



IR-4 Matters!

Year End Summary 2014



Dear Friends,

With great pleasure, I present the IR-4 Project's 2014 Year End Summary (YES) Document. The theme of this year's edition is "IR-4 Matters". As we reflect on the past and look forward to the future, IR-4 does matter. What we do and how we do it also matters. Most importantly, what IR-4 delivers to society matters. IR-4's new strategic plan, VISION 2020 (<http://bit.ly/IR-4Vision2020>) provides a roadmap for IR-4 activities and direction over the next five years.

Achieving matters. IR-4 continues to achieve success in all four program areas.

- Food Program - EPA approved 51 new pesticide tolerances supporting 309 potential new use registrations.
- Ornamental Horticulture Program - IR-4 data were used in 6 registrations and label amendments. This supported more than 4,600 species on non-food crops.
- Biopesticide and Organic Support Program - IR-4 funded 23 research grants. Registration activities assisted in supporting 125 new uses being added to registrations.
- Public Health Pesticide Program - IR-4 supported Experimental Use Permits for insecticides in autodissemination devices to control container breeding mosquitoes.

Doing matters. IR-4 takes great pride in selecting food and ornamental horticulture research priorities in open and transparent workshops involving many stakeholders. In an effort to extend this culture to biopesticide research, IR-4 held its first Biopesticide Workshop in September 2014. About 180 participants identified priorities for 2015 research.

Contributing matters. IR-4 efforts support over 104,000 jobs and add \$7.2 billion to the gross domestic product¹. These powerful economic drivers are only half the story. The other half involves food safety, food security and public wellbeing. IR-4 assists in the registration of the latest generation of reduced risk and lower risk pest management products. Many of these products are compatible with Integrated Pest Management systems, pose little hazard or degrade rapidly after use. They allow farmers to maximize yields of quality fruits, vegetables and nuts, making products available to the public at an affordable price. With IR-4's assistance, specialty crop growers provide the public a consistent supply of nutritious foods, essential to good health, as well as aid in the production of ornamentals that enhance the environment. Additionally, IR-4 helps provide tools to manage pests like mosquitoes, ticks and fleas that transmit diseases to humans.

Funding matters. Significant pest management problems exist that challenge production of specialty crops. In many cases, IR-4 is the only option to facilitate approval of necessary pest management technology. The need for IR-4 is growing with new/invasive pests, pest resistance to pesticides and regulatory decisions affecting products. Because of these challenges, the IR-4 Commodity Liaison Committee continues to educate decision makers in Washington of the importance of allocating necessary resources to sustain IR-4.

People matter. We work and partner with some of the best qualified, committed and talented people. I thank my associates for their hard work and effort as well as thanking all of IR-4's partners for their continued support!

All the best — Jerry

¹Miller, S and A. Leschewski. 2012. Economic Impact of the IR-4 Project and IR-4 Project Programs. Report by Michigan State University Center of Economic Analysis

Yes, IR-4 Matters

Food Use Crop Protection Matters because specialty crop growers have specific needs for weed, insect and disease control products.

Weed Control. IR-4 stakeholder Bruce Buurma of Buurma Farms, Willard, OH, asked IR-4 to help with a weed control issue he had in cilantro and dill. The cost of manual weeding became nearly prohibitive, making it difficult to continue or expand production. It took many years, and with help from TKI Novasource, linuron (Lorox® DF) was registered for use on coriander/cilantro, dill, parsley and dry bean in 2014. This product now saves Buurma farms a minimum of \$300 an acre in hand weeding on his 200 acre cilantro crop.

Insect Control. The brown marmorated stink bug (BMSB) has devastated many crops. According to Dr. Tracy Leskey, USDA-ARS, this pest caused \$37 million of losses to Mid-Atlantic apple growers in 2010. Researchers screened dozens of chemistries in several chemical classes to find products that could control BMSB and identified bifenthrin and dinotefuran as the best options. IR-4 began residue studies in 2013. With IR-4's help, growers are able to access these products through emergency use exemptions and with full use registration expected in 2-3 years.

Disease Control. Bacterial diseases continue to be a major

issue for food and non-food crops. Grower concerns prompted IR-4 to sponsor its first Bacterial Challenges Mini-Summit in September of 2014. The summit provided opportunities for communication and future collaborations.

In late 2014 IR-4 was able to bring a new tool, kasugamycin (Kasumin 2L) to apple and pear growers who have been battling bacterial disease for years. This product, from Arysta LifeScience, was registered on the pome fruit group and is especially good news for Michigan apple growers who lost millions of dollars due to fire blight. IR-4 has also submitted packages for several other uses which include: tomato and pepper; almond and walnut; and peach, plum and cherry.

Crop Groups. For many years, IR-4 has championed the use and expansion of Crop Groups. This saves valuable resources while gaining significant new uses for growers. EPA currently grants registrations for about 5 commodities for every IR-4 study submitted. When the new crop group updates are completed, IR-4 expects to receive 10-15 new uses for each study.

International Activities. U.S specialty crop growers need IR-4's assistance to gain or maintain access to profitable international markets. Access to export markets is often limited by the lack of common standards involving pesticide



residues in crops. In 2014, Congress modified IR-4's authorization to include "assist in removing trade barriers caused by residues of pesticides registered for minor agricultural use and for use on domestically grown specialty crops" when they passed the Farm Bill.

IR-4 has worked cooperatively, with other countries to reduce costs and gain efficiencies. Working in cooperation with Canada has achieved great savings (estimated at \$500,000 per year). In 2014, IR-4 conducted its first joint study with Costa Rica to pursue a new use on papaya. Other countries use IR-4 as a model to develop their own minor use programs. For the past two years, IR-4 has been participating in a World Bank funded project to provide technical expertise on capacity building to Asia, Africa, and Latin America. The short term goal is to train international partners in data development techniques. The longer term goal is to have these partners participate in data development projects which facilitate international harmonization of MRLs.

IR-4 continues to repurpose its existing data to submit to international authorities for the establishment of MRLs. IR-4 submits 30 or more data packages to Codex each year for review, which support US trade.

Ornamental Horticulture Crop Protection Matters because plants provide numerous physical and mental benefits including filtering impurities out of air and water, providing food and habitat, and reducing stress levels which improves productivity and conflict resolution. Mature, well-kept landscapes enhance property value and tend to reduce neighborhood crime rates.

Over the past year, IR-4 aided the Green Industry with high priority pest management issues for specific research projects, invasive species, and pollinator protection. Specific projects included studying efficacy for armored scale, botrytis, leaf spots & anthracnose, thrips, and studying crop safety for new fungicides, insecticides and pre-emergent liquid herbicides. With IR-4's help, ornamental horticulture growers have more biological and chemical tools, and registrants develop broader labels in a shorter timeframe.

Invasive species are problematic for the Green Industry. IR-4 coordinated research projects studying mitigation strategies



and has developed basic knowledge for several invasive diseases including boxwood blight, chrysanthemum white rust, gladiolus rust, and impatiens downy mildew. From this research, the research teams developed improved disease management strategies. For example, gladiolus growers in Mexico where gladiolus rust is endemic shifted their fungicide rotations to reduce the potential for shipping infected cut flowers into the US.

Protecting pollinators can be a unique challenge for the Green Industry because production systems must incorporate practices to manage pests without harming pollinators. To outline needed research, IR-4 hosted a special workshop in December 2014. Attendees included scientists who work with ornamental pests and pollinator biology, experts on risk assessment and product submission to EPA, experts on chemical residue analysis and agricultural economics, and representatives of the ornamental horticulture industry. The outcomes were three-fold. First, attendees have a clearer understanding of risk assessment and the types of studies needed to determine risk for honeybees. Second, even though systemic insecticides represent a hazard when applied incorrectly, actual exposure levels after crops leave the greenhouse and nursery are largely unknown because pollinators are not attracted equally to the thousands of different crops the Green Industry produces. The final take home point was learning that while making science-based decisions is important how the scientific results are communicated is even more important.

Biopesticides Matter because they provide a more natural option to manage pests in food and non-food crops for use in conventional and organic systems. IR-4's Biopesticide & Organic Support Program delivers options through regulatory assistance, research grants, and information available in the biopesticide label database. The ongoing regulatory efforts have been key to the continued availability of emergency exemptions for anthraquinone for managing birds in corn and rice and the potassium salt of hops beta acid for managing varroa mite in honeybees.

In December 2014 an historic milestone was set when the US EPA registered *Tobacco mild green mosaic tobamovirus*, a bioherbicide containing a plant virus as the active ingredient. The registration marked the first time a plant virus was registered as an herbicide anywhere in the world. IR-4 provided considerable guidance throughout the registration process.

The efficacy grant program underwent a dramatic change in 2014. Since 1995 the program has used a "call for proposals" mechanism to select its research. While this approach produced many successful projects and uses, IR-4 recognized that many of the projects did not necessarily align with growers' needs. IR-4 sent out an open request for high priority need projects. Many responded, and these requests were discussed during IR-4's first Biopesticide Workshop, in September. Over 180 people attended, learned about biopesticide successes and options, and voted for the priorities they thought were the most important. The greatest needs identified at the workshop, were products to manage spotted wing drosophila, brown marmorated stinkbug, fireblight in organic apples, American chestnut blight, varroa mites in honeybees, mosquitoes, bacterial diseases of vegetables and downy mildew on basil.



Tropical soda apple infestation in a pasture (left) and a conservations area (right)



Untreated

13 days after treatment

23 days after treatment

33 days after treatment

Reaction of the invasive weed Tropical Soda Apple to the bioherbicide SolviNix®



Public Health Pesticides matter because they are critical tools to protect people and domestic animals from diseases carried by arthropod vectors such as mosquitoes, ticks, and fleas. The vector control toolbox is undergoing major transitions, and the IR-4 Public Health Pesticides Program (PHP) is helping bring a new generation of products to market, while also supporting new uses for existing products, protecting existing tools and uses, and developing critical data management tools for vector control professionals.

Substantial public and private investment in vector control research over the last decade is starting to pay off with innovative products, and IR-4 is supporting the development and registration of attractive toxic sugar baits, lethal i-traps, IGR autodissemination stations, treated fabrics, novel biocontrol strategies, and new chemical classes based on

natural products, among other new tools.

While new products are critical, support for existing materials facing data requirements is sometimes the most efficient way to keep the toolbox full, and in 2014 we continued a collaboration with the user community, registrants, and regulators to help ensure the long-term availability of chemical tools.

Keeping track of existing vector control tools and potentially useful innovations is a big challenge, as hundreds of chemicals and thousands of end-use products are in use or in development around the globe. IR-4 leads the way in vector control data management, publishing both the Inventory of Public Health Pesticides and the online PHP Database (<http://bit.ly/PHPdatabase>), which was substantially revised and expanded in 2014.

Funding Matters

It Takes Many Years to Complete Projects, and this Research is Expensive

Increased Funding is Needed

- Research activities – the cost of land, workers, chemicals, supplies and protective gear, necessary for residue and product performance trials increases every year. Increased funding would allow IR-4 to expand the number of priority projects it conducts each year.
- New pest pressure – increased funding will allow IR-4 to conduct research to address these new pest problems.
- Research equipment/analytical instruments – IR-4 has been forced to defer making necessary equipment updates due to funding shortfalls.
- Increase in EPA and Global requirements – in recent years, US EPA and other regulatory bodies continue to require more comprehensive data to support new product registrations. Increased funding will allow IR-4 to meet these new requirements to conduct this research, as well as allow this research to be used for global regulators to support US export markets.



Funding Needed
\$15.9 million*

Current
USDA-NIFA Funding
\$11.9 million

Shortfall
\$4 million*

* Suggested in Vision 2020: IR-4
Strategic Plan



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Major funding provided by Special Research Grants and Hatch Act Funds from USDA-NIFA, in cooperation with the State Agricultural Experiment Stations, and USDA-ARS. State Agricultural Experiment Stations provide in-kind support valued at over \$10 million annually.