

Site-Specific Apple Insect Control Through a Web-Based Application

Final Report for FNC06-636

Project Type: Farmer/Rancher

Funds awarded in 2006: \$12,678.00

Projected End Date: 12/31/2008

Region: North Central

State: Missouri

Project Coordinator:

[Dan Kelly](#)

Blue Heron Orchard

Project Information

Summary:

PROJECT BACKGROUND

Blue Heron Orchard (BHO) is a twenty-six acre farm with a five acre apple orchard. It is the first certified organic orchard in the state of Missouri. BHO has received two other sustainable grant awards. The first one (1997) with SARE was to establish a prairie adjacent to the apple orchard that gets burned periodically to help control the apple insect pest plum curculio. The second grant (2001) from the Missouri Department of Agriculture for building an apple storage building from sustainable/local materials. The first practice has been used on three occasions and the second is currently in use as long as there are apples.

PROJECT DESCRIPTION

The project is to develop a site-specific apple insect monitoring system that uses established insect models and collected temperature data to predict critical control points for apple pests and to alert the grower to take an action.

Process: Much of the planning consisted of researching insect models. These insect models describe the life cycle of various orchard pests. The models are based on the pest's phenology. A phenology tracks the development of the various stages of insect development over time in relationship to temperature.

PEOPLE

- Chad Knepp is the computer programmer for the project. Chad was given all the parameters of the project and put them into a computer program. Chad also maintains the site for users and it is free for users.
- Leemer Cernohlavek researched the background for the instruments used in the project, constructed devices for housing the monitoring equipment and provided data from multiple devices to test the programming.
- Maury Wills provided an alternative data gathering location.

RESULTS

The primary goal was to develop an affordable computer program that takes into

consideration all of the aspects of what is described above in the Project Description. All insects have unique phenological conditions for development and one major orchard pest in particular, a codling moth, has the added feature of the mating flight occurring above an established temperature at sunset (a specific time for any point on earth) and is a good example of what makes this program “site-specific”.

DISCUSSION

Taking on this project forced me to a deeper understanding of insect life in my orchard and how these phenological models work. Translating the concept to a computer programmer for orchardists to understand took the challenge to a much higher level. A great hurdle was to explain the concept to an uninitiated group. Through persistence and repeating the phenology concept to my cooperators I did refine my explanation of the required terms necessary to create the application. To anyone serious about environmentally sound pest control in the orchard and understanding the theory to make it happen, I would recommend these books: Common Tree Fruit Pests by Angus H. Howitt, Mid-Atlantic Orchard Monitoring Guide edited by Henry W. Hogmire, Orchard Pest Management edited by Elizabeth H. Beers et al, and A Pocket Guide for IPM Scouting in Michigan Apples edited by David Epstein et al. These were instrumental in the development of the application.

OUTREACH

- February 2008 Advanced Growers Retreat in Trempeleau, Wisconsin organized by the Midwest Organic Tree Fruit Growers Network and sponsored by RMA (Risk Management Agency). Twenty-five apple producers discussed wide-ranging topics that included an explanation of the development of the ‘site-specific’ grant.
- November 2008 National Small Farm Trade Show & Conference in Columbia, Missouri. A Power Point presentation of the project delivered to approximately forty people in ‘Farmers Forum’ an event coordinated by NCR-SARE with the support of the Missouri Department of Agriculture, Truman State University, and the University of Missouri Extension.
- A web page is currently in construction to make the program more user friendly and links will be posted to various and related websites when complete. [ssaim.galatea.org] This is the site currently available for downloading the program. It is still in a ‘raw’ stage but working.

Research

Participation Summary

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture or SARE.



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