



The IR-4 Project

Pest management solutions for
specialty crops and specialty uses

ir4project.org

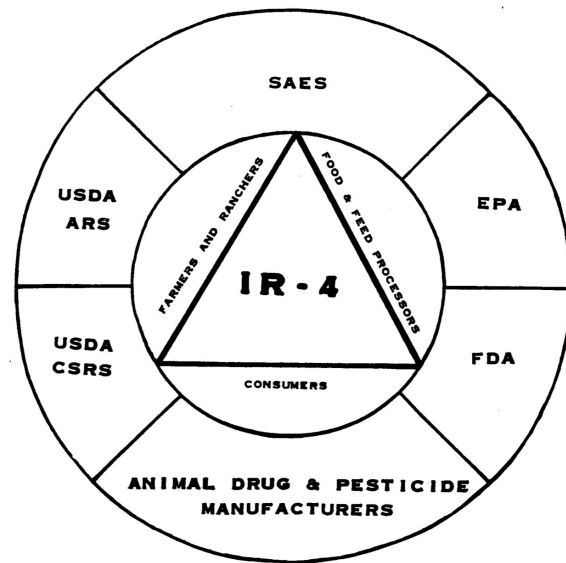
IR-4's Mission

**Securing pest management solutions for specialty crops
and specialty uses in support of public well-being.**

IR-4's History

- IR-4 was established in **1963** through a partnership between the **USDA and land-grant universities** to help address gaps in access to pest management tools for specialty crop producers.
- For over 60 years, IR-4 has built **strong, collaborative partnerships** across federal agencies, universities, and industry, which is reflected in its original logo.
- Since its founding, IR-4 has been generating the data needed to support **safe, effective pest management solutions** for specialty crop producers.
- IR-4 has secured over **23,000 pest product registrations** on food crops through the U.S. EPA, and many more for ornamental crops.

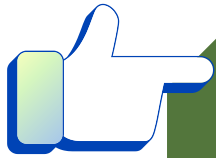
IR-4 originally stood for Interregional Research Project #4.



**A NATIONAL AGRICULTURAL PROGRAM
TO CLEAR PEST CONTROL AGENTS AND ANIMAL DRUGS
FOR MINOR USES**

IR-4 History

IR-4 was established to address the **minor use problem**.



The **minor use problem** refers to a shortage of registered pesticides for specialty crops (fruits, vegetables, nuts, herbs, ornamentals & more) due to the limited economic incentives for chemical manufacturers. Because market returns are low compared to large-acreage commodity crops (like corn, soy and wheat) and registration costs are high, these crops have faced significant yield losses and limited options for protection. Growers need public-sector interventions to facilitate registrations and advocate for their needs.

What We Do

- Ensure that specialty crops and minor uses have legal access to **safe, effective crop protection** tools
 - Work with **growers and other stakeholders** to identify pest management needs and solutions
 - Conduct necessary crop safety, efficacy, and residue **research**
 - **Submit data** to the U.S. Environmental Protection Agency (EPA) and other entities for approval of new uses

Serving Specialty Crops + Minor Uses

- **Specialty crops**
 - Fruits, vegetables, nuts, herbs, spices, mushrooms, ornamental crops + more
 - USDA, Section 101 of the Specialty Crop Competitiveness Act of 2004
 - High-value, lower-acreage crops
- **Minor uses on major crops**
 - Ex: methoxyfenozide on rice



Meeting Growers' Needs



IR-4 helps **organic and conventional** farmers access **safe, effective tools** to manage pests.

IR-4 conducts research and registration work that **responds to grower needs**:

- Chemical pesticides
- Biopesticides
- Biotechnologies
- Other emerging technologies

Addressing Key Challenges in Agriculture

- **Pest pressure** on specialty crops is significant
- **Resistance** to existing pest control products is increasing
- **Limited tools** are accessible for managing pests on specialty crops
- **Volatility in weather and climate** = increasing pest problems
- **Reduced-risk** products and emerging technologies are needed by growers
- **International harmonization** helps growers access export markets
- **Specialty crops** are essential for nutritious diets and public wellbeing
- **Pest damage creates food waste**; protecting crops reduces waste
- **Helping farmers keep farming** supports food access & security

IR-4 is Needed



IR-4 is the **primary publicly-funded program** conducting research and submits petitions to the EPA for the approval of new tolerances and the registration of additional uses of pest management tools for specialty crops.

By **increasing pest management options** through regulatory approval, IR-4 supports **healthy harvests** and generates **economic growth** for the specialty crop community.

IR-4's Impacts



Increasing Pest Management Options



IR-4 has facilitated the registration of **over 23,000** pest management products for use on food crops, and many more for ornamental crops.

Access to options for safe pest management **helps farmers keep farming** successfully.

Supporting Healthy Harvests

Specialty crops are vital to public health and wellbeing, and these are the crops we help bring to market.

Crops like fruits, vegetables & ornamental plants may be called “specialty,” but they’re essential to us all—and they need protection from damaging weeds, diseases, and arthropod pests.



Generating Economic Growth

- IR-4's efforts and jobs contribute approximately **\$8.97 billion** to the annual gross domestic product.
- **Seven jobs** can be attributed to **every \$1,000 of public investment** in The IR-4 Project.
- IR-4 contributes to more than **123,000 U.S. jobs** throughout the agricultural production value chain.
- **\$4.3 billion** increase in specialty crop food sales can be attributed to IR-4's work

**Figures according to a 2022 analysis conducted by Michigan State University's Center for Economic Analysis, based on 2021 numbers.*

IR-4 is a SPECIALTY CROP SUPERHERO.

When pests attack, IR-4 fights back!



Specialty crops are highly vulnerable to insect pests, diseases and weeds.



Pest damage is costly to growers, reducing annual yields by approximately 20-40%*.

This looks like a job for...IR-4! Safeguarding specialty crops since 1963, IR-4 secures access to crop protection tools tailored to specialty crop growers' needs.



* According to the FAO



Our Team

IR-4 serves growers across the country thanks to our offices at land-grant universities covering every region.

IR-4 Headquarters Office

IR-4 Headquarters

North Carolina
State University

*Management, QA,
program leads +
operations*

Teams located here:

Registration Team
Biology Team
Quality Assurance Unit
Operations Team
IR-4 Management



NEW DIRECTOR ANNOUNCEMENT



IR-4 recently welcomed a new Executive Director, Lina Quesada-Ocampo. Find the announcement on our website's news page.

ir4project.org/about-ir4/news

IR-4 Regional Offices

SOUTHERN REGION

University of
Florida

Field + lab

WESTERN REGION

University of
California,
Davis

Field + lab

NORTHEAST REGION

University of
Maryland
Eastern Shore

Field

NORTH CENTRAL REGION

Michigan State
University

Field

USDA-ARS

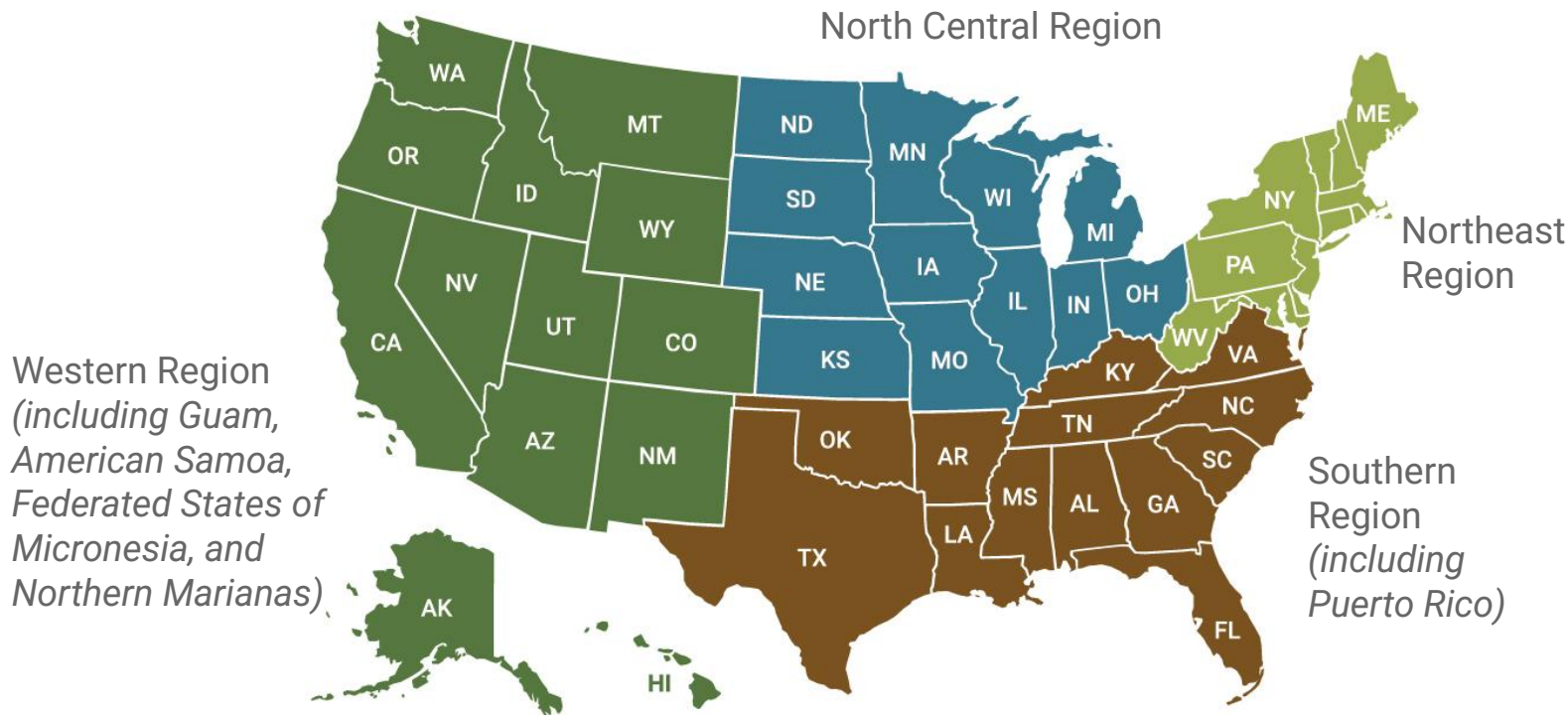
Charleston, SC
(Based at the
U.S. Vegetable
Laboratory)

Field + lab

Regional Field Coordinators (RFCs) work with local growers and commodity groups to identify pest concerns and effective solutions. They facilitate regional priority setting and advocate for high priorities on a national level.

Regional Laboratory Coordinators oversee IR-4's analytical lab teams.

The IR-4 Project Regions



Regions also include USDA-ARS

Regional and Local Engagement

- **Regional Field Coordinators (RFCs)** and **State Liaison Representatives (SLRs)** work with local **growers** and **commodity groups** to identify pest concerns and potential solutions
- **RFCs** facilitate regional priority setting and advocate for high priorities on a national level
- **Field Research Directors (FRDs)** conduct and oversee trials locally at land-grant university research sites



Purposeful Partnerships

IR-4's work takes a village

Participants in the Process

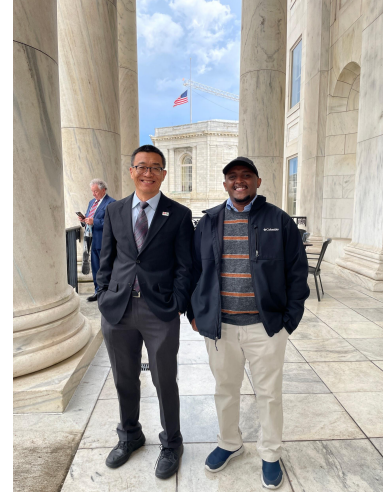


Our collaborators include growers, researchers, agencies, committee members, commodity groups, land-grant universities, registrants, manufacturers and more.

Project Management Committee

Board of Directors for IR-4

- **Meets a minimum of 3 times per year** to develop policies and procedures, set budgets, review status of ongoing programs, and ensure goals are met.
- **Members include:** IR-4 Executive Director, Regional Directors, Regional Administrative Advisors, and a representative from the Commodity Liaison Committee.



PMC members Matt Hengel, Liwei Gu and Simon Zebelo during the 2025 spring meeting in D.C.

Commodity Liaison Committee



- **Stakeholder committee** representing various specialty crop commodity groups
- Provides guidance to IR-4 on ways to **serve needs of growers**
- **Advocates for IR-4** to elected officials

Main Funding Support

- **U.S. Department of Agriculture (USDA)**
 - National Institute of Food and Agriculture (NIFA)
 - Agricultural Research Service (ARS)
- **agInnovation (NRSP-4)**
- **Crop protection industry and commodity groups**



Additional Support

- USDA – Foreign Agricultural Service (FAS)
- USDA – Animal and Plant Health Inspection Service (APHIS)
- CDFA – California Dept. of Food and Agriculture
- U.S. Environmental Protection Agency (waiver of submission fees)
- Minor Use Foundation, Canadian Pest Management Centre and other international partners (joint projects)



IR-4's Programs



Program Areas



Food Crops

- Residue Studies & Product Performance
- Biopesticide Regulatory Support
- International Activities

Environmental Horticulture

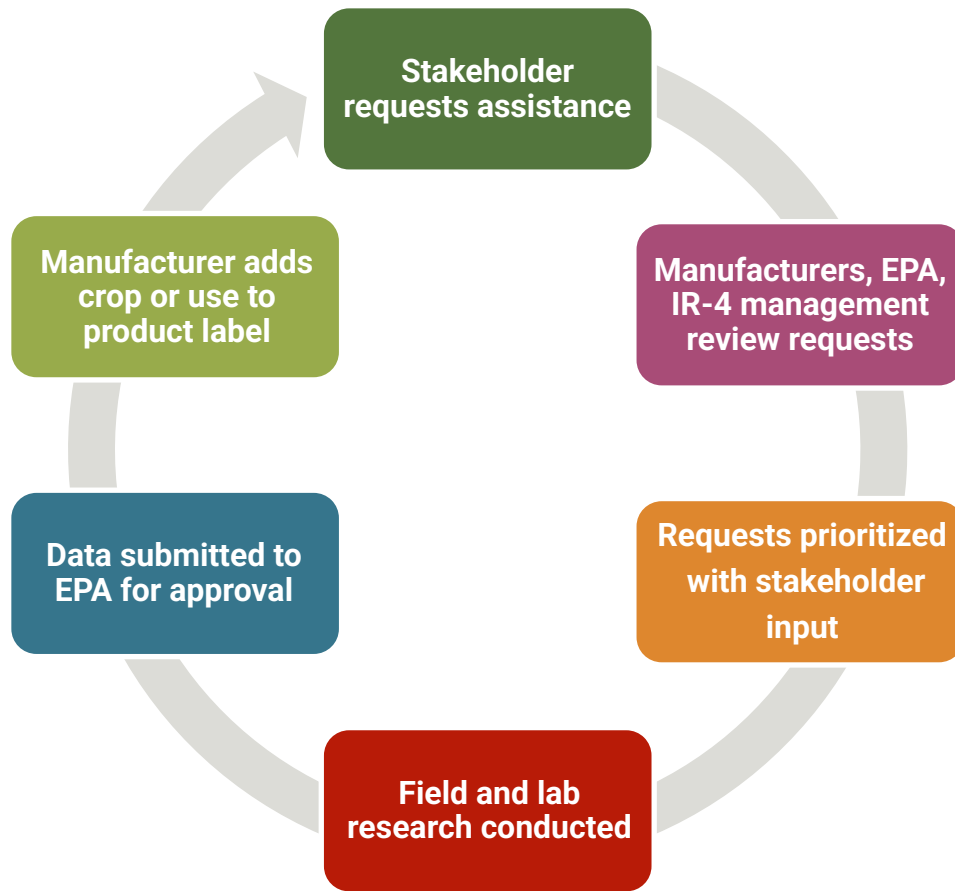
- Registration Support
- Invasive Species

- Facilitates regulatory approval of safe and effective pest management solutions for specialty food crops
- Growers & other stakeholders work with Regional Field Coordinators to identify potential solutions for research and set IR-4's priorities



FOOD CROP RESEARCH CYCLE

ANNUAL RESEARCH CYCLE IR-4 FOOD CROP PROGRAM



*This happens
at IR-4's
annual Food
Use Workshop*

RESIDUE & PRODUCT PERFORMANCE

Generates data required to support registration of a single product (conventional or biological) for the management of a specific pest on a specific crop.

- **Residue:** Establishes residue tolerance for the crop
- **Product Performance:** Assesses the efficacy and crop safety of the pesticide



2026 RESEARCH UPDATE

Integrated Solutions research is paused indefinitely due to funding constraints.

IR-4 can still conduct product performance research for biological products under the Food Crop Program. Stakeholders are encouraged to submit project clearance requests for this work in 2026 and beyond.

IR-4 also continues to serve stakeholders' biological product needs through the Biopesticide Regulatory Support platform.

Biopesticide Regulatory Support

- Provides **regulatory assistance** to public sector scientists + small businesses navigating EPA registration with bio-based products
- Furthers **development + registration** of biopesticides for use in pest management on specialty crops, and specialty uses on major crops
- Active role in securing products to protect **honey bees** and developing emerging technologies to manage **citrus greening**, among other specialty crop challenges



Image credit: Philip Moore, Haw Honey

International Activities

Global harmonization

- Help facilitate US grower access to international markets via harmonization maximum residue levels
- Harmonization of crop groups

Capacity building

- Cooperation with Minor Use Foundation

Joint residue studies

- Canadian Pest Management Centre/others





2025 Snapshot

Food Crop Program



SUCCESSSES

- **3** new tolerances for **3** active ingredients established by U.S. Environmental Protection Agency (EPA) resulting in **3** potential new product uses on food crops

REGULATORY ACTIONS

- **9** tolerance petitions submitted to the EPA, and **1** non-PRIA submission of two data packages. These covered **44** unique requests for assistance and crop group tolerance updates
- **2** biopesticide submissions were made (one addressing bacteriophages of *Varroa* mites of honeybees and one addressing citrus greening).

RESEARCH

- **346** residue trials contributing to **37** Magnitude of the Residue studies
- **149** efficacy/crop safety trials contributing to **79** Product Performance projects
- **15** field trials contributing to **17** Integrated Solutions projects

2025 presented unique external challenges with the new federal administration, an extended government shutdown, and federal agency disruptions. Despite external setbacks, IR-4's research productivity remains strong. Overall, the Food Crop Program's recent successes have significantly expanded pest management options for growers and we're optimistic that regulatory outcomes will return to healthy numbers in the year(s) to come. Here are the **successes IR-4 reported over the last 3 years:**

	2023	2024	2025
New Tolerances	211	52	3
Potential New Uses	1613	1024	3
Tolerance Petitions Submitted	12	9	9
Residue Trials	384 trials (52 new Magnitude of the Residue studies)	394 trials (53 new Magnitude of the Residue studies)	346 trials (37 new Magnitude of the Residue studies)
Efficacy/Crop Safety Trials	143 trials (65 new product performance projects)	198 trials (74 new product performance projects)	149 trials (79 new product performance projects)

Economic Impact

Food Crop Program



- **75,300** total **jobs supported** (directly and indirectly)
- **\$3.59 billion** in annual **labor income**
- **\$6 billion** contributed to the annual U.S. **Gross Domestic Product**



- **\$4.31 billion** increase in specialty **food crop sales**

**Figures according to a 2022 economic impact analysis conducted by the Michigan State University Center for Economic Analysis, in 2021 dollars*

Figures according to a 2022 economic impact analysis conducted by the Michigan State University Center for Economic Analysis, in 2021 dollars.

Environmental Horticulture Program

Assists in the development of pest management tools for use on environmental horticulture crops, est. 1977.

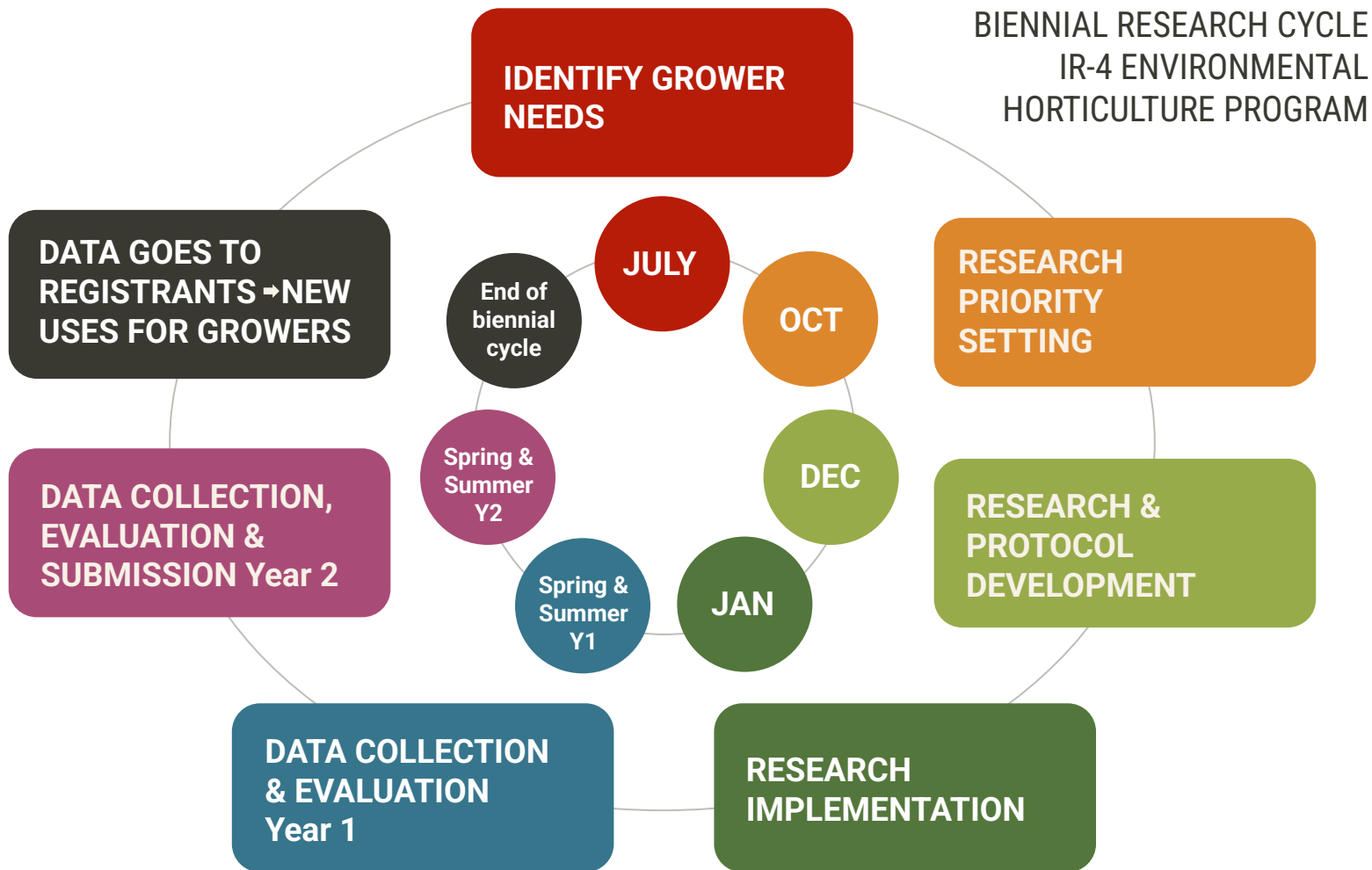
Crops include:

- Landscape & nursery plants
- Greenhouse ornamentals
- Cut flowers
- Houseplants

2 key research areas:

- Registration support
- Invasive species







2025 Snapshot

Environmental Horticulture Program



SUCCESSSES

- The Environmental Horticulture Program supported new and existing pesticide registrations for ornamental crops through the development of efficacy and crop safety data. With the assistance of IR-4 data, **four** new registrations were approved by the EPA in 2025, resulting in over **775** new use categories.

REGULATORY ACTIONS

- **13** research summaries were written and/or updated to support new or update existing registrations; **4,435** field and greenhouse trials contributed to these summaries.

RESEARCH

- **602** field and greenhouse trials (**157** efficacy, **445** crop safety) that contributed to **21** projects

Economic Impact

Environmental Horticulture



- **9,700** total **jobs supported** (directly and indirectly)
- **\$456 million** in annual **labor income**
- **\$725.5 million** contributed to the annual U.S. **Gross Domestic Product**



- Annual Crop losses mitigated value **\$506 million**

**Figures according to a 2022 economic impact analysis conducted by the Michigan State University Center for Economic Analysis, in 2021 dollars*

Figures according to a 2022 economic impact analysis conducted by the Michigan State University Center for Economic Analysis, in 2021 dollars.

Learn More + Get Involved



Pest management solutions
for specialty crops and
specialty uses

2025 ANNUAL REPORT



*Prepared by IR-4
Headquarters*

The annual report and year-end summary have been published. Find both on IR-4's annual reports webpage.

ir4project.org/about-ir4/annual_report



Visit ir4project.org
to view our latest
promotional video:

**“The IR-4 Project:
60 Years and Beyond”**

Scroll down to **Learn
More About IR-4.**

Learn More About IR-4



Learn about IR-4's impacts and how land-grant researchers in our community envision the next 60 years.



Share Your Pest Management Needs with IR-4



The best way to voice your needs and help shape our research is to **submit a Project Clearance Request (PCR)**. We accept PCRs for both the Food Crop and Environmental Horticulture Programs. The EH Program also invites input through its Grower Survey.

Visit **ir4project.org** and select **Submit a Request** to learn more, view deadlines, find a tutorial, and submit your PCR. New PCRs inform discussions at our priority setting events. We hope you'll get involved by submitting a PCR!



2026 PCR deadline: July 1



Industry Technology Session Presentations Posted



IR-4 holds the Industry Technology Session annually in February.

Companies introduce their **novel pest control technologies**, present updates on **products already in IR-4 research**, or share **news** about previously presented technologies or already known products.

Check out **recorded presentations** from this year's session online. They may be helpful in planning new project requests.

The event webpage can be found at **ir4project.org** under Events & Training.



IR-4
Project 

**FOOD USE
WORKSHOP**

September 15 -17, 2026

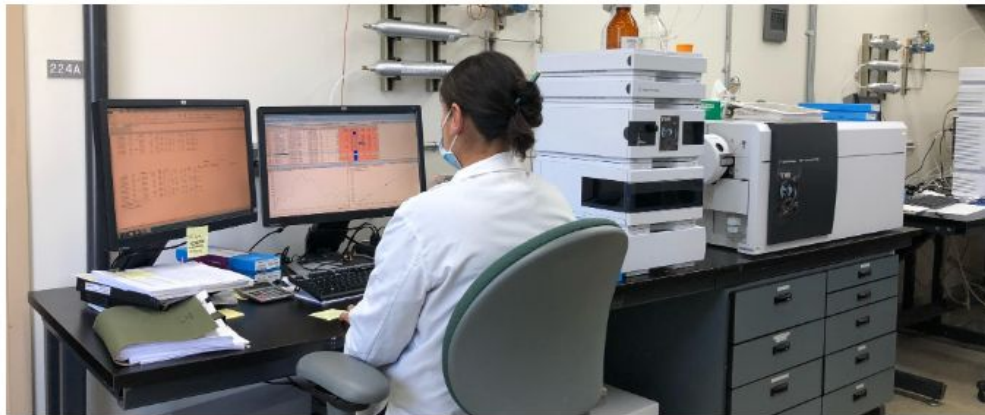
**Save the date
& join us in
Austin, TX**



Visit the **Stakeholder Resources** page at ir4project.org for more helpful materials.

Please note the **Video Tutorials**—designed so new collaborators can learn how to participate in our research cycle!

Stakeholder Resources



The IR-4 Project works with stakeholders from the specialty crop industry, land-grant universities, commodity groups, registrants and other partners to provide safe and effective pest management tools for specialty crop growers. The following resources are here to help stakeholders get involved in our research cycle.

Databases and Resources by Program

Food Program

[Food Program Database](#)

– [eQA/eDOCS](#)

[Food Use Workshop Terminology Handout](#)

[Food Crop Research Cycle Handout](#)

[Priority Upgrade Proposal Form](#)

[Researcher Resources](#)

Video Tutorials

[Submitting a Project Clearance Request](#)

[Nominating Projects for the Food Use Workshop](#)

[The Food Use Workshop Process](#)

[Priority Upgrade Proposals](#)

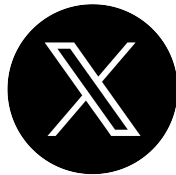


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