



The Pennsylvania
**INTEGRATED PEST
MANAGEMENT PROGRAM**



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Penn State Collaborations Help PA Growers

UNIVERSITY PARK, Pa. – Penn State is working collaboratively with state and federal agencies to ensure Pennsylvania crops such as apples and peaches are of the highest quality while reducing the use of pesticides and their impacts on the environment.

According to Dr. David Biddinger, biological control specialist at Penn State's Fruit Research and Extension Center in Biglerville, Pa., the center conducts research to help growers adopt more ecologically-based integrated pest management (IPM) programs that include scouting, biocontrol, weather and pest forecasting as well as resistant variety selection.

IPM aims to manage pests -- such as insects, diseases, weeds and animals -- by combining physical, biological and chemical tactics that are safe, profitable and environmentally compatible. An important component of the IPM system is the use of more selective "reduced risk" pesticides in their orchards. "We hope this project will lead to widespread adoption of IPM practices and will lead to more stable agroecosystems," Biddinger says.

Fruit growers are under increasing pressure from consumer advocacy groups to eliminate the use of potentially unsafe neurotoxic insecticides such as organophosphates and carbamates. The Food Quality Protection Act (FQPA) of 1996 requires the phasing out of some pesticides on certain crops to protect infants and children who are especially at risk to many toxic active ingredients in pesticides because of their smaller size and developing bodies. "There are a number of reduced-risk replacement insecticides for organophosphates and carbamates, but many growers know little about them or how to use them properly. These products are also more costly than the compounds they are replacing and a few are just as harmful to beneficial insects as the older pesticides," Biddinger explains.

One research project conducted at the center demonstrated that apple and peach pests can be controlled using reduced-risk tactics as well as IPM programs using conventional pesticides, but may be up to 85 percent more costly for growers to apply. "Our goal is to build upon our previous research and develop reduced-risk tactics that are more profitable and sustainable," says Biddinger. "We are also examining the possibility of developing eco-labels for fruit managed with reduced risk tactics to provide consumers with a choice and give an economic advantage to growers."

The researchers are refining of their use of new insect growth regulators (biologically-based insecticides and pesticides that target one or two pest life stages) to reduce environmental impacts and to enhance biological control. The researchers are also using a “whole-farm” approach in which the entire orchard, not just certain blocks, are under a reduced-risk management program. “Key insect pests of apples and peaches are highly mobile and previously we often saw movement between reduced risk managed and conventional blocks,” Biddinger explains. “These changes, along with more selective pesticides, cost effective pheromone delivery systems, and biological mite control are leading to higher profitability. This is especially true in high risk orchards that are under high pest population pressure or in which pesticide resistance has developed to the older neurotoxic insecticides and miticides.”

In addition to research projects, researchers at Biglerville conduct grower workshops for tree fruit growers and government agencies such as NRCS. Topics range from the biology of key fruit pests to high-tech pest control tools and trapping methods available to manage them. Dr. Greg Krawczyk, extension tree fruit entomologist at Penn State, says that one of the most important elements in successful orchard IPM is the precise sampling and monitoring of the pest.

Krawczyk, who also heads up a multi-county orchard IPM monitoring demonstration project, explains that sticky traps baited with insect sex pheromone are starting to be used more often in various monitoring programs designed to survey or monitor the presence and sometimes abundance of pests in the orchards. "These traps allow a grower to determine the presence and status of a pest population in the orchard, so the grower can make better insect pest control decisions, reducing pesticide sprays and improving profits," Krawczyk explains.

In addition, Penn State is partnering with the National Resources Conservation Service (NRCS) through “green” programs such as Agriculture Management Assistance (AMA), Environmental Quality Incentives Program (EQIP), and the Conservation Service Program (CSP), which will reimburse growers for the cost of various conservation practices, including IPM in tree fruit, grapes, sweet corn and Christmas trees. Such IPM practices include biological mite control, reduced risk IPM, pheromone mating disruption, IPM scouting, precision application technology, and remote weather sensors to improve spray timing. The most successful program to date has been with Pennsylvania fruit growers under the AMA program, which has awarded over \$1.2 million in IPM contracts. For more information on the program, visit their Web site at <http://www.nrcs.usda.gov/programs/ama/> or the PA IPM website at: <http://paipm.cas.psu.edu/nrcs.html>

For more information on projects at Biglerville, contact Biddinger at (717) 677-6116 ext. 8 or e-mail at djb134@psu.edu. For more information on Krawczyk's tree fruit monitoring program or workshops, contact him at (717) 677-6116 or by e-mail at gxk13@psu.edu.

Penn State’s Fruit Research and Extension Center in Biglerville, Pa is part of the research and extension division of Penn State's College of Agricultural Sciences. In addition to

providing site-specific conditions for research, the facility increases opportunities for growers, consultants, consumers, and students from Pennsylvania and other states to observe experiments and to consult with scientists. Extension specialists apply experimental findings to local conditions and make suggestions to scientists about new research needs. For more information on the center, see their Web site at <http://frec.cas.psu.edu/about.html>.

The Pennsylvania IPM program is a collaboration between the Pennsylvania State University and the Pennsylvania Department of Agriculture aimed at promoting integrated pest management in both agricultural and urban settings. For more information, contact the program at (814) 865-2839, or Web site <http://www.paipm.org>. To view our archived news releases, see Web site <http://paipm.cas.psu.edu/newsrelease.html>.