of an interactive Apple IPM Website that uses local weather data to predict apple crop and pest development and provide users information on the best sampling, monitoring, and reduced-risk pesticide inputs available to make management decisions on their farms.

Improved and updated information and new knowledge was delivered to target audiences through printed and online resources (university guidelines, newsletters, trade journal articles, web-based decision support products), grower fruit schools, field day presentations and twilight meetings, and personal consultation and farm visits.