

BIOAG PROJECT – FINAL REPORT

TITLE: Creation of a Web-Based Training Course to Promote Biological Control (Module 1)

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ABSTRACT

This project aims to stabilize and enhance conservation biological control of pests in tree fruit orchards. The adoption of organophosphate-alternative pesticides has destabilized the biological controls for pests in integrated pest management (IPM) programs, many of which were taken for granted under organophosphate-dominated management regimes. Pest management decision makers need a better understanding of how biological control functions and how natural enemies are negatively impacted in pest management programs relying in order to conserve natural enemies in orchards and, thus, enhance biological control of secondary pests. To potentially reach all pest management decision makers of Washington State, we began to convert the materials of a successful hands-on workshop into an online course. This project provided resources to finish the development and implementation of the first of two modules of the online course. The first module focuses on concepts of biological control, the biology and impact of common natural enemies in orchards, and exercises to sharpen identification skills of key natural enemies. Stakeholders can take the online course at a time of their choosing and receive pesticide recertification credits upon the completion of the course.

PROJECT DESCRIPTION

This project is an extension of a SCRI grant project (“Enhancing Biological Control in Western Orchard Systems”), which generated knowledge and content for outreach, and a Specialty Crop Block Grant (SCBG) project, which continued the extension activities that were started in the SCRI project. The SCBG project laid the foundation for the educational online course development.

The online course is divided into two modules. Module 1, “Introduction to Biological Control Concepts”, covers the concepts of biological control, details the biology and life cycles of important natural enemies in orchards, and activities to sharpen identification skills of natural enemies. Module 2 focuses on the importance of new knowledge on monitoring for natural enemies, how phenology models can be used to predict when they should be present in orchards and the effects of pesticides on natural enemies. This module ends with a case study that applies many of the new principles learned. Both modules include a self-assessment quizzes and a means for obtaining pesticide recertification credits. The proposed project will complete development and implementation of the first module of the online course.

This course will provide free access to growers, orchard managers, and crop consultants on the role and value of biocontrol in tree fruit orchards at their convenience. The interactive online course will enhance the ability of new trainees and trainers to impact others in their organization or their peers. In addition, this online course would provide a benefit to specialty crops other than tree fruits, as many of the natural enemies can be found in other crops. While the interactive online course is geared towards WA orchard pest managers, it will also be accessible to and can be of general interest for students and the public.

OUTPUTS

- **Overview of Work Completed and in Progress:**

Module 1 is divided into three parts: the introduction (already completed), key natural enemies in orchards (split into predators and parasitoids), and exercise for identification of key natural enemies. All materials for the second and third sections have been compiled, including the storyboard, images, video and narration files, and were sent to the WSU Global Campus team. The section about the parasitoids has been completed and reviewed. It needs minor edits that are being currently implemented. This is by far the most complex component of the online course, and Global Campus is still in the process of converting the materials into an online course format. Their availability to work on this course is determining the timeline from this point on. We estimate that the course will be complete by the end of 2017.

We made arrangements with WSU Extension to manage certification for pesticide credits through the WSU Urban IPM and Pesticide Safety Education Program. While the online course itself will be hosted as open access on our WSU-Decision Aid System server (and linked to the WSU Tree Fruit Extension Program website), users will need to purchase access to the credit exams for a small fee. This fee is necessary in order to reimburse the WSU Urban IPM and Pesticide Safety Education Program for their time to manage the credits. Furthermore, a part of the fees collected will flow back to the Tree Fruit Extension Program for future updates of the online course. The WSU Urban IPM and Pesticide Safety Education Program is a natural fit for taking care of the pesticide credits associated with our online course. They are already setup with an online system for user registration and shopping cart for their own online courses. They also agreed to annually renew the credits with the WSDA.

The remaining steps for this project are:

- Review drafts of the predator and ID activity sections made by WSU Global Campus team until entire module is converted and functions as desired.
 - Create downloadable handout for online course sections.
 - Launch interactive online course Module 1 on WSU-Decision Aid Systems website.
 - Get approval from WSDA for pesticide recertification credits.
 - Promote course at grower meetings in fall and winter 2017/2018.
 - Monitor course use, self-assessment and test answers, and number of issued credit certifications.
- **Publications, Handouts, Other Text & Web Products:**

As the course is not completed yet, we have no publication or web product to present yet. However, a first sneak peek at the first versions of some of the course sections can be had here:

http://das.wsu.edu/ebc_courses/

(MONITORING and NE MODELS are sections of Module 2. Keep in mind that image credits still need to be included, some parts will change until the final version, and the Introduction may not work with some browsers).

IMPACTS

The online course has not been published yet. Therefore, we cannot report on any impacts yet. The expected impacts of the online course are:

- short-term: users enhance their knowledge of biological control in general and in particular about common natural enemies in orchards; users can earn pesticide recertification credits as part of their pesticide license requirements.
- intermediate-term (5-10 years): increased awareness of and monitoring for natural enemies in their orchards, leading to more reliance on biological control of secondary pests and, thus, reduced use of pesticides, or increased use of more selective pesticides.
- long-term: economic and environmental benefits by reducing the number pesticide applications potential negative impacts on farm workers, the public, export markets, and the environment.

ADDITIONAL FUNDING APPLIED FOR / SECURED:

We secured funding (\$26,580) from a Western IPM grant to complete module 2 of the online course and have been working on the second module since March 2016. Module 2 is near completion.

In addition, WSU Extension is supporting the online course development by providing resources to the WSU Global Campus team with expertise to transform the content our team assembles and our team's vision into an interactive online course.

GRADUATE STUDENTS FUNDED: No graduate students are funded through this project.

RECOMMENDATIONS FOR FUTURE RESEARCH: None at this point in time.

Many thanks go to Wendy Jones, who has been a great help getting course materials ready, and to Wendy Steele from WSU Global Campus for her and her team's work to convert the course materials into an online course.