IR-4 Provides Economic Viability

The specialty food crop value in Arizona is $665 million¹

- Specialty crops include most vegetables, fruits, nuts, herbs, nursery and flower crops.

IR-4’s research helped to register Section 18 Emergency Exemptions for Arizona that helped prevent a loss of $41 million² from occurring (see back). A registration is granted by the Environmental Protection Agency (EPA) for a particular pest control product on a specific crop. In 2003, ninety-five of the 120 Section 18 Emergency Exemptions that were converted to final registrations were credited to IR-4 by the EPA.

IR-4 Provides Research in Support of a Safe and Secure Food Supply

The Reduced Risk chemicals that IR-4 researches receive clearances from the Environmental Protection Agency (EPA), and are able to control pests that destroy crops without harming the individuals that use them, the food that is harvested, or the environment in which the crops are grown.

IR-4 Helps US Farmers Compete in a Global Economy

With farm production costs rising every day, IR-4 research helps growers stay ahead of global competition, by producing safe and effective pest management solutions for their high value specialty crops.

¹ Source: U.S. Department of Agriculture
² Source: IR-4 Project
Clearances On Some Important Arizona Crops

**ALFALFA**
- Aluminum Phosphide
- Glyphosate
- MCPA
- Pronamide

**ALOE VERA**
- Glyphosate

**BROCCOLI**
- Bacillus thuringiensis
- Chlorpyrifos
- Clopyralid
- Glyphosate
- Malathion
- Oxyfluorfen
- Paraquat
- Sodium Hypochlorite

**CABBAGE**
- Bacillus thuringiensis
- Chlorpyrifos
- Clopyralid
- Clomazone
- Glyphosate
- DCPA
- Endothall
- Glyphosate
- Malathion
- Methomyl
- Oxyfluorfen
- Paraquat
- Sodium Hypochlorite

**CANTALOUPE**
- Bacillus thuringiensis
- Bifenthrin (Sec. 18)
- Dimethomorph
- Glyphosate
- Imidacloprid (Sec. 18)

**CANTALOUPE cont.**
- Malathion
- Metalaxyl + Mancozeb
- Paraquat
- Permethrin

**CAULIFLOWER**
- Bacillus thuringiensis
- Chlorpyrifos
- DCPA
- Endothall
- Glyphosate
- Malathion
- Methomyl
- Oxyfluorfen
- Paraquat
- Sodium Hypochlorite

**CELERI**
- Bacillus thuringiensis
- Carbaryl
- Glyphosate
- Malathion
- Methamidophos
- S-Metolachlor
- Sethoxydim

**CILANTRO**
- Azoxystrobin
- Sethoxydim
- Spinosad

**COLLARDS**
- Bacillus thuringiensis
- Bensulide
- Chlorpyrifos
- Clethodim
- Endothall
- Esfenvalerate
- Methomyl
- PCNB
- Sodium Hypochlorite

**CUCUMBER**
- Bacillus thuringiensis
- Clomazone
- Dimethomorph
- Glyphosate
- Paraquat
- Permethrin
## Clearances On Some Important Arizona Crops

### HONEYDEW MELONS
- Bacillus thuringiensis
- Metalaxyl + Mancozeb
- Paraquat

### KALE
- Bacillus thuringiensis
- Chlorpyrifos
- Clethodim
- Methomyl
- PCNB
- Sodium Hypochlorite

### LETTUCE
- Bacillus thuringiensis
- Bifenthrin
- Dimethomorph
- Sethoxydim

### PEPPER (BELL)
- Bacillus thuringiensis
- Bifenthrin
- Clomazone
- Fluazifop
- Glyphosate
- Imidacloprid
- Paraquat
- Permethrin
- S-Metolachlor

### PEPPER (NON-BELL)
- Bacillus thuringiensis
- Bifenthrin
- Clomazone
- Glyphosate
- Imidacloprid

### SPINACH
- Azoxyastrobin
- Bacillus thuringiensis
- Clethodim
- Clopyralid Glyphosate
- Malathion
- Phenmedipham
- Sethoxydim
- S-Metolachlor

### TURNIP (ROOT/GREENS)
- Bacillus thuringiensis
- Chlorpyrifos
- Clopyralid
- Esfenvalerate
- Fosethy-Al
- Imidacloprid (Sec. 18)
- Malathion
- Methomyl
- Paraquat
- Permethrin
- Spinosad
- Tebufenozide

### WATERMELON
- Bacillus thuringiensis
- Bifenthrin
- Glyphosate
- Imidacloprid
- Metalaxyl + Mancozeb
- Paraquat
- Permethrin

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### Contact Information for IR-4 Regional Field Coordinators

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Since 1963, the IR-4 Project has cooperated with researchers, producers, the agri-chemical industry and federal agencies to secure regulatory clearances for pest management products on specialty crops.

Since 2000, over 80% of IR-4’s research effort has involved new pest management technology with biopesticides and Reduced Risk chemistries. This huge shift was a direct result of the focus IR-4 placed on advocating this new technology. It was accomplished through a three pronged approach consisting of partnering with the agricultural chemical companies, educating specialty crop stakeholders, and partnering with the EPA to facilitate specialty crop registrations.

IR-4 recognized that without access to the new technology it could not assist specialty crop growers. So they solicited industry’s willingness to work together on new product development strategies which, for the first time, included specialty crops in their development plans. The foundation for this close working relationship was crop grouping, where studies on a few key crops would allow for registration on many more crops; many of those were specialty crops.

The other aspect of IR-4’s emphasis on new technology was the educational facet. It became clear that with reduced staffs in many of the companies due to mergers, federal and state research/extension scientists were not always given the ability to test the new materials. IR-4 instituted a mechanism through publication of New Pest Control Products/Transition Solutions List to inform the public about the virtues of the new technology to assist in the transition away from Food Quality Protection Act (FQPA) vulnerable crop protection tools.

Today, IR-4 continues to work as a model government funded program due to unique partnerships formed between the USDA (CSREES and ARS), the IR-4 Headquarters and Regional staff, the land grant university system, the crop protection industry, commodity and grower groups and the EPA.

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**Estimated Potential Loss Without Use of IR-4 Based Section 18s for Arizona**

<table>
<thead>
<tr>
<th>Crop Economic</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garlic</td>
<td>$2,400,000</td>
</tr>
<tr>
<td>Spinach</td>
<td>$38,300,000</td>
</tr>
<tr>
<td>Turnip Greens</td>
<td>$1,000,000</td>
</tr>
</tbody>
</table>

**Total** $41,700,000

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1. 1997 Census of Agriculture  
2. From 1998 to 2003