IR-4 Provides Economic Viability

The specialty food crop value in North Carolina is $624 million.

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

The economic loss of these crops could be as much as $13.7 million. IR-4’s research helped to register Section 18 Emergency Exemptions for North Carolina, 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.
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 biocides 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.

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

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

<table>
<thead>
<tr>
<th>Crop</th>
<th>Economic Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blueberry</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>Sweet Potato</td>
<td>$12,200,000</td>
</tr>
<tr>
<td>Total</td>
<td>$13,700,000</td>
</tr>
</tbody>
</table>

1997 Census of Agriculture
2 From 1998 to 2002
### What IR-4 Does for North Carolina

<table>
<thead>
<tr>
<th>Crop</th>
<th>Insecticides/Plants</th>
<th>Herbicides/Metabolites</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPLE</strong></td>
<td>2,4-D, Aluminum Phosphate, Codling Moth, Granulosis Virus</td>
<td></td>
</tr>
<tr>
<td><strong>BLACKBERRY</strong></td>
<td>Captan, Chlorpyrifos, Esfenvalerate, Glyphosate, Norflurazon, Oxyfluorfen, Sethoxydim</td>
<td></td>
</tr>
<tr>
<td><strong>BLUEBERRY</strong></td>
<td>2,4-D, Captan, Chlorothalonil, Chlorpyrifos, Esfenvalerate, Ethephon, Fenbuconazole (Sec. 18), Fenhexamid, Fludioxonil, Fosetyl-Al, Glyphosate, Hexaconazole, Methyl Anthranilate, Norflurazon, Terbacil, Ziram</td>
<td></td>
</tr>
<tr>
<td><strong>CABBAGE</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, CLOMABONE, Clopyralid, DCBP, Endothall, Glyphosate, Malathion, Methomyl, S-Metolachlor, Oxyfluorfen, Paraquat, Sodium Hypochlorite</td>
<td></td>
</tr>
<tr>
<td><strong>CANTALOUPE</strong></td>
<td>Bacillus thuringiensis, Dimethomorph, Glyphosate, Imidacloprid, Metalaxyl + Mancozeb, Paraquat, Permethrin</td>
<td></td>
</tr>
<tr>
<td><strong>COLLARDS</strong></td>
<td>Bacillus thuringiensis, Bensulide, Chlorpyrifos, Clopyralid, Esfenvalerate, Glyphosate, Methomyl, PCNB, Sodium Hypochlorite</td>
<td></td>
</tr>
<tr>
<td><strong>BROCCOLI</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, Clopyralid, Glyphosate, Oxyfluorfen, Paraquat, Sodium Hypochlorite</td>
<td></td>
</tr>
<tr>
<td><strong>GRAPE</strong></td>
<td>Aluminum Phosphate, Chlorpyrifos, Metalaxyl + Copper, Methyl Anthranilate, Spinosid, Zinc Phosphate</td>
<td></td>
</tr>
<tr>
<td><strong>HONEY and BEESWAX</strong></td>
<td>Bacillus thuringiensis</td>
<td></td>
</tr>
<tr>
<td><strong>KALE</strong></td>
<td>Bacillus thuringiensis, Chlorpyrifos, Clethodim, Methomyl, PCNB, Sodium Hypochlorite</td>
<td></td>
</tr>
<tr>
<td><strong>MUSTARD GREENS</strong></td>
<td>Bacillus thuringiensis, Bensulide</td>
<td></td>
</tr>
<tr>
<td><strong>NECTARINE</strong></td>
<td>2,4-D, Chlorpyrifos, Iprodione, Pronamide</td>
<td></td>
</tr>
<tr>
<td><strong>OKRA</strong></td>
<td>Bacillus thuringiensis, Esfenvalerate</td>
<td></td>
</tr>
</tbody>
</table>

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

ONION (GREEN)
Bromoxynil
Cypermethrin
Dimethomorph
Glyphosate
Methomyl
Paraquat

PEA (DRY)
Bacillus thuringiensis
Cyfluthrin
MCPB
Sethoxydim
Sodium Chlorate

PEACH
2,4-D
Chlorpyrifos
Clopyralid
Dodine
Fludioxonil
Glyphosate
Iprodione
Oxytetracycline
Pronamide

PECAN
2,4-D
Aldicarb
Bacillus thuringiensis

PEPPER (NON-BELL)
Bacillus thuringiensis
Clomazone
Glyphosate
Imidacloprid

RASPBERRY
2,4-D
Captan
Chlorpyrifos
Endosulfan
Glyphosate
Hexakis
Norflurazon
Oxyfluorfen
Sethoxydim
Sulfur

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

PEPPER (BELL)
Bacillus thuringiensis
Clomazone
Glyphosate
Imidacloprid

SWEET CORN
2,4-D
Bacillus thuringiensis
Propargite

SWEET POTATO
Bacillus thuringiensis
Clomazone
Carbaryl
Chlorothalonil
Cyfluthrin
Cyromazine
Sodium Chlorate

SPINACH
Bacillus thuringiensis
Clethodim
Clopyralid
Glyphosate
S-Metolachlor
Phenmediphap
Sethoxydim

SOUTHERN PEAS
Bacillus thuringiensis
Chlorothalonil
Cylthrin
Cyromazine
Sodium Chlorate

STRAWBERRY
2,4-D
Acifluorfen
Capta
Chlorpyrifos
Methyl Anthranilate

SWEET POTATO
Bacillus thuringiensis
Clomazone
Carbaryl
Chlorothalonil
Cylthrin
Cyromazine
Sodium Chlorate

TOMATO
Bacillus thuringiensis
Glyphosate
Imidacloprid
Paraquat

TURNIP (ROOT/ TOP)
Bacillus thuringiensis
Chlorpyrifos
Clopyralid
Esfenvalerate
Fosetyl-AL
Methomyl
Paraquat
Permethrin

WATERMELON
Bacillus thuringiensis
Bifenthin
Glyphosate
Imidacloprid
Metalaxyl + Mancozeb
Paraquat
Permethrin

Contact Information for IR-4 Regional Field Coordinators

Northeast Region
Ms. Edith Lurvey
315.787.2308
e110@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

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To learn more about IR-4 programs, visit the IR-4 web site at www.ir4.rutgers.edu