IR-4 Provides Economic Viability

The specialty food crop value in Texas is $1 billion¹

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

The economic loss of these crops would be devastating at $92.2 million². IR-4’s research helped to register Section 18 Emergency Exemptions for Texas, that helped prevent this loss from occurring. A registration is granted by the Environmental Protection Agency (EPA) for a particular pest control product on a specific crop. Many of these registrations have been turned to permanent registrations. 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 and receives clearances, from the Environmental Protection Agency (EPA), 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 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.
What IR-4 Does for Texas

Clearances On Some Important Texas Crops

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

**AVOCADO**
- Carbaryl
- Methomyl
- Norflurazon
- Permethrin

**BEAN (DRY)**
- Bacillus thuringiensis
- Chlorothalonil
- Cyromazine
- Halosulfuron
- Sodium Chlorate

**BLACK-EYED PEAS**
- Bacillus thuringiensis
- Sodium Chlorate

**CABBAGE**
- Bacillus thuringiensis
- Chlorpyrifos
- Clomazone
- Clethodim
- DCPA
- Endothall
- Glyphosate
- Malathion
- Methomyl
- S-Metolachlor
- Oxyfluorfen
- Paraquat
- Sodium Chlorate

**CANTALOupe**
- Bacillus thuringiensis
- Bifenthrin (Sec. 18)
- Dimethomorph
- Glyphosate
- Methidathion
- Imidacloprid (Sec. 18)
- Metalaxyl + Mancozeb
- Paraquat
- Permethrin

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

**CARROT**
- Bacillus thuringiensis
- Glyphosate
- Ipodione
- Malathion
- Metribuzin
- Paraquat
- Sethoxydim
- Thiabendazole

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

**CILANTRO**
- Azoxystrobin
- Sethoxydim
- Spinosad

**CITRUS**
- 2,4-D
- Bacillus thuringiensis
- Fosetyl-AL
- Methidathion

**COLLARDS**
- Bacillus thuringiensis
- Bensulide
- Chlorpyrifos
- Clethodim
- Endothall
- Esfenvalerate
- Methomyl

**COLLARDS cont.**
- PCNB
- Sodium Hypochlorite

**COTTON**
- Aspergillus flavus AF-36

**COWPEAS**
- Bacillus thuringiensis
- Sodium Chlorate

**CUCUMBER**
- Bacillus thuringiensis
- Bifenthrin (Sec. 18)
- Clomazone
- Dimethomorph
- Glyphosate
- Imidacloprid (Sec. 18)
- Paraquat
- Permethrin

**ENDIVE (ESCAROLE)**
- Bacillus thuringiensis
- Fluazifop
- Imazethapyr
- Sethoxydim

**GRAPE**
- Aluminum Phosphide
- Bifenthrin
- Chlorpyrifos
- Fosetyl-Al
- Glyphosate
- Metalaxyl + Copper
- Methyl Anthranilate
- Spinosad
- Zinc Phosphate
- GUAR
- Sodium Chlorate

**HONEY and BEESWAX**
- Bacillus thuringiensis
- Formic Acid
- Menthol

**MUSTARD GREENS**
- Bacillus thuringiensis
- Bensulide
- Chlorpyrifos
- Clethodim
- Esfenvalerate
- Glyphosate
- Malathion
- Methomyl
- PCNB
- Sodium Hypochlorite

**OKRA**
- Bacillus thuringiensis
- Carbaryl
- Esfenvalerate
- Glyphosate
- Malathion

**ONION (DRY)**
- Bacillus thuringiensis
- Bromoxynil
- Chlorpyrifos
- Clomazone
- Dimethomorph
- Glyphosate
- S-Metolachlor
- Pendimethalin
- Permethrin

**ONION (GREEN)**
- Bromoxynil
- Cypermethrin
- Glyphosate
- Methomyl
- Paraquat

**PARSLEY**
- Azinphos-methyl
- Bacillus thuringiensis
- Linuron
- Prometryn
- Sethoxydim

continued on back
<table>
<thead>
<tr>
<th>Crop</th>
<th>Insecticides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasture Grass</td>
<td>Bacillus popillae, Bacillus thuringiensis, Diflubenzuron, Lagenidium giganteum, Methomyl</td>
</tr>
<tr>
<td>Peach</td>
<td>2,4-D, Chlorpyrifos, Clopyralid, Dithane, Fludioxonil, Glyphosate, Iprodione, Malathion, Oxytetracycline, Pronamide</td>
</tr>
<tr>
<td>Peanut</td>
<td>Spinosad (Sec. 18)</td>
</tr>
<tr>
<td>Pecan</td>
<td>2,4-D, Aldicarb, Bacillus thuringiensis</td>
</tr>
<tr>
<td>Pepper (Bell)</td>
<td>Bacillus thuringiensis, Bifenthrin, Clomazone, Glyphosate, Imidacloprid</td>
</tr>
<tr>
<td>Pepper (Cubanelle)</td>
<td>Bacillus thuringiensis, Glyphosate, S-Metolachlor</td>
</tr>
<tr>
<td>Pepper (Non-Bell)</td>
<td>Bacillus thuringiensis, Bifenthrin, Clomazone, Glyphosate, Imidacloprid</td>
</tr>
<tr>
<td>Potato</td>
<td>2,4-D, Bacillus thuringiensis, Calcium Hypochlorite, Copper Complex, S-Metolachlor, Paraquat, Permethrin</td>
</tr>
<tr>
<td>Snap Bean</td>
<td>Clomazone, Lactofen, Myclobutanil</td>
</tr>
<tr>
<td>Southern Peas</td>
<td>Bacillus thuringiensis, Chlorothalonil, Cyfluthrin, Cyromazine, Sodium Chlorate</td>
</tr>
<tr>
<td>Spinach</td>
<td>Azoxyostrobin, Bacillus thuringiensis, Clethodim, Clopyralid, Glyphosate, Malathion, S-Metolachlor (Sec. 18), Phenmedipham, S-Metolachlor, Thiophanate-methyl</td>
</tr>
<tr>
<td>Squash (Winter/Summer)</td>
<td>Bacillus thuringiensis, Bifenthrin (Sec. 18), Clomazone, Dimethomorph, Glyphosate, Imidacloprid (Sec. 18), Metalaxyl + Mancozeb, Paraquat, Permethrin</td>
</tr>
<tr>
<td>Strawberry</td>
<td>2,4-D, Acifluorfen, Captan, Chlorpyrifos, Glyphosate, Malathion, Methyl Anthranilate</td>
</tr>
<tr>
<td>Sugar Beet</td>
<td>Glyphosate, Zinc Phosphate</td>
</tr>
<tr>
<td>Sugar Cane</td>
<td>Chlorpyrifos, Glyphosate, Metsulfuron-methyl</td>
</tr>
<tr>
<td>Sweet Potato</td>
<td>Bacillus thuringiensis, Calcium Hypochlorite, Carbaryl, Clomazone, Fluanidil, Napropamide, Phosmet, Pyrethrin + Piperonyl, Butoxide, Systoxide, Thiabendazole</td>
</tr>
<tr>
<td>Tomato</td>
<td>Bacillus thuringiensis, Glyphosate, Imidacloprid, Paraquat</td>
</tr>
<tr>
<td>Turnip (Root/Greens)</td>
<td>Bacillus thuringiensis, Chlorpyrifos, Clopyralid, Esfenvalerate, Fosetyl-AL, Malathion, Methomyl, Parathion, Permethrin</td>
</tr>
<tr>
<td>Watermelon</td>
<td>Bacillus thuringiensis, Chlorpyrifos, Clopyralid, Carbaryl, Glyphosate, Malathion, Methyl Anthranilate</td>
</tr>
<tr>
<td>Winter/Spring Peas</td>
<td>Bacillus thuringiensis, Clethodim, Clopyralid, Glyphosate, Malathion, S-Metolachlor (Sec. 18), Phenmedipham, Thiophanate-methyl</td>
</tr>
<tr>
<td>Tomato</td>
<td>Bacillus thuringiensis, Glyphosate, Imidacloprid, Paraquat</td>
</tr>
<tr>
<td>Tomato</td>
<td>Bacillus thuringiensis, Glyphosate, Imidacloprid, Paraquat</td>
</tr>
</tbody>
</table>

Clearances On Some Important Texas Crops

Contact Information for IR-4 Regional Field Coordinators

Northeast Region
Ms. Edith Lurvey
315.787.2308
e1l10@cornell.edu

North Central Region
Dr. Satoru Miyazaki
517.432.3100 ext. 150
ncrir4@msu.edu

Southern Region
Dr. Charles Meister
352.392.2399
cmeister@mail.ifas.ufl.edu

Western Region
Ms. Rebecca Sisco
530.752.7634
rsisco@ucdavis.edu

USDA-ARS
Dr. Paul H. Schwartz
301.504.8256
schwartp@ba.ars.usda.gov

Major funding for IR-4 is provided by Special Research Grants and Hatch Act Funds from USDA-CSREES, in cooperation with the State Agricultural Experiment Stations, and USDA-ARS.

To learn more about IR-4 programs, visit the IR-4 web site at www.ir4.rutgers.edu
IR-4: A Success Story Worth Telling

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.

Texas Agriculture is Heavily Dependent on Specialty Crops
IR-4 thanks the entire Congressional delegation from Texas for their support.

1997 Census of Agriculture
From 1998 to 2002

Estimated Potential Loss Without Use of the IR-4 Based Section 18s for Texas (from 1998-2002)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Economic Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peanuts</td>
<td>$ 78,800,000</td>
</tr>
<tr>
<td>Spinach</td>
<td>$ 12,800,000</td>
</tr>
<tr>
<td>Sunflower</td>
<td>$ 600,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 92,200,000</strong></td>
</tr>
</tbody>
</table>