What IR-4 Does for New York

IR-4 Provides Economic Viability

The specialty food crop value in New York is $682 million.

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

The economic loss of these crops could be as much as $39 million. IR-4’s research helped to register Section 18 Emergency Exemptions for New York 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 US 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 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.

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
<table>
<thead>
<tr>
<th>Crop</th>
<th>Products/Compounds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPLE</strong></td>
<td>2,4-D, Aluminum Phosphide, Glyphosate, Magnesium, MCPA, Pronamide</td>
</tr>
<tr>
<td><strong>APRICOT</strong></td>
<td>2,4-D, Malathion, Pronamide, Endothall, Iprodione, Paraquat, Sodium Hypochlorite</td>
</tr>
<tr>
<td><strong>BEAN (DRY)</strong></td>
<td>Bacillus thuringiensis, Chlorothalonil, Cyromazine, HaIsulfuron, Fomesafen</td>
</tr>
<tr>
<td><strong>BEET (GARDEN)</strong></td>
<td>Bacillus thuringiensis, Clopyralid, Desmedipham, Endothall, Fenamiphos, Sethoxydim</td>
</tr>
<tr>
<td><strong>BOK CHOY</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, Clopyralid, DCPA, Methomyl</td>
</tr>
<tr>
<td><strong>BROCCOLI</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, Clopyralid</td>
</tr>
<tr>
<td><strong>BROCCOLI cont.</strong></td>
<td>Glyphosate, Malathion, Oxyfluorfen, Paraquat, Sodium Hypochlorite</td>
</tr>
<tr>
<td><strong>BROCCOLI RAAB</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, Esfenvalerate, Glyphosate, Methomyl, Permethrin, Sodium Hypochlorite</td>
</tr>
<tr>
<td><strong>BROCCOLI RAAB cont.</strong></td>
<td>Iprodione, Malathion, Metribuzin, Paraquat, Sethoxydim, Thiabendazole</td>
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<tr>
<td><strong>BRUSSELS SPROUTS</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, Dimethoate, Endothall, Sodium Hypochlorite</td>
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<tr>
<td><strong>CABBAGE</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, Clomazone, Clopyralid, DCPA, Methomyl</td>
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<tr>
<td><strong>CAULIFLOWER</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, Endothall, Glyphosate, Malathion, Methomyl, Oxyfluorfen, Paraquat, Sodium Hypochlorite</td>
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<tr>
<td><strong>CELERY</strong></td>
<td>Bacillus thuringiensis, Carbaryl, Glyphosate, Malathion, Methomyl, S-Metolachlor, Oxyfluorfen, Paraquat, Sodium Hypochlorite</td>
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<tr>
<td><strong>CELERY cont.</strong></td>
<td>Sodium Hypochlorite, Carbaryl, Malathion, Methomyl, S-Metolachlor, S-Metolachlor, Sethoxydim</td>
</tr>
<tr>
<td><strong>CANTALOUGE</strong></td>
<td>Bacillus thuringiensis, Dimethomorph, Glyphosate, Imidacloprid, Malathion, Metalaxyl + Mancozeb</td>
</tr>
<tr>
<td><strong>CANTALOUGE cont.</strong></td>
<td>Paraquat, Permethrin, Carbaryl, Malathion, Metalaxyl + Mancozeb</td>
</tr>
<tr>
<td><strong>CARROT</strong></td>
<td>Bacillus thuringiensis, Glyphosate, Iprodione, Malathion, Metribuzin, Paraquat, Sodium Hypochlorite</td>
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<tr>
<td><strong>CHINESE BROCCOLI</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, DCPA, Glyphosate</td>
</tr>
<tr>
<td><strong>CHINESE BROCCOLI cont.</strong></td>
<td>Malathion, Methomyl, Oxyfluorfen, Paraquat, Sodium Hypochlorite</td>
</tr>
<tr>
<td><strong>CHINESE CABBAGE</strong></td>
<td>Bacillus thuringiensis, Chlorothalonil, Chlorpyrifos, Clomazone, Cyromazine, DCPA, Fenamiphos, Glyphosate, Malathion, Methamidophos, Methomyl, S-Metolachlor, Oxyfluorfen, Paraquat, Sodium Hypochlorite</td>
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<tr>
<td><strong>CHINESE CABBAGE (NAPA)</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, Clomazone, Cyromazine, DCPA, Fenamiphos, Glyphosate, Malathion, Methamidophos, Methomyl, S-Metolachlor, Oxyfluorfen, Paraquat, Sodium Hypochlorite</td>
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<tr>
<td><strong>CHINESE CABBAGE (NAPA) cont.</strong></td>
<td>Bifenthrin, Cyromazine, DCPA, Fosetyl-Al, Glyphosate, Metalaxyl + Copper, Methyl Anthranilate, Spinosad, Zinc Phosphide</td>
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<tr>
<td><strong>CHINESE MUSTARD</strong></td>
<td>Bacillus thuringiensis, Cyromazine, DCPA, Iprodione, Malathion, Methomyl, Sodium Hypochlorite</td>
</tr>
<tr>
<td><strong>CHESTNUT</strong></td>
<td>2,4-D, Carbaryl, Malathion, Metalaxyl + Mancozeb</td>
</tr>
<tr>
<td><strong>CLOVER</strong></td>
<td>MCPA, Pronamide, Metalaxyl + Mancozeb</td>
</tr>
<tr>
<td><strong>CRABAPPLE</strong></td>
<td>2,4-D, Phosmet, Chlorpyrifos, Clopyralid</td>
</tr>
<tr>
<td><strong>CUCUMBER</strong></td>
<td>Bacillus thuringiensis, Clopyralid, Metribuzin, Paraquat, Sodium Hypochlorite</td>
</tr>
<tr>
<td><strong>CURRANT</strong></td>
<td>Glyphosate, Myclobutanil, Napropamide</td>
</tr>
<tr>
<td><strong>ENDIVE (ESCAROLE)</strong></td>
<td>Bacillus thuringiensis, Fluazifop, Sethoxydim</td>
</tr>
<tr>
<td><strong>GARLIC</strong></td>
<td>Bacillus thuringiensis, Bromoxynil, Glyphosate, Pendiethalin</td>
</tr>
<tr>
<td><strong>GRAPE</strong></td>
<td>Aluminum Phosphide, Bifenthrin, Chlorpyrifos, Fosetyl-Al, Glyphosate, Metalaxyl + Copper, Methyl Anthranilate, Spinosad, Zinc Phosphide</td>
</tr>
<tr>
<td><strong>GRAPE</strong> cont.</td>
<td>Bifenthrin, Cyromazine, DCPA, Fosetyl-Al, Glyphosate, Metalaxyl + Copper, Methyl Anthranilate, Spinosad, Zinc Phosphide</td>
</tr>
<tr>
<td><strong>HONEY and BEESWAX</strong></td>
<td>Bacillus thuringiensis, Benzaldehyde, Formic Acid, Menthol</td>
</tr>
<tr>
<td><strong>KALE</strong></td>
<td>Bacillus thuringiensis, Benzaldehyde, Formic Acid, Menthol</td>
</tr>
<tr>
<td><strong>KALE cont.</strong></td>
<td>Bacillus thuringiensis, Benzaldehyde, Formic Acid, Menthol, Dimethomorph, Sodium Hypochlorite</td>
</tr>
<tr>
<td><strong>CEBRAS</strong></td>
<td>Bacillus thuringiensis, Clopyralid, Endothall, Halosulfuron, Fomesafen</td>
</tr>
<tr>
<td><strong>CLEANSERS</strong></td>
<td>Bacillus thuringiensis, Clopyralid, Endothall, Halosulfuron, Fomesafen</td>
</tr>
</tbody>
</table>
Clearances On Some Important New York Crops

**KALE cont.**
Chlorpyrifos
Clethodim
Methomyl
PCNB
Sodium Hypochlorite

**LEEK**
Bacillus thuringiensis
Chlorpyrifos
Glyphosate
Methomyl

**LETTUCE**
Bacillus thuringiensis
Bifenthrin
Dimethomorph
Sethoxydim

**LIMA BEAN**
Bacillus thuringiensis
Cyromazine
Sodium Chlorate

**MARJORAM**
Napropamide

**NECTARINE**
2,4-D
Chlorpyrifos
Iprodione
Pronamide

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

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

**PEPPER (BELL) cont.**
Bacillus thuringiensis
Clomazone
S-Metolachlor
Paraquat
Norflurazon

**PEPPER (BELL)**
Azinphos-methyl
Bacillus thuringiensis
Linuron
Prometryn
Sethoxydim

**PEARS**
2,4-D
Chlorpyrifos
Clethodim
Methomyl
Pronamide

**PLUM**
2,4-D
Chlorpyrifos
Clopyralid
Codling Moth
Granulosis Virus
Fludioxonil
Iprodione
Pronamide

**POTATO**
2,4-D
Bacillus thuringiensis
Calcium Hypochlorite
Sodium Hypochlorite
Linuron
Sodium Chlorate

**PUMPKIN**
Bacillus thuringiensis
Clomazone
Glyphosate
Metalaxyl + Mancozeb
Paraquat

**RADISH**
2,4-D
Bacillus thuringiensis
DCPA
Bifenthrin
Captan
Chlorpyrifos
Fenamiphos
Glyphosate
Malathion
Methyl Anthranilate
Myloclubanil

**SQUASH (WINTER/ SUMMER)**
Bacillus thuringiensis
Clomazone
Glyphosate
Metalaxyl + Mancozeb
Paraquat
Permethrin

**SWEET CORN**
Bacillus thuringiensis
Chlorpyrifos
Clopyralid
Esfenvalerate
Fosetyl-Al
Malathion
Methomyl
Paraquat
Permethrin

**TOMATO**
Bacillus thuringiensis
Glyphosate
Imidacloprid
Metalaxyl
Sodium Chlorate

**TURNIP (ROOT/Greens)**
Bacillus thuringiensis
Chlorpyrifos
Clomazone
Sodium Chlorate

**WATERMELON**
Bacillus thuringiensis
Bifenthrin
Glyphosate
Imidacloprid
Metalaxyl + Mancozeb
Permethrin

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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 biostatistics 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.

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

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

<table>
<thead>
<tr>
<th>Crop</th>
<th>Economic Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beet</td>
<td>$ 4,000,000</td>
</tr>
<tr>
<td>Onion (Dry)</td>
<td>$ 35,400,000</td>
</tr>
<tr>
<td>Strawberry</td>
<td>$ 500,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 39,900,000</strong></td>
</tr>
</tbody>
</table>

1997 Census of Agriculture
2 From 1998 to 2002