



2011 Year End Summary

Clear Advances in Uncertain Times



Advances in the Food Program



Advances in Ornamental Horticulture



Advances in Biopesticides & Organic Support



Advances in Public Health Pesticides

Accomplishments

Clear advances
in facilitating
registration
of sustainable
pest
management
technology
for specialty
crops and
minor uses

The IR-4 Project Made Clear Advances in 2011

Food Program— EPA approvals supported 382 potential new registrations. Of these, 220 already appear on product labels and IR-4 expects the majority of those remaining may be registered in time for the 2012 growing season.

Other notable deliverables in the Food Program include:

- 90 New studies conducted to answer specialty crop pest needs
- 179 New petitions submitted to EPA to establish pesticide tolerances and support registrations on 31 chemicals
- 2 Proposals to enhance Crop Groups submitted to EPA
- 4 IR-4 data packages submitted to the Codex Committee of Pesticide Residues or to foreign regulatory authorities to support US exports of specialty crops.

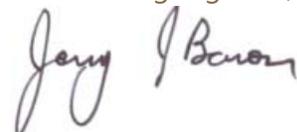
The IR-4 Ornamental Horticulture Program — was involved with 11 registrations which influenced the use of pesticides on 2572 species of non-food crops.

Biopesticide and Organic Support Program — with IR-4 regulatory assistance and data, EPA approved new biopesticide registrations for Bacteriophage of *Clavibacter michiganensis* subsp. *michiganensis* on tomato and *Aspergillus flavus* AF 36 on corn.

Public Health Pesticide Program — achieved key milestones in 2011, including submission of the first regulatory package to EPA for expansion of registration for a new reduced risk product for adult mosquitos and the submission for an experimental use permit for a reduced risk insecticide to manage Asian tiger mosquito in urban environments.

IR-4's Global Initiatives — continued to provide global leadership in the harmonization of Maximum Residue Levels for pesticides on specialty crops. Through pilot research projects and the Global Minor Use Summit-2, IR-4 provides value to growers in the U.S. and throughout the world.

None of these advances could occur — without all those who help IR-4 fulfill its mission including our partners in regulatory agencies, researchers, the IR-4 Project Management Committee (PMC), coordinators, study directors, administrators and our universities. Additionally, I'd like to recognize our stakeholders, the IR-4 Commodity Liaison Committee (CLC), Minor Crop Farmer's Alliance (MCFA), CropLife America and our growers. I also want to thank you for making IR-4 a priority topic when communicating with Federal legislators. I know working together, we will make 2012 a most successful year too!



Clear Advances Result from Public and Private Sector Investment in IR-4

Annual National IR-4 Funding Direct Support

USDA-NIFA (Improved Pest Management*)	\$12,180,000
USDA-ARS	\$ 4,000,000
USDA-FAS (TASC Grant)	\$ 500,000
USDA-APHIS (Invasive Species)	\$ 172,000
Hatch Grant (Multi State Research)	\$ 481,182
Dept. of Defense/USDA-ARS (Public Health)	\$ 250,000
Industry Grants	<u>\$ 1,420,000</u>

Over \$19 million direct

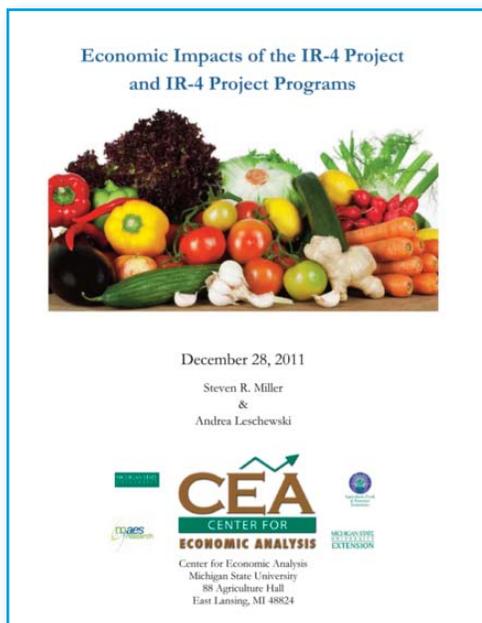
In-Kind Support

Land Grant Universities and/or State Agriculture Experiment Stations	~ \$10,000,000
Crop Protection Industry	~ \$ 3,000,000
Regulatory Authorities (EPA, CA-DPR)	~ \$ 4,200,000
Agriculture and Ag-Food Canada	~ \$ 800,000

Indirect contributions at least \$18 million

*IR-4 is one of several programs within USDA-NIFA (Improved Pest Management)

Return on Investment as reported by Michigan State University's Center for Economic Analysis



Food Program
\$6.2 billion impact
on U.S. GDP

**Ornamental
Horticulture**
\$1.0 billion impact
on U.S. GDP

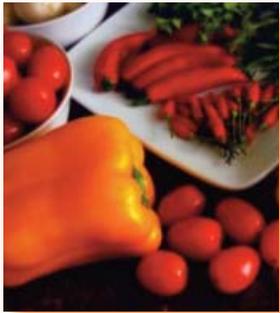
**Biopesticide &
Organic Support**
\$155 million
impact on U.S. GDP

Report can be found at
www.ir4.rutgers.edu

More than
\$7.2 Billion

“the IR-4 Project is anticipated to support research and industry sales sufficient to support 104,650 U.S. jobs and bumps annual gross domestic product by more than \$7.2 billion.”

— MSU CEA



Food Use

In March 2011, the largest bundled submission in IR-4 history was submitted to EPA.

Due to the efforts of the IR-4 Crop Grouping Update Project, revisions of nearly two-thirds of the crop groups have been submitted!

In 2011, the IR-4 Food Use Program worked smarter and faster by improving registrant partnerships, increasing submission bundling, utilizing crop groups and data extrapolations, and establishing a new project prioritization process that better focuses efforts on growers' highest priority needs.

Of note, are two new and exciting products, BYI-02960 (insecticide) and QGU-42 (fungicide) - high priority products on several commodities in IR-4's 2011 research plan. Thanks to the cooperative efforts of the registrants, IR-4 regions and the Pest Management Centre in Canada, IR-4 expects registrations as early as 2014 for BYI-02960 and 2015 for QGU-42. The registrants graciously included analysis of IR-4 samples with their own laboratory work, and will submit the IR-4 data as part of their initial submission and pay the associated EPA PRIA fees. As an added bonus, these products are being considered for Global Joint Reviews by a number of countries and should have global MRLs in place for export of US commodities at nearly the same time the registrations are granted in the US.

In response to EPA's challenge to increase efficiencies by bundling as many uses as possible around each active ingredient submission, IR-4 continues to increase the number of commodities contained in each submission. In March 2011, the largest bundled submission in IR-4 history (expected to provide for more than 350 uses) containing 5 administrative volumes for 5 active ingredients, 14 final reports (IR-4 studies), 21 end-use product labels, and 78 tolerance requests were submitted to EPA.

Due to the efforts of the IR-4 Crop Grouping Update Project, revisions of nearly two-thirds of the crop groups have been submitted! And IR-4 took advantage of these updates in 2011, for example, new tolerances for sulfentrazone included a "Vegetable, fruiting, group 8-10" that provides uses for 21 crops, including okra (which belonged in no group prior to this). Updates and modifications of crop groups have greatly increased the value of IR-4 studies and data. On average, IR-4 gains uses for about 5 commodities for each study conducted; once the crop group updates are complete an expected 10-15 new uses will be gained for each IR-4 study. To date, five crop group revisions (bulb vegetables, citrus fruits, fruiting vegetables, pomefruit, small fruits) and two new crop groups (oilseeds, edible fungi) have been approved; two revised groups (stone fruit, tree nuts) have been proposed in the Federal Register, and another seven crop group revisions have been submitted for EPA consideration and approval.

At the 2011 Food Use Workshop IR-4 Stakeholders selected 45 "A" Priority projects for 2012 research using a different prioritization process. After considerable pre-workshop discussion and stakeholder input, the focus on a quota of "A" priorities for each discipline was replaced by a "no quota" process. The new process focused on the most critical needs for each commodity, regardless of discipline. Stakeholders worked through the slate of about 210 potential projects crop by crop, and reached agreement on the 45 most important priorities in less than a full day. Feedback from attendees confirmed the new process was a huge success and should be continued!



The Green Industry – ornamental horticulture – has faced unprecedented economic uncertainties over the last few years. The largest sector, production of woody nursery crops, has suffered due to the lagging real estate industry. There have been fewer large installations of these crops around new homes or major landscape renovations around existing homes. Also, given tighter budgets, consumers have shifted toward buying 'color', in other words, annuals and herbaceous perennials with colorful flowers or interesting foliage.

Despite these challenging times, the IR-4 Ornamental Horticulture Program continues to make clear advances in uncertain times by providing efficacy and crop safety data to write product labels and by providing an information bank for growers when they are making pest management decisions. During 2011, four new and four amended labels were registered by EPA covering disease, pest and weed management issues. The web resources now include more than 5,500 research reports, 48 efficacy and crop safety research summaries, and management plans created with extension and research scientists.

One product label updated in 2011, Safari 20G (dinotefuran), illustrates IR-4's impact. IR-4 research contributed to the addition of seven new pests on the Safari 20G label in 2011. Nine new research reports and two research summaries were added to the website containing Safari 20SG data. And this is just one example out of many where IR-4 addresses specific grower needs and provides additional resources for growers.

In addition to managing the usual pests, growers often face new exotic organisms that can become invasive. Not every exotic organism wreaks havoc on growers' crops and/or native plants, but enough do that this is an area of concern for biosecurity. Ramorum blight devastates hundreds of native and imported woody plant species and may ultimately alter the makeup of forests throughout the US. Chili thrips and European pepper moth feed on many different plant species - both edible and ornamental. In 2011, the IR-4 Ornamental Horticulture Program received grants to work on two exotic rust diseases and on several exotic insect pests. Collaborating with researchers in the US, Mexico and Hungary, this research aims to minimize the further spread of these rusts or eliminate them. The 2010 and 2011 efforts with gladiolus rust have already begun to influence grower practices in Florida and in Mexico.

The IR-4 Ornamental Horticulture Program remains an essential supporter of the Green Industry and continues to ensure growers have the tools they need to remain globally competitive through traditional research and new initiatives for invasive species.

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Ornamental Horticulture



Biopesticide & Organic Support



IR-4 was instrumental in moving this product through the discovery phase... to submitting the completed package to EPA for registration.

The Biopesticide and Organic Support Program is modest but mighty when it comes to providing growers with new tools to manage pests. In keeping with the goal of facilitating registration of crop protection products classified by EPA as Biopesticides (pesticides derived from natural materials as animals, plants, bacteria, and certain minerals), IR-4 administers a small grants program to fund efficacy research on biopesticides and provides regulatory assistance.

The grant program provides funding for research in one of three stages, Early, Advanced and Demonstration. Early Stage is research for products whose core data packages have not been submitted to EPA. Advanced Stage is research for products that have been registered by EPA or are in the registration process but require additional data to expand the registration for use on new crops or new pests. Demonstration is research on large scale plots to gather data and provide outreach supporting biopesticides as a useful tool in pest management systems.

In regulatory assistance, of note is the registration for bacteriophage of *Clavibacter michiganensis* susp. *Michiganensis* on tomato. IR-4 first became aware of the lack of effective conventional alternatives to control bacterial canker disease during a tour of a commercial tomato greenhouse facility. To remove diseased tissue, the grower's only option was to prune plants and in many cases destroy all plants in a bay. Just like the flu, which is a virus infecting humans, bacteriophage is a virus that infects specific bacteria, in this case, bacterial canker disease. An obvious concern of using bacteriophage is whether it produces a disease in tomato. Analysis and testing shows that the host strain did not, nor can it, cross infect tomato or other bacteria. IR-4 was instrumental in moving this project through the discovery phase, worked with a registrant that had a potential solution, funded greenhouse efficacy trials, and submitted the completed package to the EPA for registration.

The Biopesticide and Organic Support program is involved with a variety of other interesting projects such as the oriental beetle pheromone that attracts the pest to a trap; carob moth pheromone that disrupts the mating process and anthraquinone which can be an effective bird repellent on crop seeds causing an upset stomach in birds.

Along with these clear advances, the Biopesticide and Organic Support program also provided assistance to small businesses and public sector scientists in navigating the EPA registration process.



The IR-4 Public Health Pesticide Program (PHP) made clear advances in 2011 in its work to ensure an adequate toolbox for combatting mosquitoes, ticks, and other disease-carrying arthropods. The year began with a GLP residue study that involved making applications from small aircraft and ended with the PHP program achieving the first federal and state Experimental Use Permits (EUP's) for a series of experiments by the U.S. Navy, Rutgers University, and the University of Florida.

An extraordinary success in 2011 was the submission to EPA of a petition for all-crop tolerances from applications of the mosquito adulticide etofenprox, a high priority of vector control programs. The GLP residue study (to support removal of label restrictions of drift onto crops) was novel both in the requirement to characterize and model the behaviors of ultra-low-volume droplets, and to ensure they hit small test plots when applied by moving aircraft. The PHP program negotiated a new experimental protocol with EPA to conduct this complicated research, and achieved study success through substantial collaboration with IR-4's field, laboratory and quality assurance teams.

IR-4 also initiated the drafting of a white paper that documents the mosquito pest problem in the U.S., products available for mosquito control, products in the development pipeline, and additional pest control needs. This exercise provides an opportunity to help the user community formally define its priorities for research, regulatory support, training and education, and funding for the coming years.

The PHP program wrapped up the year with one more major accomplishment. The program developed the first federal and state EUP's for a series of experiments by the U.S. Navy, Rutgers University, and the University of Florida, using the reduced risk insecticide pyriproxyfen to manage Asian tiger mosquitoes in urban areas of New Jersey and Florida. EUP's are required for experiments which could impact public health or the environment and are a critical step in expanding the permitted uses of existing pesticide products. These EUP's were the first ever submission of a registration action by the Armed Forces Pest Management Board, and IR-4 served as the military's Agent. Much of the large-scale experimental work was completed in 2011, but additional experimentals for 2012 will require amendments and extensions of the EUP's, and any new formulations will require regulatory support as new pesticides.

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Public Health Pesticides



Contact US

IR-4 Regional and USDA-ARS Contacts

Dr. Satoru Miyazaki
North Central
Michigan State University
IR-4 North Central Reg.
Res. Ctr.
3815 Technology
Boulevard, Suite 1031B
Lansing, MI, 48910-8396
Phone: 517-336-4611
ncrir4@msu.edu

Ms. Edith Lurvey
Northeast
Cornell University-NYSAES
Entomology Department
630 W. North Street
Geneva, NY, 14456-1371
Phone: 315-787-2308
ell10@cornell.edu

Dr. Michelle Samuel-Foo
Southern
Regional Field Coordinator
University of Florida
P.O. Box 110720
SW 23rd Dr. Bldg. 685
Gainesville, FL 32611-0720
352.392.1978 x 406
mfoo@ufl.edu

Ms. Rebecca Sisco
Western
Regional Field Coordinator
University of California
1 Shields Avenue
Meyer Hall Room 4218
Davis, CA 95616
530.752.7634
rsisco@ucdavis.edu

Dr. Paul Schwartz
USDA-ARS
ARS National IR-4 Director
USDA/ARS/Office of
Minor Use Pesticides
Rm. 212 Bldg. 007 BARC-W
10300 Baltimore Avenue
Beltsville, MD 20705
301.504.8256
Paul.Schwartz@ars.usda.gov

IR-4 HQ Contacts www.ir4.rutgers.edu

Dr. Jerry Baron
IR-4 Executive Director
IR-4 HQ, Rutgers University
500 College Road East,
Suite 201 W
Princeton, NJ 08540
732.932.9575 x 4605
jbaron@aesop.rutgers.edu

Dr. Dan Kunkel
Associate Director
Food and International
Programs
IR-4 HQ, Rutgers University
500 College Road East
Suite 201 W
Princeton, NJ 08540
732.932.9575 x 4616
kunkel@aesop.rutgers.edu

Dr. Michael Braverman
Manager
Biopesticide & Organic Support
IR-4 HQ, Rutgers University
500 College Road East
Suite 201 W
Princeton, NJ 08540
732.932.9575 x 4610
braverman@aesop.rutgers.edu

Dr. Cristi Palmer
Manager
Ornamental Horticulture
IR-4 HQ, Rutgers University
500 College Road East
Suite 201 W
Princeton, NJ 08540
732.932.9575 x 4629
palmer@aesop.rutgers.edu

Dr. Karl Malamud-Roam
Manager
Public Health Pesticides
IR-4 HQ, Rutgers University
500 College Road East
Suite 201 W
Princeton, NJ 08540
732.932.9575 x 4628
kmr@aesop.rutgers.edu



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Institute of Food
and Agriculture**

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