2007 Annual Report

Western Integrated Pest Management Center

WIPMC

Director's Comments

This is the third annual report of the Western Integrated Pest Management (IPM) Center. During the past year the Center has received a new four-year grant, funded numerous projects, work groups, and information networks, and participated in international, national, and local meetings, workshops, and symposia.

The Western IPM Center is one of four centers in the United States. Each center is unique in the issues it addresses, but all follow the overarching guidance of the National Roadmap for IPM, which identifies agricultural, urban, and natural systems goals. The Road Map is available at ***http://www.ipmcenters/IPMRoadMap.pdf.*** The goal of the National IPM Program is to improve the economic benefits of adopting IPM practices and to reduce potential risks to human health and the environment caused by pests or by the use of pest management practices.

Funding provided to the Western IPM Center comes primarily from the United States Department of Agriculture, Cooperative State Research, Education, and Extension Service (USDA-CSREES). This funding is used to support Center activities through several programs.

Information Networks. Information networks at the state or multistate level provide needed information about pest management needs and tactics at the local level. These networks respond to information requests from USDA and USEPA. Coordination of these requests often occurs via regional comment coordinators. These networks are the local component of the Western IPM Center.

Pest Management Strategic Plans (PMSPs). Regional staff, along with growers, crop consultants, industry groups, and university researchers, develop pest management strategic plans. These documents are used by industry and by state and federal authorities as they try to understand pest management uses and needs in agricultural settings.

Work Groups. Focused work groups are funded to address particular issues, such as pesticide resistance management, urban IPM, weather modeling and pest forecasting, and other topics. These work groups have been enormously successful in leveraging other funds to address issues identified as important in the West. Several large grants have been obtained by work group members as a result of the small support provided by the Western IPM Center.

Grants. As research and education needs are identified through the work groups and other stakeholders, the Western IPM Center is able to provide some funding via annual grant programs and through small startup grants. These small startup grants can be quickly funded to address newly emerging issues, such as diseases or other pest outbreaks.

Advisory and Steering Committees

Two standing committees guide the Center. The Advisory Committee provides vision and guidance. Its members represent a wide range of stakeholders that link the Center to stakeholder needs and priorities for pest management programs in the West. These advisors, integral to Center outreach, promote awareness of the Center's resources to their constituencies and beyond. The Steering Committee gathers input from stakeholders (including the Advisory Committee), determines broad policy goals and priorities, recommends Center budgets, and provides direction for timely and effective Western IPM Center management.

In the pages of this annual report we highlight some of the activities and people that have made the Western IPM Center a success.

Cover photos by Rick Melnicoe

Development of an Electronic, Multi-Entry Key for Diagnosing Arthropod, Disease, and Abiotic Problems of Small Grains

Principal Investigators: Ned Tisserat and Ronda Koski, Colorado State University; William Lanier, Montana State University, Bozeman

(Photo by Rick Melnicoe)

Problem: The first step in a successful IPM program is rapid and accurate identification of the cause of the plant problem. Inaccurate diagnosis can result in pesticide misapplication, whereas a delayed diagnosis may allow pests to develop to population levels that are not easily controlled by IPM practices. For many crops, information about symptoms and other elements associated with the various causes of crop disorders are published in separate publications, making it difficult for pest control decision makers to track down relevant, integrated information that can be efficiently and effectively used for diagnostic purposes. Investigators saw the need for an easily accessible, integrated diagnostic resource that was linked to current IPM recommendations; that brought together all the relevant information about crop disorders, including diseases, arthropods, and abiotic problems; and that provided assistance and resources for diagnosing unidentified problems. The overall goal of this project is to provide growers, crop advisers, extension agents, diagnosticians, and others associated with crop production with multi-entry, multi-media, commodity-based electronic keys to aid in the diagnosis and management of crop problems.

Objectives: (1) To create a general framework for integrating field diagnostics of insects, diseases, and abiotic disorders into an electronic, multi-entry diagnostic key; (2) to validate the usefulness of the general framework by developing a diagnostic key specifically for pest and abiotic problems of small grains of the High Plains region of the United States; and (3) to release free copies of the small grains diagnostic key to stakeholders and provide student-driven, self-paced training in its use.

Interim Results: Investigators have posted a beta version of the wheat pest diagnostic key on the High Plains Integrated Pest Management Web site, ***http://highplainsipm.org/wheat_pest_key/wheat_pest_key.html.*** The key will be finalized and released for distribution in 2008. Investigators believe that if producers are provided with an integrated, easily accessed diagnostic tool that is directly linked to the most up-to-date IPM recommendations, they are more likely to adopt and implement those management practices.

Environmental-Friendly Strategies for Management of Mealybugs, Ants, Ampeloviruses, and Mealybug Wilt of Pineapple

P.I.s: John S. Hu and Diane Sether, University of Hawaii, Honolulu

(Photo by Harold Alford)

Problem: Pineapples are Hawaii's leading agricultural commodity and have a two- to three-fruit crop cycle. The first fruiting is referred to as the "plant crop." The subsequent fruitings are referred to as "ratoon crops." Ratoons are shoots that grow from the plant's roots. The most economically important insect pests of pineapple are pineapple mealybugs. Grey pineapple mealybugs are vectors of the pineapple mealybug wilt associated viruses (PMWaV), a complex of several ampeloviruses. PMWaVs reduce pineapple fruit yield, and PMWaV-2, along with mealybugs, plays a role in the devastating disease mealybug wilt of pineapple (MWP). Big-headed ants frequently tend and defend mealybug colonies in pineapple, leading to the establishment of large mealybug colonies, increased spread of ampeloviruses, and MWP outbreaks. Diazinon is one of the few insecticides registered for use on pineapple for mealybug control, and Amdro ant bait recently received approval for use in pineapple fields. Investigators sought to determine if Amdro Pro ant bait could be used to control the spread of ampeloviruses indirectly by controlling ants in pineapple from the plant crop through the ratoon crop and into the fallow periods. This strategy would alleviate reliance on diazinon as the sole control measure for reducing mealybugs.

Objective: To demonstrate and compare alternative control strategies for minimizing incidences of virus spread and mealybug wilt of pineapple in the ratoon and fallow periods of the pineapple crop.

Interim Results: Investigators determined that ant control can reduce the spread of viruses by indirectly reducing the number of mealybug vectors and thus slowing the increase of virus incidence in the existing crop and future propagation material. (Propagation material is collected from previous crops that often include infected plants.) Investigators discovered that the method of ant control depends on the crop cycle. Applied in bait stations during the plant crop and as a broadcast in the ratoon crop, Amdro Pro ant bait can eliminate big-headed ants and reduce grey pineapple mealybug populations and subsequent virus spread. Bait station-based application of Amdro Pro in the ratoon crop was less efficient at controlling big-headed ants.

Investigators concluded that inclusion of ant control as a component in an IPM approach to mealybug, virus, and MWP disease control in pineapple can potentially reduce the foliar applications of diazinon to one or less, thereby reducing exposure of nontarget arthropods such as bees and beneficial organisms, including natural enemies of mealybugs. Investigators also discovered that ant bait appears to be compatible with the natural enemies and parasitoid wasps present in Hawaii that attack pineapple mealybugs. Removing the ant component and reducing the diazinon component gives generalist predators and specific parasitoid wasps of mealybugs more opportunity for success.

Integration of a Modified Strain of BlightBan A506 with Conventional Fire Blight Management

P.I.s: Virginia O. Stockwell and Kenneth B. Johnson, Oregon State University; Joyce E. Loper, USDA Agricultural Research Service, Horticultural Crops Research Laboratory

(Photo by Virginia Stockwell, OSU)

Problem: Streptomycin-resistant populations of *Erwinia amylovora*, the bacterium that causes fire blight, the most serious disease of pear and apple, are widespread in the western United States. Fire blight epidemics regularly cause losses totaling

(Photo by Virginia Stockwell, OSU)

tens of millions of dollars. Disease control focuses on preventing the pathogen from growing on and infecting flowers. Growers use two antibiotics, streptomycin and the less effective compound oxytetracycline for disease control. Antibiotics generally are sprayed an average of two to four times per year to trees in bloom. Streptomycin had provided excellent control for pear and apple growers until streptomycin-resistant pathogens became prevalent in the western states. Biological agents are now available for disease control. The investigators studied two biocontrol agents, BlightBan A506 (*Pseudomonas fluorescens* strain A506) and BlightBan C9-1 (*Pantoea agglomerans* C9-1). In addition, seeking more effective management of streptomycin-resistant fire blight, the investigators have developed a modified strain of BlightBan A506 (called A506 AprX-) and have tested it in an integrated strategy with conventional control methods. They also discovered that co-application of BlightBan A506 with an iron chelate induced A506 to produce an antibiotic and improved disease control.

Objectives: (1) To evaluate in pathogen-inoculated, small-scale orchard trials an integrated strategy for control of fire blight with the new biopesticide products, BlightBan C9-1 combined with BlightBan A506 and BlightBan C9-1 combined with A506 AprX-; (2) to evaluate the effect of biopesticide and antibiotic applications (singly and in combination) on population dynamics of the pathogen *Erwinia amylovora*; and (3) to evaluate the effect of oxytetracycline application on the population dynamics of biopesticide strains.

Interim Results: Investigators found that the mixture of biological control agents C9-1 with Apr-X- provided better control of fire blight than C9-1 with BlightBan A506 in four out of five trials. The integrated strategy of applying biological control agents followed by a single application of oxytetracycline provided better control than biological control agents alone, and this strategy often provided better control than the conventional method of spraying oxytetracycline twice. Population size of the pathogen was lower on flowers treated with biological control agents and oxytetracycline compared to flowers treated with only biological control agents or with two applications of oxytetracycline. The methods developed in this research potentially will reduce the number of antibiotic sprays applied to pear and apple trees while still providing disease control. Reduction in the number of antibiotic sprays will reduce exposure of the environment and of orchard workers to antibiotics and may reduce the probability of *Erwinia amylovora* becoming resistant to oxytetracycline.

Predator Control of Rodent Pests

PI: Jackie Hastings, Polk Soil and Water Conservation District, Dallas, Oregon

(Photo by Jackie Hastings, Polk Soil & Water Conservation District, Dallas, OR)

Problem: Rodent damage to agricultural crops has been identified as a significant resource problem. The use of rodenticides is an issue of great concern to agricultural producers, private landowners, and other natural resource managers. The rodenticide most commonly used, zinc phosphide (ZP), has application method and timing restrictions, because migrating birds grazing in farm fields die after eating ZP pellets. This problem is one of many factors that have led agriculturalists to call for alternate options for managing rodent pests.

Objectives: (1) To promote the widespread acceptance and implementation of biological control to manage rodent pests; (2) to cooperate with stakeholders to design a biological control system for rodent pests by utilizing and augmenting natural rodent predators; and (3) to reduce rodent pest damage and commercial rodenticide use.

Interim Results: During 2006, 846 acres (involving 15 producers) in Polk County, Oregon, implemented IPM practices for vole control using different combinations of kestrel and barn owl nesting boxes and raptor perches. Most producers participating in the program had previously utilized very time-consuming pest management methods that involved walking through vole infested fields and applying poisons or other control methods to individual vole holes. This program implements management practices that require an investment of time and effort in the beginning, but significantly less time and effort is required after installation of the boxes and perches. The immediate economic benefit to producers is an increase in time that can be spent on other farm activities. Future expected economic benefits include spending less (or no) money on rodenticides, decreases in crop losses caused by vole damage, and a decreased cost in equipment repairs (vole tunnels significantly increase wear and damage to equipment). Expected environmental benefits include protection of nontarget mammal and avian species due to decreased use of rodenticides; more secure nesting sites for native raptors; and assured continued use of environmentally beneficial low tillage and cover cropping practices which, without sufficient predators, tend to create conditions for unacceptably high populations of voles.

Wheat Seed Quality Effects on Competitive Ability with Wild Oat

P.I.s: Robert Stougaard and Qingwu Xue, Montana State University, Bozeman; Joe Yenish and John Burns, Washington State University, Pullman

(Photo by Rick Melnicoe)

Problem: Wild oat management systems have evolved to the point that producers rely on herbicides to the virtual exclusion of all other strategies. While generally effective, herbicide use erodes profits and poses environmental concerns. Moreover, despite the intensive use of herbicides, wild oat populations continue to persist. Wild oat seed dormancy and variable herbicide efficacy contribute to this problem. However, this situation is worsened by the widespread occurrence of herbicide resistant biotypes. A strict reliance on herbicides for wild oat management has not been sufficient. Investigators have pursued development of integrated weed management systems that shift the focus to the crop rather than the weed and emphasize improving crop competitive ability. This project evaluates the interactive effects of seed size, protein content, and gibberellic acid (GA) seed treatments on spring wheat's ability to compete against wild oat. All three factors

contribute to enhanced wheat emergence, seedling vigor, and developmental rates, and investigators hypothesize that their integration will enhance their individual attributes, stabilize their cumulative impact on wild oat, and provide for a more durable weed management system. Investigators will add suppressive rates of herbicides to enhance the cumulative effect on the weed.

Objectives: (1) To determine the interactive effects of seed size, protein content, and GA seed treatments on spring wheat competitive ability for the suppression of wild oat; and (2) to determine to what extent seed quality factors influence the effects of variable tralkoxydim rates on wild oat control, wheat yield, and economic returns.

Interim Results: Investigators determined that crop competitive ability increased as seed size increased. Plants established from large seed had more rapid emergence, had greater initial leaf area, and produced greater biomass than plants derived from small seed. Consequently, the use of large seed sizes increased yields by 25% compared to systems where plants were derived from small seed. Similar yield benefits also were realized when reduced rate herbicide applications were included in the system. The effects of wheat seed protein and GA seed treatments were less evident. Seed protein content had minimal effect on wheat competitive ability at the Kalispell, Montana site, which may be related to the high residual nitrate levels present at the site. However, wheat biomass did increase with seed protein at the Pullman, Washington, location, but only with plants derived from small seed. GA seed treatments occasionally resulted in crop injury, reducing wheat biomass, competitive ability, and yield.

Investigators concluded that wheat seed quality can be manipulated to favor the crop over the weed. The resultant improvement in competitive ability improves weed control, reducing yield losses and dockage penalties in the process. This technology correspondingly improves herbicide efficacy. In turn, this could reduce herbicide input costs and environmental contamination and could slow the development of herbicide resistance.

*See the Western IPM Center Web site, **http://www.wripmc.org/**, for further details about objectives, progress, and outcomes of WIPMC funded projects.*

Special Issues Projects Yield Results

The Western IPM Center has an ongoing call for proposals to address special IPM issues in the West. Special issues funding may be requested to convene groups of people to address emerging issues such as new pests, environmental concerns, development of proposals for larger grants based on documented stakeholder needs, or development of Pest Alerts. The Western IPM Center has funded several projects under this program this year. The impacts of some of these small grants (up to $5,000 each) are summarized below:

- Dialogue promoted between researchers and pest managers to identify future research needs for effective policy and pest management decision making.
- Mechanism provided to address a serious and emerging pest in Oregon, Washington, and other major potato states across the northeastern United States. The potato tuberworm is one of the most important constraints on potato productivity worldwide. This P.I. received a $39,750 grant to improve potato tuberworm management with cultural practices.

(Photo by Linda Herbst)

- Development of a Western IPM Center Conservation Biological Control work group.
- Field studies on green manure as an alternative to chemical fumigants increased the use of this nonchemical alternative. Dennis Searle, Amalgamated Sugar Co., said, "Having the funding to do this kind of research helps the company show the grower that chemicals are not the only answer to pest control. It has been very beneficial to do this work. We have learned, first of all, that it is possible to control cyst nematodes biologically, and second, that it is important to be timely in the process. We can also better manage nitrate loss, saving the groundwater and saving the grower money because of more available nitrogen in the spring."

Addressing Western IPM Issues

Newly Funded Projects

The Western IPM Center funded five "Addressing Western IPM Issues" projects, totaling $214,075 in the fall of 2006.

The projects:

- Developing a Monitoring Strategy for Voles in Agriculture
  Principal Investigator: Jennifer Gervais, Oregon State University
- Effective IPM Strategies for Parks Maintenance Staff in the Pacific Northwest
  PI: Megan Kemple, Northwest Coalition for Alternatives to Pesticides, Eugene, Oregon
- Best Practices for Local Government IPM Contracting Toolkit
  PI: Jennifer Krebs, San Francisco Estuary Project, Association of Bay Area Governments
- Development of a Monitoring Program for Root Weevils in Blueberries and Strawberries
  PIs: Thomas Peerbolt, Peerbolt Crop Management, Portland, Oregon; Denny Bruck, USDA-Agricultural Research Service, Corvallis, Oregon
- Walnut Pest Management Alliance: Outreach and Implementation of Pheromone Mating Disruption
  PIs: Carolyn Pickel, University of California Cooperative Extension, Sutter/Yuba Counties; Joseph Grant, University of California Cooperative Extension, San Joaquin County

(Photo by Rick Melnicoe)

Further information is online at ***http://www.wripmc.org/***.

Collaborations

Housing and Urban Development

The Western IPM Center, along with the three other regional IPM Centers, has developed a new partnership with the U.S. Department of Housing and Urban Development to train maintenance staff and residents of Public Housing Agency dwellings in IPM tools for pest management. This project involves consulting with the USDA-formed advisory committee to review and refine existing IPM training materials. After creating an educational package, the team will test it by providing four pilot trainings led by a team of IPM trainers and tailored to maintenance staff and residents in each of the USDA regions.

Legume-PIPE Program in the West

Colorado State University coordinated a network of legume pest sentinel plots (five to eight in each state, and fewer in each province) located in the western United States (Arizona, California, Colorado, Idaho, Montana, New Mexico, Oregon, Washington, and Wyoming) and Canada (Alberta, Manitoba, and Saskatchewan). The Arizona sentinel plot specialist also established five dry bean monitoring plots in collaboration with a colleague in the Sonora, Mexico region. During 2007, from May to September, the western network of more than 35 sentinel plot specialists and observers monitored nearly 70 legume (primarily common bean) plots for SBR in the western region of North America. No suspicious samples of soybean rust were detected in any sentinel plot or commercial field of legume during this period. Plans are under way to expand SBR (and other pest) monitoring on legume crops during 2008, with the addition of other priority legume diseases and pests, such as white mold, common bacterial blight, ascochyta leaf spot (of chickpea and lentil), viruses, Mexican bean beetle, and aphids. There will be more outreach efforts to provide public access to the legume PIPE.

(Photo by Rick Melnicoe)

In addition to contributing valuable information to the national monitoring program, timely reporting in the West allowed pest management specialists to advise crop consultants and growers regarding SBR disease status and threat. As a result, needless spraying with a preventive fungicide was avoided on a total of 225,000 acres of common bean grown in Colorado (75,000 acres), Idaho (75,000 acres), Oregon (10,000 acres), Washington (30,000 acres) and other western states (35,000 acres). This provided economic benefits to growers and reduced chemical exposure of the environment and food supply.

Howard F. Schwartz, Professor of Plant Pathology and Research and Extension Specialist at Colorado State University, is the principal investigator for the USDA grant that funds this research. He can be reached at ***howard.schwartz@colostate.edu.***

SYSCO 2007 Sustainable/IPM Conference

The SYSCO 2007 Sustainable/IPM Conference was held on March 14–15 in Woodland, CA. The event was hosted by the Western IPM Center and co-organized by the IPM Institute of North America. The annual event brought together suppliers and buyers for the SYSCO Corporation to discuss the company's sustainable program goals, requirements, and audit systems. More than 100 participants from across the United States participated in this conference.

(Photo by Rick Melnicoe)

Sustainable Agriculture Opening Stakeholder Dialogue Meeting

Linda Herbst, Associate Director, attended the Sustainable Agriculture Opening Stakeholder Dialogue meeting on October 29–30, 2007, held at UC Berkeley. The gathering was part of an effort to establish national standards in sustainable agriculture by 2010. The American National Standards Institute (ANSI), working through nonprofits, will gather input from stakeholders to produce standards for sustainable agriculture for food, fiber, floral, and energy crops.

Information Networks Solve Problems

Activities of the Western IPM Center's information networks have resulted in everything from added worker and environmental protection to retained pesticide uses for specialty crops. Each information network is comprised of many people working on a variety of issues. The main functions of information networks are to:

- serve as resources for information about the importance of pesticides and other pest management tactics in local production systems and urban and natural systems covered by the network
- respond to information requests from USDA and USEPA
- collaborate and/or coordinate with a diverse group of stakeholders, including extension IPM coordinators
- identify critical issues
- aid in identifying appropriate individuals to whom IPM tactics use surveys, crop profiles, and Pest Management Strategic Plans (PMSPs) should be addressed.

The network participants are closely involved in many activities directly related to the mission and goals of the Western IPM Center. They serve as members of work groups; organize or assist on PMSP teams; and participate in peripheral programs such as the Interregional Research Project No. 4 (IR-4), water quality, Natural Resources Conservation Service, sustainable agriculture, and many others.

This involvement provides avenues for the Western IPM Center to understand and address stakeholder needs. Followup activities from PMSPs have resulted in several research projects, IPM manuals, pesticide registrations, and improved IPM in many crops.

National IPM Evaluation Group

The National IPM Evaluation Group (NIPMEG) is a clear indication that collaboration is under way. Western IPM Center staff participate actively in this collaborative effort that includes representatives from USEPA's Strategic Agricultural Initiative Project, the USDA/CSREES regional IPM centers, CSREES National Program Leaders, and the staff of USEPA's Pesticide Environmental Stewartship Program (PESP). The work group first met in October 2004 to explore mutual USEPA/USDA goals for measuring success and to create a long-term strategy for cooperation on IPM performance measurement and outcome reporting. Action items coming out of their most recent meeting, November 29–30, 2007, in Washington D.C., included:

- NIPMEG becoming a work group of the Federal IPM Coordinating Committee (FIPMCC)
- NIPMEG's National IPM Evaluation Committee will send draft logic models out to state IPM Coordinators for review. The committee will then finalize the models and develop a user-friendly interface for their distribution on a national Web site.

Work Groups

Western IPM Center Sponsors Seven Work Groups


(Photo by Rick Melnicoe)

Western IPM Center funding currently supports seven issue-based work groups involving:

- Crop insect losses and impact assessment in California and Arizona cotton, melon, and other crops
  PI: Al Fournier, University of Arizona, fournier@ag.arizona.edu
- Western region school IPM implementation and assessment
  PI: Dawn Gouge, University of Arizona, dhgouge@ag.arizona.edu
- Technical work group that discusses and refines standards and protocols for the collection, analysis, and Web delivery of weather data for IPM purposes
  PI: Walt Mahaffee, Oregon State University, mahaffew@science.oregonstate.edu
- Pacific Northwest coalition that collaborates on a multitude of issues
  PI: Catherine Daniels, Washington State University, cdaniels@wsu.edu
- Group to organize a workshop to prepare a comprehensive research proposal to develop low-impact IPM strategies to control pest ants in urban environments
  PI: Michael Rust, UC Riverside, michael.rust@ucr.edu
- Western conservation biological control work group to foster a collaborative approach of communication, research, and outreach to preserve crop pollination by native pollinators and management of pests by predators, parasitoids, and pathogens in forest rangeland, farms, and gardens in the western region
  PI: Gwendolyn Ellen, Oregon State University, gwendolyn@science.oregonstate.edu
- An IPM for Spanish-speaking landscape workers work group
  PI: Rebecca Hines, Washington State University, hinesre@wsu.edu

Center Staff


Rick Melnicoe


Tom Holtzer


Linda Herbst


Diane Clarke

Rick Melnicoe, active in pest management issues for more than 30 years, serves as the director of the Western IPM Center (WIPMC), headquartered at Meyer Hall, University of California, Davis.

Co-director is entomologist Tom Holtzer of Colorado State University, Fort Collins, and associate director is Linda Herbst of UC Davis. Diane Clarke of UC Davis serves as writer/editor.

The WIPMC enhances communication between federal and state IPM programs in the western United States: Alaska, Arizona, California, Colorado, Hawaii and the Pacific territories, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

The WIPMC serves as an IPM information network, designed to quickly respond to information needs of the public and private sectors.

Contracted WIPMC staff includes regional comment coordinators, a regional Pest Management Strategic Plan coordinator, and an IPM regional grants manager, located throughout the region.

Impacts

Crop Insect Losses and Impact Assessment Work Group
Awarded a $2.5 million RAMP grant to develop and implement multistate, multicrop field- and landscape-level strategies for reducing damage caused by lygus bugs. Data collected by this work group are routinely used to respond to federal pesticide information requests and to provide quantitative metrics for measuring adoption and economic impact of IPM recommendations.

Curly Top Virus Biology, Transmission, Ecology, and Management Work Group
Development of a regional committee. Grant funding in the amount of $80,000 was received by members of this work group from the Southwest Consortium on Plant Genetics and Water Resources.

Western IPM Center Work Group on Weather Systems
Members of this workgroup have been awarded more than $2 million in grants from a variety of different competitive grant programs (National Research Initiative, Risk Management Agency, Western IPM Center, etc.).

Oregon and Washington Small Fruits Workgroup
Development of a database that provides updated information on the monitoring data and movement of insects. The coordinated efforts of members of this workgroup resulted in a $170,929 Western SARE Research and Education grant.

Western Region Urban Residential and Institutional IPM Work Group
Creation of a regional curriculum that was instituted at the Washington State University Structural Pest IPM Facility. This facility gives inspectors and pest managers the opportunity for hands-on experience identifying wood destroying organisms, their damage, and the conditions that are conducive to infestations by examining damaged wood and insect frass or other remains.

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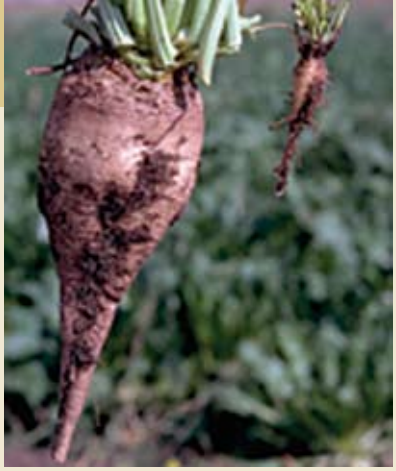
PMSP Impacts



What are PMSPs for?

PMSPs serve as a very effective conduit for communication from growers and other pest managers to regulators, policymakers, granting agencies, and other interested constituencies. These documents give a realistic view of pest management issues and strategies used in the field, and they provide a forum for agricultural producers and other pest management professionals to set meaningful research, regulatory, and educational priorities.

(Photo by Rick Melnicoe)

COMMODITY ACTION GROUPS

Formation of Commodity Action Groups comprised of university researchers, state Departments of Agriculture, USDA representatives, and growers.

GRANTS

Grant funds exceeding $1 million have been received that address stakeholder priorities identified in Pest Management Strategic Plans.

REAL-WORLD INFORMATION

Provides current, real-world information to regulators, giving a realistic picture of commodity production practices. (Less dependence on default assumptions.)

REDUCED-RISK PESTICIDE ALTERNATIVES

Successful registration of reduced-risk pesticide alternatives to organophosphates, carbamates, and other more toxic pesticides.

BEST MANAGEMENT PRACTICES

Crop-specific best management practices developed and adopted by growers.

COLLABORATION

Fosters multi-state and multi-regional collaboration resulting in less duplication of efforts and more judicious use of limited dollars.

COMMUNICATION

Provides a venue for increased USDA and EPA communication.

Work Group Impacts—*continued*

Western Region School IPM Implementation and Assessment Work Group

This work group encompasses 30 participants from nine states and has stimulated new collaborations among diverse stakeholders working to enhance successful implementation of IPM in schools in the western region. Work group members participated in the National IPM in Schools PMSP, and the group's success has encouraged the formation of school IPM work groups in the other three USDA regions.

(Photo by Rick Melnicoe)

Western IPM Center

For more information on the Western Integrated Pest Management Center, see

http://www.wripmc.org/

Rick Melnicoe
Director
(530) 754-8378
rsmelnicoe@ucdavis.edu

Linda Herbst
Associate Director
(530) 752-7010
llherbst@ucdavis.edu

Tom Holtzer
Co-Director
(970) 491-5843
thomas.holtzer@colostate.edu

Diane Clarke
Writer
(530) 752-7011
dmclarke@ucdavis.edu

The Western IPM Center is headquartered at:

4249 Meyer Hall
University of California
One Shields Avenue
Davis, CA 95616
Phone: (530) 754-8378
Fax: (530) 754-8379

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