Utah State University Extension
Integrated Pest Management
Mini-Grant Report
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Optimal Codling Moth Control in Cache County Orchards Through Insect Trapping and Utilization of a Degree Day Model for Pesticide Application

Project leaders and producers:
Loralie Cox, USU Horticulturist, Cache County
Diane Alston, Extension Entomologist Specialist
Shawn Steffan, IPM Project Leader
Mark Ashcroft, Producer
Alvin Hamson, Producer
John Schoonmaker, Producer
Mervin Weeks, Producer
Richard Wiedeman, Producer
Ron Zollinger, Producer

The objectives for this IPM project were to monitor diverse orchard sites in Cache Valley for Codling Moth, collect temperature data from the sites and apply it to a degree-day model to identify optimal pesticide application, and educate producers and homeowners of the benefits of an IPM strategy to control fruit tree insects.
Producers in the valley participating in the study last year were willing to take part this year as well. Through grant money, I was able to purchase max/min thermometers, sticky traps, and pheromone for codling moth; as well as pay someone to travel to each of the participating orchards to collect weekly temperature data.
On February 28, 2003 most producers met at the Extension office with Diane Alston and myself for a preliminary meeting. We reviewed the process that we followed the previous year and Diane talked with the producers about any changes with current pesticide products and use.
The producers took this opportunity in meeting with each other to share experiences and challenges that most face with new regulations for bottling apple juice. Four of the producers extract juice from the apples they grow.
Supplies were distributed to the producers at the meeting with instruction to place the traps in the orchard and begin taking temperature readings beginning the end of April. Orchards in North Logan had traps out and began catching moths on April 26 and May 2. Locations in the south end of the valley had biofix dates from May 12 to 14.

Sheets to record weather data were supplied to the producers with columns for the date, moth counts, high and low temperatures, and spray dates. Jim Petersen, Master Gardener, collected data from Ron Zollinger's orchard and routinely brought the information into the Extension office. Mark Ashcroft, hired to collect data sheets from orchards, brought them in weekly. The data was then put on a spread sheet and degree days were computed using the graph provided by Diane. Shawn Steffan, IPM project leader, also collected

data from John Schoonmaker's orchard and applied it to the computer model for comparison.

The first application of pesticides is applied when 250 days have elapsed following bio-fix. About ten days before the anticipated date, I included the first cover spray date in my bi-weekly newspaper article and relayed the date to Master Gardeners and secretaries in the Extension office answering phone calls. Home owners with access to email were placed on a list and were notified of the first spray date. Shawn collected data from John Schoonmaker and included his projected spray dates on the state IPM internet site. Spray date for the second cover spray was distributed the same way.

Producers continued to collect temperature data and watch the moth traps to observe the number of insects in the orchard through the end of July. Late spring frosts had a significant impact on the apple crop. Rich Wiedman and Merv Weeks lost all of their apples in Paradise. Ron Zollinger, River Heights, had about 5% of normal. Mark Ashcroft in Hyde Park lost all of his apples, but continued to monitor trees in his father's yard. John Schoonmaker estimated his crop at 25-30% of normal, and Alvin Hamsen harvested about 40 bushels when in a normal year he harvests from 5,000 to 6,000 bushels.

Producers across the valley had a poor yield, however, in selected sites in the county, homeowners harvested from trees filled with apples. Homeowners brought a number of apples affected with bitter pit, a calcium deficiency related to water practices, into the office for diagnosis. The majority of homeowners have fruit trees planted in lawn and assume lawn water supplies the needs of trees. The extended drought has had an adverse affect on many valley trees.

I anticipate producing a one-page fact sheet this winter, primarily for novice gardeners who want to treat apple and pear trees for codling moth. Ideally, this project will continue indefinitely with as many producers participating as possible. The accumulated data will help us identify a target date for both the first and second cover sprays for codling moth in different areas of the valley.

This year the information for codling moth control was shared with the public through the newspaper, phone calls to the Extension office, the diagnostic clinic at the Gardener's Market on Saturday mornings, and through public speaking assignments. The Master Gardener training beginning in the fall also covered the subject of fruit tree pests and an abbreviated version of how it can be accomplished by monitoring temperature and trapping.

Accumulating several months of temperature data, establishing a bench mark of pesticide application by local producers for codling moth, and continuing lines of communication between producers and myself would be the major accomplishments of the project for this year.

Grower Bio-fix (2002)(2003) Pesticide applications (2002) (2003)
Ashcroft 5-17 5-17 None applied None
Hamson 5-14 5-2 5-7 Guthion & Procure
7-1 Guthion
7-25 Guthion

8-16 Guthion
Schoonmaker 5-15 4-26 6-11 Guthion 5-29 Imidan/Bayleton
7-10 Diazinon/Guthion 6-19 Imidan/diazinon 8-8 Guthion 7-22 Imidan Weeks 5-17 5-13
None applied None Weidman 5-15 5-14 6-8 Guthion None
7-12 Imidan
8-12 Guthion Zollinger 5-17 5-12 Not reported 5-27 None