Western IPM Center

2018 Annual Report

Creating a Healthier West with Fewer Pests

The Western IPM Center

2018

Year in Review

For the Western Integrated Pest Management Center, 2018 was an active and rewarding year. We served our stakeholders and advanced our vision of a healthier West with fewer pests.

We funded innovative, impactful IPM research. As you'll see on the map on the reverse, our funded projects were incredibly diverse in scope and scale, geographic focus, and target crop, pest or concern.

We also launched a new, fully responsive website and expanded our outreach to promote those projects and IPM generally. Our newsletter readership has more than doubled since it debuted electronically and now exceeds 1,875 subscribers.

Western IPM Center staff helped write and edit the new National Roadmap for Integrated Pest Management and were very involved at the International IPM Symposium.

We were awarded four more years of funding by the U.S. Department of Agriculture's National Institute of Food and Agriculture to continue promoting, coordinating and supporting IPM research and outreach across the 17 states and territories that make up the American West.

We ended the year with our annual request for proposals and selected 10 outstanding projects to support in 2019. Each will receive a share of $250,000 in Center funding.

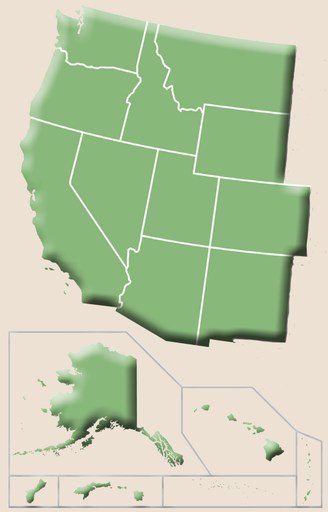
During the year, we had to say goodbye to former staff. Rick Melnicoe passed away in February, and Amanda Crump and Cathy Tarutani left for new positions.

Thank you for your interest in the Western IPM Center and the work we do for the people, environment and economy of the American West.

Learn more at westernipm.org

Western IPM Center

Working Familiar Territory and Breaking New Ground



The responsibilities of the Western IPM Center have been constant since our founding in the early 2000s.

We create and deliver new IPM science, solutions and resources through our annual grant and signature programs.

We connect people and groups across the vast and diverse West.

We communicate IPM's benefits to a broad audience and educate regulators and policymakers about the West's specific pest management needs and priorities.

We did all of that in 2018, and also formed new collaborations, launched new efforts and broke new ground in several areas during the year.

Here are some highlights.

New Collaborations

Western Governors' Association

In 2018, the Western Governors' Association focused a year's worth of effort around invasive species in the West. We hadn't collaborated closely with the governors before, but became very active partners around this work; helping draft a priority list of invasive species and attending or presenting at a series of workshops on different elements of invasive species identification, control and recovery.

Expanded Crop Pest Loss Program

For several years, Western IPM Center-affiliated researchers at the University of Arizona have conducted detailed crop pest loss surveys, generating powerful data about the value of IPM programs to growers in the Desert Southwest.

Now that effort has expanded significantly and the Arizona team worked with the Center's Oregon State University-based collaborators to bring those pest-loss surveys to growers in four Pacific Northwest industries: cherry, hazelnut, onions and mint. Not only will the data serve as a baseline to measure pest-management improvements over time, it provides rich insights into the specific pests and pressures those growers faced in 2018.

Further capitalizing on the effort, the Oregon State team also created or updated Integrated Pest Management Strategic Plans for those same four crops, documenting pest management practices and needs for each.

Expanded Activities

Western Sustainable Agriculture Research and Education Program

Because we cover the same geography and have aligned missions, the Western IPM Center has long had a close working relationship with Western SARE. In 2018, however, that relationship expanded as we built closer collaboration and mutual promotion into our new four-year work plan. Staff from our Center also participated in SARE's once-a-decade national conference.

Forest Insects, Rodents and Sociologists

The year was also notable for the number of new meetings or conferences Center folks presented at or attended. These ranged from the Western Forest Insect Work Conference to Rural Sociological Society meetings to a vertebrate pest conference.

Novel Research

Factoring Pesticide Risks and Hazards into IPM Decision-Making

The Center's newest signature program was active throughout the year, engaging state IPM coordinators and practitioners in capacity development centered around understanding and communicating the risks posed by highly hazardous pesticides. Participants researched and presented case studies from their own states and were preparing a journal article as the year ended.

Predator Thresholds in Cotton

Building on earlier work funded in part by the Center, the University of Arizona pushed further along the IPM continuum by publishing predator thresholds for cotton growers to consider when making pest management decisions. The research established the minimum number of specific predators needed to provide effective biocontrol at different levels of pest pressure.

Shared Expertise

Helping Others Communicate

At the Western IPM Center, our expertise goes beyond pests and pest management to include communicating with diverse audiences. To help others do the same, in 2018 we consulted with the Integrated Education Platform for Extension and Education, known as iPiPE, Western SARE and the Western Region IR-4 program about their outreach efforts or methods. We also conducted a communication survey and published a self-directed communication evaluation exercise for other programs to use.

New Publications

IPM Improvements in Melons

Evaluating pest management strategic plans from 2003 and 2016, the Center documented significant pest management improvements in the California melon industry – including a 97% reduction in the use of fumigants, a 75% decline in sulfur use and a 46% drop in the use of carbamate and organophosphate insecticides.

Center Brochure and Poster

Finally, we produced two well-received promotional publications in 2018. They were a 12-page introduction to the Western IPM Center and the value we add to state and tribal IPM programs, and a full-color poster that's proven quite popular. Copies of both are available upon request.

Finding and Funding New IPM Science and Solutions

Every year, the Western IPM Center awards about $250,000 in grants to fund new IPM research, planning and outreach in the West. Our request for proposals is released in the fall and announced in our newsletter and on westernipm.org. Here are the projects selected for funding in 2019.

Work Groups

Agroecosystem Impacts and Integrated Management of Kochia in North America

Todd Gaines, Colorado State University

Kochia, or tumbleweed, has colonized virtually all arid and semi-arid ecosystems in North America. This work group creates industry, government and university collaboration to build IPM programs for kochia control that include all management tools and herbicide stewardship.

Pacific Islands Pesticide Safety Education Work Group

Zhiqiang Cheng, University of Hawaii

This multi-state, multi-island work group will identify priority needs for educational materials for pesticide applicators in Hawaii and the American-affiliated Pacific Islands. It will outline pesticide training objectives and assess the availability of online training and the sustainability of pesticide safety training programs in the Pacific Islands.

Rodent Management Work Group

Niamh Quinn, University of California

Rodents are among the most economically significant pests in the world and vectors of disease in humans. This work group will collaborate to modify current rodent-control practices for agricultural and urban sites with the goals of improving the effectiveness of rodent management and reducing rodenticide exposure to non-target species.

Critical Research and Extension Needs for Alfalfa Weevil and Forage Insect Pests

Kevin Wanner, Montana State University

Alfalfa weevil management has remained static for decades and research-based management guidelines need to be updated. This group will develop those updates and science-based management guidelines relevant to production systems and local climate conditions across the West.

Outreach & Implementation

Training on Developing an Invasive Plant Management Plan

Jutta Burger, California Invasive Plant Council

The California Invasive Plant Council and the U.S. Fish & Wildlife Service recently produced a “Guide to Developing an Invasive Plant Management Plan” to support organizations trying to strengthen their land stewardship activities and develop IPM programs. This outreach project will develop and deliver hands-on training based on the guide.

Project Initiation

Aerobiology and IPM of Bacterial Blight in Carrot Seed Crops

Jeremiah Dung, Oregon State University

This project will develop a weather-based forecasting model for bacterial blight affecting hybrid carrot seed production in Oregon to predict periods of high disease risk and improve disease management through better timing of bactericide applications and modified cultural practices.

Integrated Pest Management Strategies for Phragmites-Invaded Wetlands

Karin Kettenring, Utah State University

The invasive grass *Phragmites australis,* also known as the common reed, has taken over vast areas of Western wetlands. The goal of this research is to restore previously invaded wetlands and determine the most effective seeding techniques to maximize native seedling survival.

Sex in the Orchard: Determining Mating Success of Sterile Codling Moth

William Cooper, USDA-Agricultural Research Service Washington

In Washington, there is interest in supplementing current codling moth mating disruption programs with the release of sterile codling moths. This project will develop a molecular technique to determine mating success of wild females with wild vs. sterile males to help understand the compatibility of these techniques.

Planning Documents

Pest Management Strategic Plan for Processing Tomato in California

Amber Vinchesi, University of California

This pest management strategic plan, a first for California processing tomato production, will identify research, regulatory, and extension needs and priorities for the industry and document current pest management practices.

Pest Management Strategic Plan for Rice in California

Tunyalee Martin, University of California

This pest management strategic plan, a first for California rice production, will identify research, regulatory, and extension needs and priorities for the industry and document current pest management practices.

See full descriptions on the Current Projects page of westernipm.org

Western IPM Center

The Western IPM Center promotes smart, safe and sustainable pest management to protect the people, environment and economy of the American West

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Action Thresholds for Spider Mites

Ann George, Washington Hop Commission

Spider mites are the most damaging arthropod pest of hops in the Pacific Northwest. This project identified that the factor that best predicts the likelihood of mite damage to cones is late season populations of the pest in the upper canopy. Created a model and a decision aid for hop growers.

Gene Silencing for Zebra Chip Control

Rodney Cooper, USDA-ARS

Using FANA-based gene silencing techniques, assayed 18 gene targets against the Liberibacter pathogen that causes zebra chip. Documented five treatments that significantly reduced foliar and tuber symptoms. Two were more effective at reducing foliar symptoms and three more effectively reduced tuber symptoms. All five appeared to reduce Liberibacter titers in infected potato psyllids, which spread the disease.

Soil Solarization in the Pacific Northwest

Jennifer Parke, Oregon State University

Refined a soil solarization model for nurseries and vegetable growers at **uspest.org/soil/solarize** showing the time needed to kill weed seeds and soil-borne pathogens. Documented that tree-seedling nurseries increased crop growth, reduced populations of soil-borne pathogens and reduced labor needed for hand-weeding by 52 to 54 percent.

Alfalfa Weevil IPM Adoption

Kevin Wanner, Montana State University

Monitored alfalfa weevil populations across the state and reported real-time data online at **pestweb.montana.edu** so producers could see the seasonal progression of this pest and learn appropriate monitoring methods. Expanded the Pestweb site to include North Dakota, Utah and Wyming.

Pest-Detecting Drones in Berries

Jason Myer, Northwest Berry Foundation

Tested unmanned aerial vehicle and multi-spectral sensor technology to image and map pest issues in berry crops in the Pacific Northwest. Collected 28,017 images during 58 flights to identify and evaluate pests in blueberries, raspberries, blackberries and strawberries and develop UAV technology to enhance IPM knowledge and practices.

Low-Cost IPM for Medusahead

Jeremy James, University of California

Examined the costs and benefits of integrating herbicide use and grazing to manage medusahead, a serious plant pest on rangeland. Initial studies showed that low-rate herbicide applications in spring resulted in 98% seed sterility. Developed an online calculator for land managers to assess their costs and benefits of integrated control of medusahead. Access it at **ucanr.shinyapps.io/medusahead_ipm**

IPM in Utah Tree Fruit

Marion Murray, Utah State University

Conducted a survey of the Utah tree fruit industry to determine changes in IPM adoption compared to historic records. Since 2003, the number of growers using 13 or more IPM practices has more than tripled, while growers not using any IPM practices has declined by more than two-thirds. Overall, 71% of Utah fruit producers use IPM.

Pruning Out Macadamia Pests

Alyssa Cho, University of Hawaii

Demonstrated that pruning the canopy of macadamia orchards reduced populations of felted coccid, increased populations of natural enemies and did not reduce yield. The ability to manage coccid populations through canopy management allows macadamia nut producers to limit pesticide applications.

Physical & Cultural Kochia Control

Steve Young, Utah State University

Determined that a cover crop of clover seeded with an irrigated wheat crop outcompeted weeds and had no detrimental effect on wheat growth and development. Wheat yields were not significantly less than herbicide-alone treatments. Clover continued to grow and did not suffer from diminishing irrigation during dry down and after harvest.

Bed Bugs in the West

Andrew Sutherland, University of California

Created a network of bed bug researchers and extension professionals and launched a digital clearinghouse for bed bug information at **westernbedbugipm.ucanr.edu**. Conducted outreach to new and underserved client groups and reviewed strategies used against bed bugs in multi-unit housing. Established laboratory colonies of bed bugs from six Western states to evaluate insecticide resistance.

Priority Insect Pests of Hemp

Whitney Cranshaw, Colorado State University

Assessed the insects associated with hemp and identified the cannabis aphid (*Phorodon cannabis*) as one of five key hemp pests in Colorado. Developed a hemp insect web site at **hempinsects.agsci.colostate.edu** that provides pest management information to producers.

Preventing Invasives After Fires

Loralee Larios, University of California

Evaluated the impact of bulldozer lines on post-fire recovery of coastal sage scrub habitat by measuring invasive grass seed dispersal from bulldozer lines. Tested how trait composition of seed mixes for revegetation may suppress invasive plants and promote sage scrub regeneration.

Invasive Plants in Arizona

Elise Gornish, University of Arizona

Used a literature review to update the "Non-Native, Invasive Plants of Arizona" guide, which includes recommended management approaches for 17 forbs, seven grasses, six woody plants and five aquatic, riparian or wetland plants.

Insecticide Effects on Natural Enemies

Isadora Bordini, University of Arizona

Examined the selectivity of insecticides for whitefly and Lygus bug control in cotton to promote conservation of natural enemies. Conducted outreach to growers and pest managers about insecticide selectivity, degree of selectivity of specific products, thresholds for natural enemies and the economic and environmental benefits of choosing selective insecticides.

Western IPM Center

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Western IPM Center Projects Funded in 2018

Projects Funded Earlier but Still Active in 2018

Learn more at westernipm.org

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