IR-4 Provides Economic Viability

The specialty food crop value in Massachusetts is $345 million.1

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

The economic loss of these crops could be as much as $71.6 million.2 IR-4’s research helped to register Section 18 Emergency Exemptions for Massachusetts 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 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.

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1. IR-4 provides a model partner.
2. Of particular importance to EPA has been IR-4's focus on reduced risk pesticides...IR-4 is the most prolific submitter of pesticide tolerance petitions as well as the most successful in having their petitions approved by EPA's Office of Pesticide Programs.

– Jim Jones, Director, EPA, Office of Pesticide Programs
### What IR-4 Does for Massachusetts

#### Clearances On Some Important Massachusetts Crops

<table>
<thead>
<tr>
<th>Crop</th>
<th>Insecticide/Herbicide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPLE</strong></td>
<td>2,4-D, Aluminum Phosphide, Codling Moth, Granulosis Virus, Phospholipid (EUP)</td>
</tr>
<tr>
<td><strong>BEAN (SNAP)</strong></td>
<td>Clomazone, Halosulfuron, Lactofen, Myclobutanil</td>
</tr>
<tr>
<td><strong>BEET (GARDEN)</strong></td>
<td>Bacillus thuringiensis, Clomazone, Endothall, Sethoxydim</td>
</tr>
<tr>
<td><strong>BLACKBERRY</strong></td>
<td>Bifenthrin, Captan, Chlorpyrifos, Esfenvalerate, Glyphosate, Malathion, Metylcobutanol, Norflurazon, Oxyfluorfen, Sethoxydim</td>
</tr>
<tr>
<td><strong>BLUEBERRY</strong></td>
<td>2,4-D, Captan, Chlorothalonil, Chlorpyrifos, Esfenvalerate, Ethephon</td>
</tr>
<tr>
<td><strong>CANTALOUPE</strong></td>
<td>Fenbuconazole (Sec. 18), Fenhexamid, Fludioxonil, Fosetyl-Al, Glyphosate, Hexazinone, Methyl Anthranilate, Norflurazon, Pyriproxyfen, Tebufoenoizide, Terbacil, Ziram</td>
</tr>
<tr>
<td><strong>BROCCOLI</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, Clopyralid, Glyphosate, Malathion, Oxyfluorfen, Paraquat, Sodium Hypochlorite, Spinosad</td>
</tr>
<tr>
<td><strong>CABBAGE</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, Clopyralid, Clomazone, DCPA, Endothall, Glyphosate, Malathion, Methomyl, Oxyfluorfen, Paraquat, S-Metolachlor, Sodium Hypochlorite</td>
</tr>
<tr>
<td><strong>CHINESE CABBAGE</strong></td>
<td>(NAPA) Bacillus thuringiensis, Chlorothalonil, Chlorpyrifos, Clomazone, Cyromazine, DCPA, Glyphosate, Malathion, Methamidophos, Methomyl, Oxyfluorfen, Paraquat, S-Metolachlor, Sodium Hypochlorite</td>
</tr>
<tr>
<td><strong>CHINESE MUSTARD</strong></td>
<td>Bacillus thuringiensis, Cyromazine, DCPA, Ipodione, Malathion, Methomyl, Sodium Hypochlorite</td>
</tr>
<tr>
<td><strong>CHINESE RADISH</strong></td>
<td>Bacillus thuringiensis</td>
</tr>
<tr>
<td><strong>CRANBERRY</strong></td>
<td>2,4-D, Acephate, Azoxystrobin, Chlorothalonil, Chlorpyrifos, Clpyralid (Sec. 18), Cryolite, Ferbam, Fosetyl-Al, Glyphosate, Maleic Hydrazide, Metalaxyl, Phospholipid (ELU), Pronamide (Sec. 18), Pyridaben, Sethoxydim, Spinosad (Sec. 18), Tebufoxenoizide</td>
</tr>
<tr>
<td><strong>GRAPE</strong></td>
<td>Aluminum Phosphide, Bifenthrin, Chlorpyrifos, Fosetyl-Al, Glyphosate, Maleic Anthranilate, Spinosad, Zinc Phosphide</td>
</tr>
<tr>
<td><strong>HONEY and BEESWAX</strong></td>
<td>Bacillus thuringiensis, Benzyldehyde, Formic Acid, Menthol</td>
</tr>
<tr>
<td><strong>ONION (GREEN)</strong></td>
<td>Bromoxynil, Cypermethrin</td>
</tr>
</tbody>
</table>
| **ONION (GREEN) cont.** | }
Clearances On Some Important Massachusetts Crops

Dimethomorph
Glyphosate
Methomyl
Paraquat

PEA (SUCCULENT)
Bacillus thuringiensis
Clomazone
Malathion

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

POTATO
2,4-D
Bacillus thuringiensis
Calcium Hypochlorite
Copper Complex
Sethoxydim
Sodium Chlorate
Spinosad
Sulfuric Acid
Thiophanate-methyl

PUMPKIN
Bacillus thuringiensis
Clomazone
Glyphosate
Metalaxyl + Mancozeb
Paraquat

RADISH
Bacillus thuringiensis
DCPA
Methomyl
Sodium Hypochlorite
Spinosad

RASPBERRY

2,4-D
Bifenthrin
Captan
Chlorpyrifos
Fenhexamid
Glyphosate
Hexakis
Malathion
Myclobutanil
Norflurazon
Oxyfluorfen
Sethoxydim
Sulfur

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

STRAWBERRY
2,4-D
Acifluorfen
Captan
Chlorpyrifos
Glyphosate
Malathion
Methyl Anthranilate
Myclobutanil
Oxyfluorfen
Phospholipid (EUP)

SWEET CORN
2,4-D
Bacillus thuringiensis
Propargite

TOMATO
Bacillus thuringiensis
Glyphosate
Imidacloprid
Paraquat
Phospholipid (EUP)

TURNIP (ROOT/GREENS)

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To learn more about IR-4 programs, visit the IR-4 web site at www.ir4.rutgers.edu
Estimated Potential Loss Without Use of the IR-4 Based Section 18s for Massachusetts (from 1998-2002)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Economic Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blueberry</td>
<td>$1,100,000</td>
</tr>
<tr>
<td>Cranberry</td>
<td>$70,300,000</td>
</tr>
<tr>
<td>Strawberry</td>
<td>$200,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$71,600,000</strong></td>
</tr>
</tbody>
</table>

1997 Census of Agriculture
2 From 1998 to 2002

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.

Massachusetts Agriculture is Heavily Dependent on Specialty Crops

IR-4 thanks the entire Congressional delegation from Massachusetts for their support.