Challenges and opportunities for pest management in specialty crops

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https://www.ir4project.org/
The IR-4 Project

Established in 1963 by the United States Department of Agriculture to provide a solution to the “Minor Use Problem”.
Minor Use Pesticide Problem

Specialty crops such as fruits and vegetables have high value per acre.

Fewer acres per crop compared with corn, cotton, soybeans.

High risk but little return on investments so companies are generally not interested in registering a product in minor or specialty crops.

Who can help specialty crop growers?
It Starts with the Pests!
IR-4 Mission

Facilitating the regulatory approval of sustainable pest management technology for specialty crops and specialty uses to promote public well-being
Program/Efforts

Research Funding

Food Program
- Residue Studies
- Product Performance
- Integrated Solutions

Environment Horticulture
- Product Performance

Support Activities
- Crop Grouping
- Biopesticides Registration
IR-4 is Technology Neutral

Give farmers the tools, let them make the decision on what products to use.

IR-4 supports conventional and organic farming practices with conventional pesticides, biopesticides, biotechnology and other pest management technology.
Food Crops Program

- Residue Program
  - Conduct 70 residue studies per year on 40 or chemistries (about 450 field trials)
  - Submit 80 study reports to EPA
  - Approximately 1000+ new uses registered / year
- Targeted Product Performance
  - Not required to submit to EPA-done to satisfy company or needs by states
- Integrated Solutions
- Crop Grouping Expansion
- Harmonization of MRLs and international activities
The IR-4 Food Use Regulatory Clearance Process

Stakeholder:
- Define Pest Problem
- Identify Pest Management Solution
- Request Assistance from IR-4

The Process Starts with Requests
- Submitted from:
  - Growers
  - Grower Groups
  - State/Federal Research & Extension Personnel

Request Reviewed by Manufacturer

Requests Prioritized
- Top Priorities Researched That Year
- Other Priorities Researched as Money Allows

Field and Lab Research
- Measure residue levels in crop samples (EPAregions.pptx)
- Top priorities completed in ~30 months

Manufacturer Adds Crop to the Product Label

Risk Assessment
- Tolerance Established by EPA

Data Submitted to EPA

http://ir4.rutgers.edu/FoodUse/FOODRequestForm.cfm
IR-4’s Global Activities

- Joint residue studies-PMC in Canada
- Harmonization research-zoning/crop groups
- Codex Committee of Pesticide Residue
- Global Minor Use Summits/Workshops
- OECD
- Capacity development
Minor Use Foundation, Inc.
Working with Governments, Grower Groups, and Specialty Crop Organizations on technology tools

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Biopesticides

IR-4’s Biorational Program established in 1982. Over time name changed to Biopesticide Program, then Biopesticide and Organic Support in 2008

Prior to the establishment, IR-4 facilitated “All Crops” tolerance exemption for sprayable Bt
Signature Successes

• Codling Moth Granulosis Virus
• AGRIPHAGES for bacteria control, including canker in greenhouse tomato
• Numerous biopesticides for management of mites in/on honeybees
• Extract of giant knotweed to manage diseases on many crops → REGALIA
• AF36 to manage aflatoxin on many crops
• Honeysweet varieties of stone fruit that is modified to resist Plum Pox
• “All Crop” tolerance for spinosad → Broad ENTRUST label for organic crops
Changes in Biopesticide World

• Many new effective products with registrations
• Big companies are established in biopesticide market
• Consumer demand for green products for home and garden
• Seemingly, biopesticides had greater fit into conventional agriculture systems
Modern Minor Use Problem

Registrations are plentiful but ability to use approved pest management products can be limited:

- Export issues
- Pest resistance
- Use restrictions
- Public acceptance
Integrated Solutions

“Integrated Solutions” initiative; coupling biopesticides with conventional products in research. Priorities include:

• Pest Problems Without Solutions
“Integrated Solutions” initiative; coupling biopesticides with conventional products in research. Priorities include:

- Pest Problems Without Solutions,
- Resistance Management
Integrated Solutions

“Integrated Solutions” initiative; coupling biopesticides with conventional products in research. Priorities include:

• Pest Problems Without Solutions,
• Resistance Management
• Residue Mitigation
Residue Mitigation

Extending the pre harvest interval (time from last application to harvest) to allow for residues to decline below MRLs of export markets and then maintain pest control with biopesticides at the end of the season.
Integrated Solutions

“Integrated Solutions” initiative; coupling biopesticides with conventional products in research. Priorities include:

- Pest Problems Without Solutions,
- Resistance Management
- Residue Mitigation
- Address needs in organic production systems
Specimen Label

Agricultural Use Requirements (Cont.)

It contains requirements for training, decontamination, notification, and emergency response. This also includes specific instructions and exceptions pertaining to the statement on this label about personal protective equipment (PPE) and necessary entry. The requirements in this box only apply to PPE used in this product that are covered by the Worker Protection Standard.

Storage and Disposal

Do not store water, fuel, or any other material in a container containing PPE, and store containers in a dry, cool, and well-ventilated area. When not in use, store containers in a safe location out of reach of children.

Precautionary Statements

Personal Protective Equipment (PPE)

Container Labeling:

The following container labels are required for this product:

- A label containing the required PPE information
- A label with the following text: "For use with this product only. Not acceptable for any other use."
- A label containing the following information:
  - The name of the company producing the product
  - The type of product (e.g., insecticide, fungicide)
  - The intended use of the product

Certification by the Organic Materials Review Institute (OMRI)

This product is certified by the OMRI for use in organic production.

Non-Agricultural Use Requirements

This product is intended for use in non-agricultural settings and is not subject to the Worker Protection Standard.
Regulatory Assistance-Biopesticides

New Active Ingredients from USDA, universities & small companies

- Arranging meetings with EPA
- Write data waiver scientific justification
- Formatting documents
- Government Forms
- Label Modification
- Communication, Negotiation
- Toxicology review
Crop Grouping-Building Research Efficiency

- Conduct residue studies on a few representative crops and get EPA tolerance established on all crops in the group or subgroup.

<table>
<thead>
<tr>
<th>Crop Grouping</th>
<th>Fruit Group</th>
<th>Representative Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-12. STONE FRUIT GROUP</td>
<td>Sweet cherry or Tart cherry, Peach and Plum or Prune plum</td>
<td>Apricot; apricot, Japanese; capulin; cherry, black; cherry, Nanking; cherry, sweet; cherry, tart; Jujube, Chinese; nectarine; peach; plum; plum, American; plum, beach; plum, Canada; plum, cherry; plum, Chickasaw; plum, Damson; plum, Japanese; plum, Klamath; plum, prune; plumcot; sloe; cultivars, varieties, and/or hybrids of these</td>
</tr>
<tr>
<td>12-12A. Cherry subgroup</td>
<td>Cherry, sweet or Cherry, tart</td>
<td>Capulin; cherry, black; cherry, Nanking; cherry, sweet; cherry, tart; cultivars, varieties, and/or hybrids of these.</td>
</tr>
<tr>
<td>12-12B. Peach subgroup</td>
<td>Peach</td>
<td>Nectarine; peach; cultivars, varieties, and/or hybrids of these.</td>
</tr>
<tr>
<td>12-12C. Plum subgroup</td>
<td>Plum, or Prune plum</td>
<td>Apricot; apricot, Japanese; Jujube, Chinese; plum; plum, American; plum, beach; plum, Canada; plum, cherry; plum, Chickasaw; plum, Damson; plum, Japanese; plum, Klamath; plum, prune; plumcot; sloe; cultivars, varieties, and/or hybrids of these.</td>
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</tbody>
</table>
Benefits

**Growers**
- Legal access to safe & effective pest management technology......grow high quality crops

**Food Processors & Food Retailers**
- Consistent supply of raw materials

**Economy**
- IR-4 contributes $9.4 Billion to annual US GDP/supports >95,200 jobs

**Public**
- Plentiful supply of specialty crops that contribute to a healthy diet & plants that enhance the environment.
Research Planning-2023

• Southern Region State Liaison Representatives

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Research Planning- Your Role in 2023?

How do I Request Assistance? Talk with your local Commodity Group, Extension Agent, and/or Regional Field Coordinator and Submit a Project Request.
Research Planning - Your Role in 2023?

What Happens Next?
• Attend the Food Use Workshop to make others aware of your need and garner support.
• Trial samples are then sent to Analytical Laboratories at SAES or USDA-ARS Facilities and if necessary contract labs are assigned samples.
• The labs determine the amounts of chemical remaining in or on the crop.
• IR-4 QAU and EPA inspections and audits are conducted throughout the study.
• This data is then compiled into a regulatory package and submitted to the EPA requesting establishment of new tolerances (Maximum Residue Limits or MRLs).
Research Planning - Your Role in 2023?

How can I help?

Behind the Scenes
• IR-4 personnel hold many meetings with registrants to determine their level of support of an IR-4 submission.
• IR-4 personnel meet with the EPA to determine the “red, yellow, green” chance for a tolerance to be granted on the particular chemical/s
Research Planning-2023

• Southern Regional Priority Setting

• New Technology Session on July, 2022

• IR-4 Food Use Workshop- Will be virtual again(?)......in person (??)September 2022
Thank You!

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