

**Utah State University Extension
Integrated Pest Management
Mini-Grant Proposal 2004**

**Optimal Codling Moth Control in Cache County
Orchards Through Insect Trapping and
Utilization of a Degree Day Model
for Pesticide Application**

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Title: Optimal Codling Moth Control in Cache County Orchards Through Insect Trapping and Utilization of a Degree Day Model for Pesticide Application

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Situation Statement

The objectives for the 2003 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 codling moth in apple trees.

Climatic extremes in Cache Valley during the winter of 2002 and late spring frosts in 2003 significantly reduced the amount of apples in county orchards the past two years. However, pheromone traps were in place in orchards by mid-April, 2003 to ensure an accurate bio-fix date from each orchard. Growers began reporting moth catch in North Logan by April 24 with the last producer catching moths on May 17 in Hyde Park.

The bio-fix date is important in applying the degree-day model for pesticide application. The first pesticide application date is applied when 250 days have elapsed since the bio-fix. About a week before the projected cover spray date, May 28-30, I shared the information with the producers by phone or personal contact. The information was also relayed to the public through the media, and left with the secretaries in the Extension office for those who called in. I compiled a list of people who are interested in the spray date and e-mailed the projected spray date to them as well.

The bio-fix date varied from orchard to orchard by about three weeks, but the projected cover spray date was within two days across the valley. Although insects are caught over a fairly wide range of time, the pesticide application date is within a close range. I would like to continue to monitor the advent of the insect and continue to collect temperature data another season to make sure this information is indicative of a normal year.

Collecting the data is the initial part of this study, but the other important issue is distributing the spray dates to the public. The past summer the information for codling moth control was shared with the public through the newspaper, phone calls to the Extension office, the diagnostic clinic, 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. A short, two-page fact sheet on codling moth and it=s control was also produced as a quick resource for both nursery personnel and homeowners.

Objectives

- < Monitor representative orchard sites in the valley, ensuring diverse climatic conditions across the valley, for the advent of Codling Moth.
- < Collect climatic data from orchard sites to use in the insect model to predict optimal pesticide application timing.
- < Educate producers and homeowners of the environmental and economic benefits of an Integrated Pest Management strategy to control insect populations through a variety of media sources, including a new publication, Garden Utah!

Procedures

The USU Extension Horticulturist, Cache County, has been contacted by several of the commercial producers in the county who wish to continue with monitoring insect populations, giving them the information necessary to make timely pesticide applications according to predictions derived from the degree day model. Pheromone traps for Codling Moth will be provided by Extension to the producers. A training session will be held prior to the growing season for cooperators and Master Gardener volunteers participating in the project. Codling moth control, information about chemicals available

for use, as well as any other immediate concerns growers have with insects and disease control may be discussed.

This training will include specific instructions of how the producers are to collect the data, as well as the theory behind the procedure. Information about the degree day model, an explanation of how it works, and a demonstration of timing pesticide application in relationship to the codling moth flight will help participants understand the theory behind the practice. Data from the past two years will be presented and discussed. Producers and Master Gardener volunteers will be responsible for checking traps and thermometers and subsequently reporting findings to the Extension Horticulturist, or the data will be collected by an assistant.

With data applied to the degree day model, pesticide applications for different sites in the valley will be provided to cooperating producers. In addition, pesticide application dates will be provided to homeowners and commercial pesticide applicators throughout the valley via personal contact, the newspaper, Master Gardeners who answer gardening questions directed to the Extension office, and a new publication, Garden Utah!, that will be distributed through the nursery and garden centers along the Wasatch Front and Cache Valley. Maggie Wolf and myself are collaborating on this publication as a way to communicate current horticulture issues, as well as class and activity dates. We anticipate using the April/May issue to highlight IPM practices and regional information, which would include pesticide information for Codling Moth.

Currently fact sheets are available through the extension office and on the extension website which detail the process of insect control using degree day modeling. Cache Valley growers will have the opportunity to apply specific information derived from this study for representative sites in the county. Over a period of time, the data and information derived from this study will become part of a county data base to assist producers, homeowners, commercial pesticide applicators, and Master Gardener volunteers.

Trained Master Gardeners are instrumental in disseminating research information directly to the public through phone calls to the extension office, the weekly Cache Valley Gardeners Market, personal contacts, and public speaking assignments. The information derived from this study will become part of the Master Gardener education classes and advanced Master Gardener training each year in Cache County. A single page describing the insect and management through pesticide applications is complete and available to the public from the Extension office and on-line. A portion of a class presented in Master Gardener training will consist of a discussion of the degree day model, how it is used to predict optimal spray application timing for the control of codling moth, and the resulting environmental benefits to the public.

Budget

Pheromone traps (codling moth) \$ 87.50 (25 @ 3.50 each)

Wages - assistant \$ 400.00

Travel \$ 200.00

Training session \$ 50.00

April/May issue of Garden Utah! \$ 1050.00 (8,000 copies)

Total \$ 1787.50