

Western IPM Center Project Report Form

How to submit: Please submit this completed form electronically, as an attached Microsoft Word file, to Jane Thomas at jmthomas@tricity.wsu.edu. If you have questions, contact Linda Herbst, (530) 752-7010. **Content:** Complete each section below, and include responses to as many of the questions listed in Attachment A as are relevant to your project. *These are guidelines.* Provide your readers with enough detail that someone who is not familiar with your project can understand what you were trying to achieve, how you went about it, and what you accomplished, but please keep it concise.

A. Report Data

Date: 3/22/10

Reporting Period:

Report Type (please check one):

Progress Report Final Report

B. Grant Data

- Grant Agreement #: 07-001491-CA
- Title: Snails and Slug Management in Ornamental Production - Research Priority Setting
- Grant Type:
- Lead investigator:
 - Name: Cheryl Wilen
 - Title: Area IPM Advisor
 - Institution: University of California, Statewide IPM Program
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- Team members (name, title, institution): See attached
- State(s) involved: See attached

C. Nontechnical Summary. An overview of the project, briefly outlining the problem(s), how your project addresses them, and your results, *written to a lay audience*. (500 words)

Thirty-seven researchers, growers, regulatory agency representatives, and industry professionals primarily from the western U.S. and Hawai'i met on March 26, 2009 in Portland, Oregon to discuss research priorities, coordination of research and outreach, and future plans for managing snails and slugs in ornamental crop production. Discussion and presentations focused not only on the damage caused by these pests but the economic loss of commodities due to finds in shipping products as well as impacts of potential new pests that may enter the western states and U.S. Pacific Islands. Researchable topics of importance regarding control included efficacy on specific species; appropriate use patterns for eggs, neonates, and adults; use patterns related to formulations, and biocontrol. General research priorities were developing information about the pests and their impacts including biology/life cycle, scouting/monitoring/thresholds, surveys to determine species range, and the economic impacts of snails and slugs. The most important issue the group agreed upon was the need for additional identification and taxonomic support. There is only one USDA systematist and his main charge from USDA is to ID snails/slugs from foreign sources. There is no one assigned to do identification of snails found domestically. The National Plant Diagnostic Network lab needs support for for immediate triage such as a visual guide for risky species.

D. Objectives and Progress. List your objectives and describe your progress for each objective.

Despite the potential and realized economic and ecological costs attributed to terrestrial snails and slugs, research in the biology and management of these mollusks is conducted by few scientists generally located distant from each other in the Western U.S. Therefore, the primary objective of this proposal was to convene a workgroup to discuss current projects and priorities for future research and outreach. The workgroup was convened on March 26, 2009 immediately following the 2009 International IPM Symposium held in Portland OR. Thirty-seven researchers, growers, regulatory agency representatives, and industry professionals primarily from the western U.S. and Hawai'i met. Presentations were made from researchers in western states regarding snail and slug issues, species, and research updates. State regulatory representatives reported on new finds and their potential impact to the ornamental industry and state environment if not detected. Representatives from commercial nurseries presented information on local situations and chemical manufacturers reported on the status of new or older products.

E. Outputs. List your project's outputs, which might include publications, information, data, meetings held, attendance at meetings held, etc.

-One meeting was held which included 37 researchers, growers, regulatory agency representatives, and industry professionals primarily from the western U.S. and Hawai'i. The meeting was held on March 26, 2009 in Portland, Oregon. The outcome of that meeting was a summary report on research priorities and other needs to facilitate coordination of research and outreach, and includes future plans for managing snails and slugs in ornamentals. The report, which includes the attendees, is attached.

-The Snail and Slug Pest Note published by UC Statewide IPM Program was revised and updated to reflect the information presented at the meeting (<http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7427.html>)

-A Facebook group, Snail and Slug Research and Extension, was created to facilitate communication among interested parties (<http://www.facebook.com/group.php?gid=210518445194>).

F. Impacts and Potential Impacts. The "impacts" and "potential impacts" sections of your report will help the Western IPM Center highlight the value of IPM research and education by detailing the real-world impacts of Center-funded projects. We will use the information in news articles, reports, and informational brochures to showcase the impacts of projects that our program supports. *See Attachment A at end of form for questions to assist you in describing the impacts of your project.*

1. Impacts. Describe any impacts of your work. *Impacts* are specific changes in condition for those affected by your work. Impacts include adoption of technology, creation of jobs, reduced cost to the

consumer, less pesticide exposure to farmers, access to more nutritious food, and a cleaner environment and healthier communities.

Innovations to IPM

As a result of this workgroup, three members collaborated on a proposal to examine plant oils as a method of killing snail and slug eggs as a novel method to reduce populations as well as a potential shipping protocol treatment to reduce the spread of the organisms.

A proposal was submitted the USDA for funding research and education on snail and slug biology and control. This was submitted as national project with both basic and applied research components as well as extension and graduate education sections.

Safeguarding human health and environment

Research was funded to test lower a.i. and reduced risk molluscicides which will result in label expansion for growers to use the products as well as reduce the amount of pesticide introduced into the environment.

Increased the knowledge of researchers outside of the Pacific Islands about the vectors of rat-lung disease and importance of good identification methods.

2. Potential impacts. Describe your project's potential impacts. *Potential impacts* are the ways that your project's outputs could directly lead to changes in condition that will unfold in the future.

Researchers should be able to leverage additional funding to as a result of the information reported at the meeting and priorities set by the workgroup. Additionally, researchers now have new professional connections which will help with partnerships and collaborative projects.

As more members choose to use the Facebook page as method sharing information, we expect that there will be more awareness of future meetings, potential collaborators, updates of local situations.

The attached summary report has been requested by APHIS Invertebrate and Biological Control Programs, PPQ, Emergency and Domestic Programs to supplement their information about the impact of invasive species. We expect that this report will also be used by other groups as summary of the mollusk issues facing ornamental plant growers and regulators.

We hope that by submitting this report the USDA will strongly consider supplementing personnel to help with terrestrial mollusk identification both domestically and from international shipments.

G. Leveraged Funds. List *additional funding* you have acquired because of the data and results yielded in this WIPMC-funded project.

Additional Funding Award #1:

Date of Award: 7/09

Dollar Amount: \$4000

Grant Period Duration: ends July 2010

Name of Granting Entity: USDA

Name of Grant Program: IR4 ornamentals

Additional Funding Award #2:

Date of Award: 1/10

Dollar Amount: \$13,758

Grant Period Duration: 1 year

Name of Granting Entity: Oregon Asso. Nurseries and Oregon Department of Agriculture

Name of Grant Program:

Additional Funding Award #3:

Date of Award: 12/4/09

Dollar Amount: \$70,000

Grant Period Duration: 2 years

Name of Granting Entity: USDA

Name of Grant Program: WIPMC

H. Appendices

1. With your report, please attach *at least two (2) photographs* that illustrate your project. Please describe the photo and indicate the name and institution of the person who took the photo. (If you submit more than two photographs, please include those additional descriptions and photo credits under "I. Additional Information," below.)

Photo #1 description:

Two young brown garden snails (*Cornu aspersum*) feeding damage on *Alstroemeria* foliage

Photo #1 credit (photographer's name and institution):

Jack Kelly Clark, UC Statewide IPM Program

Photo #2 description:

Cuban slug (*Veronicella cubensis*), one of the many vectors of rat-lung disease

Photo #2 credit (photographer's name and institution):

Rory Mc Donnell, UC Riverside

2. Also attach any printed fact sheets or other publications resulting from your work that will enhance our understanding of your project and its impacts. Please provide a description of each attached publication below.

Document #1 description:

Summary report from Research Priority Setting Meeting

Document #2 description:

Snail and Slug Pest Note - primarily for non-professionals but information obtained at the workgroup meeting led to a substantial revision of the document.

Document #3 description:

I. Additional Information

Credit: Some of the language about impacts and potential impacts was adapted from a PowerPoint presentation by H. Michael Harrington, Executive Director, Western Association of Agricultural Experiment Station Directors, Colorado State University.

Attachment A

Questions to Help in Reporting Impacts and Potential Impacts

Below are some questions that will guide you in assessing and then describing the impacts and potential impacts of your project. The relevance of each question may vary depending on whether yours is a research or extension project. Please answer as many as you can to the best of your ability, and feel free to describe any additional types of impacts not mentioned below. Remember to identify any potential impacts.

1. Innovations in IPM:

Are there new IPM practices that have been (impacts) or could be (potential impacts) adopted as a direct result of your project? What is the total number of acres (or homes, schools, greenhouses, nurseries) on which these practices could realistically be implemented?

2. Safeguarding human health and the environment:

- a. Has the project reduced risk (or could it potentially do so) by changing the use of pesticides on farms, in homes, in schools, etc.? For example, could it result in fewer sprays per season or a switch to lower-risk pesticides? If possible, quantify the changes in condition. (Since there is no unanimous definition of *high* and *low risk*, investigators selecting this indicator are asked to categorize the pesticides they are reporting on as *high* or *low risk* according to the particular situation [e.g., lower risk to natural enemies]).
- b. Are there any other impacts or potential impacts on human health or the environment as a result of your project?

3. Economic benefits:

- a. What is (or could be) the economic benefit (e.g., dollars saved) for clientele who adopt IPM strategies and systems you studied? Do you envision potential commercialization or mass production of these systems?
- b. How many clients are satisfied with IPM results (such as improved yield, improved quality of yield, reduced pest populations, more effective pest control, greater preservation of nonpest species)?
- c. Are there other financial benefits that might be realized (potential impact) as a result of your project?

4. Implementation of IPM:

- a. How many IPM strategies and systems have been validated through this project (e.g., through on-farm trials, large plot tests, or other methods used to confirm efficacy)?
 - b. How many educational materials were delivered? To whom? And what are the impacts or potential impacts?
 - c. What is the number of growers/personnel trained? And what are the impacts or potential impacts?
 - d. For a Web site, what volume of traffic and type of use has the site experienced? (For example, number of visitors per day or month; number of page views; number of unique user sessions; change in volume during growing season; average viewing time.) And what are the impacts or potential impacts?
 - e. How many more people adopted IPM practices as a direct result of your project, or how many people adopted new IPM practices?
 - f. Are there other ways in which your work will result in improved use or increased implementation of IPM strategies in your region or across the West?
5. Has your project or study increased collaboration among stakeholders interested in the development and implementation of improved IPM strategies and systems?