

## Western Regional IPM Grants Annual Progress Report Guidelines

Due October 15, 2008

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INSTRUCTIONS: PLEASE PROVIDE ONLY THE ESSENTIAL COMPONENTS OF ACCOMPLISHMENT WHICH ARE:

1. A CLEAR IDENTIFICATION OF THE PROBLEM/ISSUE ADDRESSED BY THE RESEARCH/EXTENSION.
2. A CONCISE EXPLANATION OF HOW THE RESEARCH/EXTENSION ACHIEVEMENT CONTRIBUTED TO THE SOLUTION OF THE PROBLEM/ISSUE BEING RESEARCHED.
3. THE IDENTIFICATION OF OTHER BENEFITS RESULTING FROM THE RESEARCH/EXTENSION, EVEN IF UNPLANNED.
4. **PLEASE ATTACH A SUMMARY OF THE PAST YEARS PROGRESS, ONE PAGE MINIMUM.**

PROJECT NUMBER: 2007-03626

PROJECT TITLE:

Integrated Pest Management to Reduce Vole Damage to Crops

LEAD PRINCIPAL INVESTIGATOR: Dr. Jennifer Gervais

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CO-PIs or OTHER KEY PERSONNEL, and their INSTITUTIONS or AFFILIATIONS:

Dr. William C. Young III. Department of Crop and Soil Sciences, Oregon State University

WHO MAY WE CONTACT FOR ADDITIONAL INFORMATION IF NOT THE LEAD PI?

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THE PROBLEM, ISSUE, OR REASON FOR PURSUING THIS RESEARCH/  
EXTENSION PROJECT.

Gray-tailed voles are an endemic species in the Willamette Valley of western Oregon. They are also significant crop pests in years in which populations reach high densities. The last population peak caused an estimated \$35 million dollars of damage to the grass seed industry, and an additional \$4-6 million dollars to orchards and nursery crops. Currently, control relies primarily on the surface broadcast of zinc phosphide bait in grass seed fields.

This is conducted under special local needs pesticide labels and has been controversial because of the accidental poisoning of non-target wildlife, particularly migratory geese. Currently, the use of zinc phosphide bait is severely restricted in an attempt to reduce the risk to geese in particular. Research on vole population dynamics in Europe suggests that although predators cannot prevent a vole population spike, if they have access to the population while it is still relatively low, they may reduce the magnitude of the vole peak population density and increase the interval of time between population peaks. In western Oregon, changes in the landscape have eliminated most of the large trees with hollows and

old barns that once provided nesting habitat for a major predator of voles, the barn owl. This research project is designed to test the hypothesis that barn owls can be recruited into grass seed crop areas by providing them with nest sites and perches if needed, and that recruiting owls into agricultural areas will lead to measurable decreases in vole populations in grass seed fields. The study has also been designed to explore what criteria barn owls might use in nest site selection.

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**THE SINGLE MOST IMPORTANT ACCOMPLISHMENT OR BENEFIT RESULTING FROM THIS RESEARCH/EXTENSION PROJECT.**

Understanding the extent to which natural predation may assist growers in controlling an intermittent but serious crop pest will help guide management decisions in terms of which strategies to pursue, particularly when possible actions may be in conflict with each other or incur costs to farming operations.

**BRIEFLY DESCRIBE ADDITIONAL BENEFITS, SUCH AS:**

**SOCIAL BENEFITS -**

Wildlife is valued by the public at large, and also by most landowners and farmers. Encouraging the presence of raptors in agricultural areas by enhancing their habitat provides greater opportunities for people to observe them. Many landowners also care about wildlife conservation, and providing habitat enhancements allows landowners to participate in conservation on their own property.

**ECONOMIC BENEFITS -**

Broadcast baiting with rodenticides requires purchase of the bait and the costs associated with a field operation. As fuel prices generally rise, such control strategies become more expensive. In addition, due to the expense of baiting and the limitations on pesticide labels, such control strategies are typically implemented only after voles have reached densities that are causing damage to crops. Providing raptors, especially barn owls, with nest sites and perches is relatively inexpensive, and may provide enough pressure on vole populations to alleviate the need for much more expensive direct management intervention.

**ENVIRONMENTAL BENEFITS -**

Rodenticide baits are well-known for the risks they pose to non-target wildlife. Zinc phosphide use in the Willamette Valley has been linked to mortality in wild migratory geese in particular. Placing bait in burrows greatly reduces primary poisoning risks, but many growers feel that they cannot afford to pay crews to hand-bait vole burrows. Anticoagulant rodenticides have been suggested for special local needs registration, but these also pose substantial risks to wildlife, particularly raptors. Recruiting natural predators may

substantially reduce the need for these pesticides.

OTHER -

As of October 2008, 80 barn owl boxes were installed in 14 fields, roughly divided between the region of Shedd and Coburg, Oregon. The last of the boxes were installed in September. As of this date, none of the boxes showed signs of occupancy. It is expected that young owls seeking breeding territories through the fall will recruit into these sites as regional vole populations begin to increase.

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PLEASE SUBMIT A HIGH RESOLUTION DIGITAL IMAGE REPRESENTATIVE OF YOUR RESEARCH/EXTENSION PROJECT THAT WE CAN USE IN WESTERN IPM CENTER PUBLICATIONS WHICH MENTION YOUR PROJECT.

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When you have completed this form, return to

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THIS FORM WAS COMPLETED BY:

Jennifer Gervais, Principal Investigator  
(Name and Title)