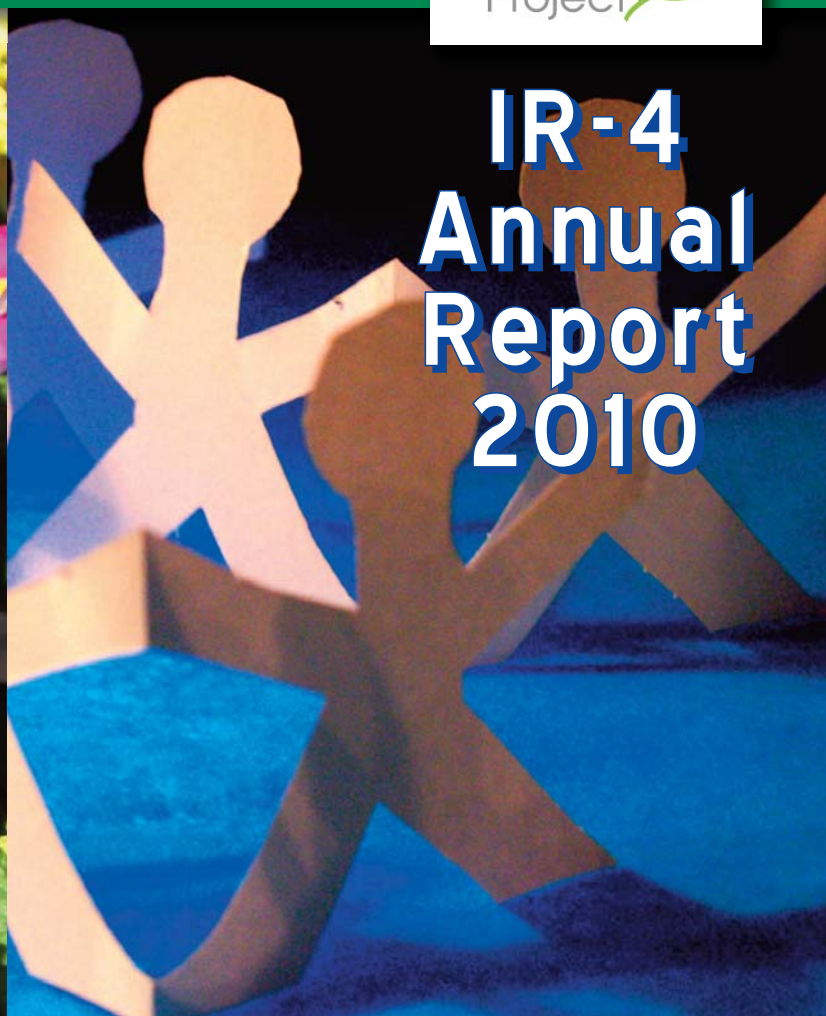
Benefiting Specialty Crop Growers & the General Public

Facilitating registration of sustainable pest management technology for specialty crops and minor uses

The IR-4 Project



IR-4 Annual Report 2010

Dear IR-4 Friends and Co-workers,

It is with great pleasure that we present the 2010 IR-4 Annual Report. This accountability document captures IR-4's numerous accomplishments, successes and deliverables for 2010. It also presents on-going efforts to sustain IR-4's service to our stakeholders who are involved with managing pests of specialty crops and other minor uses. IR-4's 2010 accomplishments include:

In the Food Program, US Environmental Protection Agency (EPA) established **219** new permanent pesticide tolerances which supported **786** new uses. Of these new uses, nearly 80% are registered and available for use by growers, with anticipated registration of the remaining 20% in 2011. EPA also established the new Oil Seed Crop Group and enhanced the existing Fruiting Vegetable, Citrus and Pome Fruit Crop groups. With biopesticides, IR-4's efforts facilitated **3** new registrations, including acetic acid for weed control in organically grown food and ornamental crops; HoneySweet Plum, a USDA plant incorporated protectant technology to control Plum Pox Virus in stone fruit and almond; and *Trichoderma hamatum* isolate 382 for disease control uses. Biopesticide clearances totaled **776** food crops and **3,700** ornamental crops. Finally, IR-4 data has been used to support **4** new registrations and label amendments for ornamental horticulture crops, which positively impacted **2367** ornamental uses.

Activities in 2010 that will support future deliverables/registrations on food crops involve the initiation of **84** residue studies that consisted of **604** field trials. The Canadian Pest Management Programme participated in **16** of these studies and contributed **53** field trials. IR-4 also conducted over 50 efficacy and/or crop safety trials on food crops to answer the product performance data requirements for 24 projects. IR-4 Study Directors submitted **55** new residue tolerance petitions to EPA. The submission numbers were significantly down from 2009, partially attributable to backlogs within the analytical laboratories and delays within companies in providing IR-4 with required submission documents. It is anticipated there will be a large number of submissions in 2011. Finally, IR-4 submitted proposals to establish edible and inedible peel tropical crop groups to EPA.

In an effort to assist specialty crop growers by eliminating pesticide residues as a barrier of access to export markets, IR-4 developed data packages for four active ingredients (data from over 20 IR-4 studies) and submitted them to the Joint Meeting of Pesticide Residues (JMPR). The data supported **16** Codex Maximum Residue Levels (MRLs).

Additional activities in other areas include:

- IR-4 continues to make progress in the Global Residue Study. This study tests the effect of environment at 27 test locations throughout the world on the pesticide residue levels on tomato fruit. The fruit were exposed to four active ingredients at the same application rates using uniform spray equipment. Residue data were obtained from 21 field trial sites in 2010. Data from the other sites are expected in 2011.
- IR-4 awarded funds for testing the efficacy of biopesticides involving 5 early stage projects, 21 advanced stage projects and 10 demonstration projects; additionally, IR-4 submitted 6 biopesticide data packages to support 24 registrations.

- IR-4 conducted **1473** field trials on ornamental crops to collect efficacy and/or crop safety data within **912** studies; IR-4 developed and submitted **21** data summaries to registrants to expand the use of pesticides on ornamentals.
- IR-4 completed its first public health pesticide study - a residue study to enable the current label restriction against applying etofenprox on or near croplands and pasturelands to be removed. This will be submitted to EPA in 2011.

IR-4 faced major challenges in 2010 relating to resources and research timelines. The challenge of research timelines has taken a more prominent role in IR-4 due to procedural changes within EPA and with cooperating registrants. The timelines are being affected on a routine basis as IR-4 is being asked to coordinate submissions of its data for a specific active ingredient to align with schedules established by registrants or EPA. IR-4 is often asked to develop/submit data in 18 to 24 months to synchronize with other regulatory actions. This is of critical importance - if IR-4 misses the submission window, the submission may be delayed for one or more years awaiting the next opportunity. IR-4 has established a workgroup to examine how processes can be improved to reduce the time it takes to complete IR-4 studies. Since there is no "magic bullet" solution, the workgroup will focus on multiple aspects of IR-4 research, which must collaboratively adjust to better meet timeline demands.

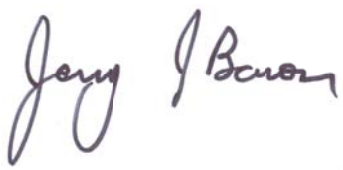
As state and federal governments deal with unprecedented budget deficits, sustaining resources for IR-4 is anticipated to become more difficult over the next several years. At the federal level, significant cuts of funding to discretionary programs within agriculture are expected. Any funding cuts to IR-4 are likely to result in a reduction in our ability to do the necessary research to help specialty crop growers gain new technology to control critical pests on their crops.

Equally worrisome are the budget situations of our host institutions that support IR-4 research centers, laboratories and offices. IR-4 currently receives significant in-kind and direct support from these State Agricultural Experiment Stations/Land Grant Universities. Any reduction of the existing support will also directly impact IR-4's research capacity.

Despite these challenges, we remain optimistic about the future. IR-4 continues to receive strong support from US specialty crop growers - specifically members of the IR-4 Commodity Liaison Committee and from members of the Minor Crop Farmers Alliance. We anticipate that the new Congress will listen to the concerns expressed by US specialty crop grower groups about the impact of cutting IR-4's resources. This will allow IR-4 to remain a productive organization that continues to address its mission.

On behalf of the IR-4 Project Management Committee and the IR-4 community, I want thank our numerous partners for their continual support of our efforts to facilitate the regulatory approval of appropriate pest management technology for specialty crop growers and other minor use stakeholders.

Sincerely yours,



Executive Director
The IR-4 Project

ANNUAL REPORT OF THE IR-4 PROJECT (NRSP*)
January 1, 2010 - December 31, 2010

*National Research Service Project No. 4 - Specialty Crop Pest Management

COOPERATING AGENCIES AND PRINCIPAL LEADERS

The IR-4 Project, the National Agriculture Research Program whose mission is to facilitate the registration of needed pest management technology for specialty crops (fruits, vegetables, herbs, ornamentals and other high value horticultural crops) and other minor uses accomplishes it tasks by working closely with many groups and associations. Some of the major partners/cooperators include the specialty crop growers/commodity organizations, the state agricultural experiment stations/land grant university system (SAES), the crop protection industry, the United States Department of Agriculture (including Agriculture Research Service, Foreign Agriculture Service, National Institute of Food and Agriculture, Animal Plant Health Inspection Service), US Environmental Protection Agency, the Department of Defense-Deployed Warfighter Protection Program, California's Department of Pesticide Regulation and Canada's Pest Management Regulatory Agency as well as Pest Management Centre in Agriculture and Agri-Food Canada. Cooperating agencies, principal leaders of the project, technical managers and IR-4 State and Federal Liaison Representatives are shown in Attachment 1.

Background

The IR-4 Project was organized in 1963 by the Directors of the State Agricultural Experiment Stations and USDA to solve the "Minor Use Problem". The companies involved in developing, registering and marketing crop protection chemicals do not view the relatively small markets associated with specialty crops and minor uses as a priority business objective because of the limited potential return on investment. They focus their efforts on major crops where there is large market potential. This leaves many pest management voids for these high value crops which are important in providing healthy and diverse diets.

In 1977, IR-4 expanded its objectives to include registration of pest control products for the protection of nursery, floral and Christmas trees. In 1982 the objective to support biopesticides was added. For all three objectives (Food, Ornamental Horticulture and Biopesticide and Organic Support Programs) IR-4 provides national coordination, technical guidance and funding for field trials and laboratory expertise to develop residue and other appropriate data required by the US Environmental Protection Agency (EPA) and the crop protection industry to register the minor uses.

The IR-4 Project is funded by USDA in partnership with the SAES. The majority of USDA funding for the IR-4 Project comes through the National Institute of Food and Agriculture (NIFA). The Agriculture Research Service (ARS) established a companion minor use program in 1976 to provide further program support. Recently, USDA-Foreign Agriculture Service (FAS) has provided IR-4 resources to work on international activities to support specialty crop exports and Animal Plant Health Inspection Service (APHIS) has funded IR-4 to do work on selected invasive species. The SAES contributes financial resources through Multi-State Research Funds and a significant amount of in-kind contributions by housing IR-4 Field Research Centers, analytical laboratories and management offices throughout the United States. The crop protection industry also contributes direct financial resources as well as significant in-kind resources.

In 2009, IR-4 approved a new strategic plan. In this plan, IR-4 intends to enhance the activities in the three mission areas, food crops, ornamental horticulture and biopesticides. In the food program, we added a plan to increase the effort to ensure that growers can use the registrations that IR-4 facilitated. This includes the development of additional efficacy data to encourage the companies to actively market new uses. Additionally, IR-4 will aid in the harmonization of pesticide use and country-specific Maximum Residue Levels (MRLs) between US and its global trading partners. In the ornamental area, more emphasis is being placed on efficacy testing, including testing of new products to manage invasive plant pests. The biopesticide mission is enhanced to support development of pest management tools for use in crops destined for organic markets. Finally, IR-4 added a new cooperative project with USDA-ARS and the Department of Defense's Deployed Warfighter Protection Program to provide regulatory support for public health pesticides.

Further details on the IR-4 Project can be found on the IR-4 Project's website: http://ir4.rutgers.edu.

Food Program

The regulatory approval of safe and effective crop protection chemicals to assist in the production of food crops continues to be the central objective of the IR-4 Project. IR-4 is committed to provide the support required to give growers the tools they need to be successful and competitive. In most cases IR-4 develops residue data to support new registrations for specialty crops. However, the need for product performance data has increased over the past few years. This is mainly due to the companies requesting some efficacy and/or crop safety data prior to marketing a new use. IR-4 efforts to expand crop groups and use of extrapolation based on our residue studies have all contributed to the greater need for efficacy and crop safety data.

Research Activities – Food Residue

Since 1963, IR-4 stakeholders have submitted 10,745 requests for assistance to the IR-4 Food Program. Of these, 645 are currently considered researchable projects. The remainder have been addressed through previous research and regulatory submissions or the use cannot be registered at this time. In 2010, a total of 202 new project requests were submitted to IR-4 by various stakeholders.

The researchable projects for IR-4 in 2010 were prioritized by IR-4 stakeholders during the September, 2009 IR-4 Food Use Workshop, in Cleveland, OH. Based on the outcome of this workshop and other priority setting mechanisms, IR-4 scheduled 84 studies consisting of 604 field trials. The specific studies including the test chemical and crop for 2010 are shown in Attachment 2.

Field trials are assigned to IR-4 Field Research Centers and sample analyses to IR-4 Analytical Laboratories. When necessary, other cooperating facilities or contractors are utilized to ensure projects are completed in a timely manner. In most studies, the chemical is applied in the field in a manner that simulates proposed grower use of the product on the target specialty crop. When the crop is at the appropriate stage, samples of the crop are collected and shipped to the analytical laboratory where the amount of chemical remaining in or on the crop is determined. Field and laboratory data from this research are compiled in a regulatory package and submitted to the EPA to request a pesticide tolerance or MRL.

Research Activities - Efficacy and Crop Safety (E/CS)

The "Strategic Plan for the IR-4 Project (2009-2014)" calls for enhancement of the existing core food program with additional product performance and crop safety research, and the 2010 E/CS program was the first step in expanding these efforts. The need for IR-4 to develop product performance and crop safety data to support labeling of new uses for specialty crop pest management tools has become a higher priority in recent years, and in many cases is required by registrants prior to actively marketing the new uses. IR-4 dedicated funding for expansion of E/CS research, and in 2010 this program was supported with $125,000 from the NIFA grant. This funding supported research to address E/CS needs on 24 projects, including 37 trials with state university researchers, and an additional 15 trials at ARS research sites (see Attachment 3 – "2010 Efficacy/Crop Safety (E/CS) Research Program"). These E/CS trials will benefit specialty crop stakeholders by assisting IR-4 and registrants in adding new pests to existing labels, adding additional crops to marketing labels where tolerances have been established, and securing E/CS data to meet registrant requirements.

Submissions and Success

In 2010, IR-4 submitted data to EPA or companies for 23 chemicals involving 55 IR-4 projects along with 2 crop group requests for a total of 57 submissions to support new registrations, label changes, or re-registration (see Attachment 4). The numbers are considerably lower compared to previous years; however, it should be noted that IR-4 has over 90 reports signed and ready for submission as soon as the submission documents from the cooperating registrants are provided. In some cases, signed reports are awaiting the completion of additional studies, so they can be bundled into a single submission. Over the past year, IR-4 has also dealt with a number of analytical challenges which include closing two laboratories and some very difficult analytical requirements for some chemicals, which have temporarily delayed some reports. IR-4 continues to efficiently bundle as many uses as possible for each chemical into each submission. This bundling allows EPA to make the most efficient use of their resources for each review. IR-4 also initiated a new timeline strategy in 2010 to more efficiently bundle submissions and is making additional changes in 2011 to further reduce timelines and focus on working as efficiently as possible to complete studies and make submissions. In many cases IR-4 is working to make submissions coincident with registrant submissions for the same chemical, which again often requires IR-4 to work under shortened timelines.

EPA established a total of 219 permanent tolerances in 2010 based on IR-4 submissions. IR-4 successes continue to account for over 50% of all EPA new tolerances established on already registered products. These tolerances, considering crop grouping and crop definitions, will support up to 786 new specialty crop uses that could be added to product labels. EPA also published a final rule in 2010 for expanding 3 existing crop groups and establishing one new crop group, based on IR-4 petitions (see "Crop Grouping Initiative" below for more information). A complete list of these new uses and new crop groups can be found in Attachment 5. In total, EPA reviewed 21 chemistries for IR-4 in 2010, which is substantially lower compared to previous years when they reviewed approximately 35 actives per year. The 786 new use registrations in 2010 bring the IR-4 46 year total of clearances to 13,379. The Biopesticide Program added 776 new uses (see Attachment 10). Therefore the combined total number of new food uses by IR-4 is 1562.

In 2010, IR-4 initiated a new process to evaluate labels to determine if the new uses approved by EPA are available to growers. Through this process, IR-4 confirmed that of the 786 potential new uses, 614 are listed on product labels (see Attachment 5). This information was collected from the CDMS website (http://www.cdms.net/LabelsMsds/) or from information received directly from registrants. These results indicate that nearly 80% of the potential uses have been registered. It is also likely that over the next year most of the other remaining uses will make their way to product labels.

A listing of IR-4 projects in the queue for future submission to EPA is included as Attachment 6. It is expected that approximately 50% of EPA approvals in future years will continue to be associated with IR-4 submissions. EPA posts their Multi-Year work plan that includes IR-4 pending submissions at: http://www.epa.gov/opprd001/workplan/newuse.htm. IR-4 submissions are generally reviewed by EPA and a tolerance established within a 15 month review timeline. IR-4 continues to support EPA's goal of encouraging the use of pesticides that pose less risk to human health and the environment compared to existing conventional alternatives. Since EPA places a high priority on assisting growers in transitioning to reduced risk approaches for pest management and tracks that progress closely, IR-4 continues to make reduced risk requests of EPA. In one case in 2010 (Spiromesifen), IR-4 made a tolerance submission in January of 2010 and the new tolerances were established in September of 2010, illustrating a considerable reduction in EPA review timeline when submissions are made with Reduced Risk products.

Regulatory Compliance

Good Laboratory Practice Standards (GLP's as noted in Chapter 40, *Code of Federal Regulations*, Part 160) compliance is paramount to the success of the IR-4 Project's Food Program. Key components of compliance are the activities of the IR-4 Project's Quality Assurance Unit (QAU). The QAU continues to provide monitoring and support to cooperating scientists throughout the United States. Audits of facilities and ongoing field and laboratory procedures provide assurance that IR-4's data is of the highest quality and will be accepted by the crop protection industry and EPA.

The Annual QA Planning Meeting was held on Feb. 23-24, 2010 in New Orleans, LA. At this meeting, the audit plan for 2010 was created. For 2010, regular inspections included 17 facility, 209 field in-life, 124 analytical in-life, 95 analytical summary report/data audits and 513 field data book audits. During the 2010 calendar year, 82 final reports and amended reports were audited.

In addition to their standard duties, members of the IR-4 QAU were involved in EPA GLP compliance inspections. Eight IR-4 participating testing sites were audited in 2010 by the EPA for GLP compliance and data integrity. A total of **115** IR-4 related facility inspections for GLP compliance have occurred since April 27, 1997. IR-4 facilities continue to maintain high standards and fully meet the GLP requirements.

Crop Grouping Initiative

Crop grouping enables the establishment of residue tolerances for a group of crops based on residue data from representative crops from the group or subgroup. The IR-4 Project, with support from the International Crop Grouping Consulting Committee (ICGCC), continues to lead an effort to update the EPA crop group regulation to not only incorporate "orphan" crops that are not members of a crop group, but also to develop new crop groups and subgroups. The ultimate goal is to make IR-4 efforts as efficient as possible and to pursue a harmonized international crop grouping system to facilitate international MRLs and international trade.

As noted previously, there was publication of the final rule in the *Federal Register* for revisions to the current crop grouping regulations for the Fruiting Vegetable crop group 08-10, Citrus crop group 10-10, Pome crop group 11-10 and the establishment of the new Oilseed crop group 20. The publication occurred on December 8, 2010.

The proposed new crop group Tropical and Subtropical fruits with edible peel was submitted to EPA by IR-4 on November 10, 2010. The proposed new crop group Tropical and Subtropical fruits with inedible peel was submitted to EPA by IR-4 on November 15, 2010. Analysis of Tree nut crop group 14 was conducted with input from the Canadian Pest Management Regulatory Agency (PMRA). This crop group was then submitted to the EPA's Health Effects Division Chemistry and Safety Advisory Council (ChemSAC) and was reviewed on December 8, 2010. IR-4 and the ICGCC are currently working on revisions to the Leafy Vegetable crop group 4 and *Brassica* Vegetable crop group 5.

Efforts to harmonize crop grouping systems between the US, Canada and Codex Committee of Pesticide Residues (CCPR) continue with cooperative efforts between the US and the Netherlands for revisions to the Bulb Vegetable, Berries and Small Fruits, Edible Fungi, Fruiting Vegetables (except Cucurbits), Oilseed, Citrus Fruits, Pome Fruit, Stone Fruit, Tree Nut, Herb and Spice and Tropical Fruits commodity groups. Also, the document "Draft Principles and Guidance on the Selection of Representative Commodities for the Extrapolation of MRLs to Commodity Groups" has been revised to include all of the "Fruit Types" for inclusion on the agenda at the 2011 CCPR meeting. It is expected that the Codex Committee on Pesticide Residues will approve and hopefully publish all "fruit type" amendments in 2012.

International Activities:

IR-4's involvement with efforts to remove pesticide residues as a barrier of exports for domestic specialty crop growers has become a common aspect of IR-4's efforts. IR-4 continues to participate in global organizations that involve pesticide issues and commodity exports. In North America, IR-4 cooperates with Canada and its Minor Use Program the Pest Management Centre (PMC) of Agriculture and Agr. Food Canada. In 2010, 16 new cooperative projects were started that consisted of 105 IR-4 field trials and 53 PMC trials. PMC also provides significant contributions to IR-4 efficacy and crop safety research. IR-4 also shares ornamental efficacy and crop safety data with Canada. There is also a good exchange of personnel; AAFC participated in IR-4 meetings and vice versa. The minor use joint review process (EPA/Canada's PMRA) continues to save resources since only one agency is reviewing the residue data; but more importantly, both agencies are establishing MRLs at the same level and at the same time to prevent trade irritants before they happen. IR-4 also made a number of data submissions to JMPR/CCPR that should support additional Codex MRLs in the future. These submissions included Boscalid, Etoxazole, Fenpyroximate, Novaluron, and Pyraclostrobin (see Attachment 3) as well as other submissions of IR-4 data made by cooperating registrants and committee consultants.

At the request of EPA, IR-4 personnel are included as part of the US delegations to both the CCPR and Organization for Economic Co-operation and Development (*OECD*) Working Group on Pesticides. IR-4 plays a key role on the OECD Expert Group on Minor Uses, where a number of guidance documents have or are being prepared and released with regard to minor use issues. IR-4 also assists other countries, both developed and developing, as they begin to establish minor use programs. In 2010 IR-4 hosted a number of Brazilian scientists and regulators as they evaluated the program and prepare to develop their own minor use program. The knowledge and expertise of IR-4 is highly valuable to these countries as these minor use programs evolve and therefore, our assistance continues to be sought on occasion.

Following up on the successful Global Minor Use Summit, IR-4 will continue to work with the USDA Foreign Agriculture Service and other specialty crop programs throughout the world to reduce the data development burden domestically while still providing robust data to regulators and to harmonize MRLs. IR-4 has received funding from FAS to conduct a global study examining the influence of geographic location on residues. This study will provide data and allow scientists to determine if geographic zone affects the ultimate residues in the test crop. For this study, premeasured vials of the four pesticide chemicals were applied using uniform application equipment and a standard use pattern and sprayed on tomatoes growing at 27 locations throughout the world (22 countries). Most of the tomato residue samples have been harvested and the residue analysis is completed. It is expected that a final report will be issued in 2011. IR-4 is also in the process of initiating another global study within its conventional Food Program with a cooperating registrant for a new active ingredient in 2011. It is expected that the global residue data will be part of the initial submission for this new product and should be ready for submission in 2012.

Ornamental Horticulture Program

The Ornamental Horticulture Program continues to support an industry valued at approximately $11.7 billion in annual sales (Horticulture Census, 2009, NASS). This industry is quite complex because growers cover many diverse markets including flowers, bulbs, houseplants, perennials, trees, shrubs and more. These plants are grown and maintained in greenhouses, nurseries, commercial/residential landscapes, interiorscapes, Christmas tree farms, and sod farms.

Research Activities

In 2010, IR-4 conducted 1473 ornamental horticulture research trials to support registrations in the greenhouse, nursery, landscape, Christmas tree, and forestry industries. Of these 719 were efficacy trials designed to compare different products to manage pests, diseases and weeds and to measure the impact of growth regulators; the remaining trials were conducted to determine the level of phytotoxicity to crops with herbicides used to manage common weeds in and around nurseries. See Table 1 for a summary of research activities, Attachment 7 for a complete listing of 2010 field cooperators and Attachment 8 for research activities listed by project.

Table 1. Summary of IR-4's 2010 Ornamental Horticulture Program Research Activities.

Category	**2010**		
	Efficacy	Crop Safety	Total
Number of Studies (PR Numbers) with Planned Trials	478	434	912
Number of Trials	719	754	1,473

Submissions and Successes

During 2010, 21 data summaries were compiled based upon research reports submitted by researchers. See Attachment 9 for Abstracts from the individual reports. Data from 4,183 field trials contributed to the writing of these reports. Table 2 lists the number of trials by IR-4 Region that were used in the data summaries.

Table 2. 2010 Ornamental Horticulture Program Research Summaries.

Region	**Number of Trials**
North Central	391
North East	682
Southern	1422
Western	698
USDA-ARS	990
Total	4183

During 2010, 3 new products were registered with EPA using label directions based partially on the efficacy or crop safety IR-4 generated. One (1) label amendment was granted to add new crops partially based on IR-4 data submitted to manufacturers: Pennant Magnum (s-metolachlor). IR-4 data also contributed to 2 state registrations where efficacy data were reviewed: Adorn (fluopicolide) and Pylon (chlorfenapyr). IR-4 data from 153 field trials contributed to these actions. This impacted 2,367 ornamental crops. See Table 3 for details.

Table 3. Ornamental Horticulture Program Contributions to 2010 Registrations.

Category	2010		
	Efficacy	Crop Safety	Total
New US EPA Product Registrations [a]	2	1	3
US EPA Label Amendments [b]	0	1	1
State Registrations [c]	2	0	2
Number of Trials Contributing to Registrations [d]	99	54	153
North Central	21	1	22
North East	5	6	11
Southern	33	14	47
Western	33	6	39
USDA-ARS	7	27	34
Number of Impacted Crops [e]	2333	34	2367

[a] New products for the ornamental horticulture industry based on data collected through IR-4 and submitted to manufacturers in previous years.

[b] Label updates on existing products for the ornamental horticulture industry based on data collected through IR-4 and submitted to manufacturers in previous years.

[c] State registrations and special local needs registrations on federally registered products for the ornamental horticulture industry based on data collected through IR-4 and submitted to manufacturers in previous years.

[d] The total number of trials where data was utilized for registrations.

[e] The number of impacted crops is an estimate of the total plant species grown commercially for ornamental uses impacted by the IR-4 data.

Biopesticide and Organic Support Program

The IR-4 Biopesticide and Organic Support Program has the goal of facilitating the registration of crop protection products classified by EPA as Biopesticides. IR-4 has four major functions in the biopesticide arena including: (1) an "Early Stage" grants program to fund research proposals for products whose core data have not yet been submitted to EPA; (2) an "Advanced Stage" grants program to fund research proposals for products that have been registered by EPA or are in the registration process and additional data is needed to assist with expansion of the registration to new crops or to new pests; (3) a "Demonstration" grants program to fund large-scale demonstration plots to gather information and provide outreach indicating that biopesticides can be a useful tool in pest management systems; and (4) a registration assistance program to provide university and USDA researchers as well as small biopesticide companies with regulatory advice and petition preparation assistance.

Research Activities

The Biopesticide Research Program is in its thirteenth year of competitive grant funding of projects, amounting to over $5.5 million in grants to researchers since its inception. In 2010, the biopesticide grant program funded 5 Early Stage, 21 Advanced Stage and 10 Demonstration Stage projects (see Attachment 10). These were conducted by 30 different universities and USDA research units and on 107 product-crop combinations. The demonstration stage grants were co-funded and co-reviewed by EPA and IR-4.

Submissions and Successes

In 2010, IR-4 submissions to EPA included amended volumes for C5 HoneySweet Plum, acetic acid , *Trichoderma hamatum* 382, Bacteriophage of *Clavobacter michiganensis* subsp. *michiganensis* in tomato, Tobacco Mild Green Mosaic Tobamovirus and *Aspergillubs flavus* AF36 on corn. New Section 3 packages were submitted for *Aspergillus flavus* AF36 on pistachio, 9,10-anthraquinone on corn, Oriental Beetle pheromone and the new inert Lactoperoxidase. In 2010, Section 3 registrations were approved including C5 HoneySweet Plum, *Trichoderma hamatum* isolate 382 and Acetic Acid. Through these activities 776 new food uses and 3,700 ornamentals uses were registered (see Attachment 10 and Table 1 below).

From efficacy research funded through the biopesticide grant program, there were 11 additions of crops to biopesticide labels (see Attachment 10) resulting in another 24 uses. In addition, a total of 19 Section 18 Emergency Exemptions for 9,10 Anthraquinone in corn and rice were approved (Avipel Liquid for Corn and Avipel Dry for Corn, each in 8 states; and AV-1011 for rice in 3 states). Therefore, the total impact of the registration activities and grant program include 819 food uses and 3,700 ornamental uses for a grand total of 4,519 uses (see Table 1 below).

The Biopesticide and Organic Product Label Database had over 37,000 visits since 2007, with about 9,000 hits in 2010 alone and is undergoing continual updating. A total of 24 new or updated labels were added to the label database containing 547 crops and 73 pests for a total of over 39,000 uses. The label database was initially funded through an EPA Region 2 grant. It continues to be a valuable tool as noted by the activity.

Table 1. Summary of Registration Activity of the Biopesticide and Organic Support Program in 2010.

Source of New Use	Food uses	Ornamentals	Total
Approval of regulatory packages submitted to EPA	776	3,700	4,476
Label amendments supported by efficacy program	24	0	24
Section 18 uses	19	0	19
Total	819	3,700	4, 519

The Public Health Pesticides Program

IR-4's newest initiative, the Public Health Pesticide (PHP) Program, assists in the development and registration of minor use of pesticides that protect the public from vector-borne diseases such as West Nile Virus or Lyme Disease. Additionally, the public remain at risk both from the reintroduction of malaria and the emergence on novel diseases spread by mosquitoes, ticks, sand-flies, and other disease vectors. The initiative is cooperatively funded by the USDA-ARS and the Department of Defense (DoD) through Deployed Warfighter Protection Program (DWFP). These two government entities have been working together to develop new pesticides for vector management use. IR-4 has been engaged by USDA-ARS and DoD to assist with the pesticide regulatory aspects of the new uses.

The IR-4 PHP program, which has built on IR-4's traditional expertise in supporting pest management in small markets, has become a key player in linking researchers, commercial partners, and regulators in the development of new chemical tools, including toxicants, repellents, and attractant-baited traps. The PHP program has also worked with these groups to retain existing tools facing new data requirements, and in the search for underutilized chemicals from other realms which might be repurposed effectively for vector control at relatively low regulatory cost.

During its first full year, the IR-4 Public Health Pesticides Program has built links to major user groups and pesticide developers, completed its first study to remove the registration restriction of Etofenprox that would not allow the use of this product to control adult mosquitoes near crops or pastures, launched the first public access database of chemicals used to combat disease-carrying arthropods (http://ir4.rutgers.edu/PublicHealth/publichealthDB.cfm), initiated regulatory approval processes for a wide portfolio of novel pesticide products, and facilitated efforts to retain existing products facing cancellation due to regulatory costs that exceed market revenues.

Impact

The successes, accomplishments and deliverables of the IR-4 Project have been documented in the specific program sections (Food Use Program, Ornamental Horticulture Program, the Biopesticide and Organic Support Program and the Public Health Program). Without the existence of the IR-4 Project, few safe and effective crop protection chemicals and biological alternatives would be available for use on food and ornamental specialty crops and minor uses.

The accomplishments of the IR-4 Project are many. Specialty crop growers often report on the impact of the IR-4 Project to their business. Some have said, "Without the IR-4 Project and what they provide, my farm would be out of business". In an effort to capture a solid assessment of program value, in 2010, Michigan State University's Center of Economic Analysis conducted an economic impact study of IR-4's food use activities, ornamental horticulture and biopesticide programs. Their assessment indicated that the efforts of the IR-4 Project add $7 billion dollars annually to the gross domestic product (GDP).

FY 2010 Appropriations and other funding

The IR-4 Project receives its funding from several sources. The majority of funding is directed through USDA-NIFA and USDA-ARS. There are also direct and in-kind contributions from the state agricultural experiment stations, grants from industry and grants from USDA-Foreign Agriculture Service and USDA-Animal Plant Health Inspection Service.

Total direct funding for the IR-4 Project during calendar year 2010 was approximately $18 million. This included the FY 2010 Congressional appropriation through NIFA amounting to $12.18 million. This was an increase of $180,000 from the FY 2009 appropriation of $12.0 million. The amount allocated to the USDA-ARS Minor Use Program remains at $4.0 million. The Directors of the State Agricultural Experiment Stations provided IR-4 (NRSP-4) $481,182 through a Multi-state Research Funds grant. USDA-Foreign Agriculture Service granted nearly $500,000 to cover IR-4's international activities and the IR-4 Global Residue Study. A cooperative project between IR-4/Department of Defense-Armed Forces Pest Management Board/USDA-ARS provided $260,000 for regulatory support of public health pesticides. The crop protection industry was able to assist the IR-4 Project by providing approximately $1.044 million in grants.

The direct funding of $18 million does not include the substantial in-kind contributions provided by the crop protection industry, commodity groups and SAES/land grant universities. For example, many IR-4 research units are housed at state funded research stations. The host institutions contribute indirect and direct costs as leverage on the IR-4 funds at our field research centers and regional labs and offices. The crop protection industry always provides characterized test substance and analytical standards to be used in residue studies and they also provide significant technical assistance. Various commodity groups provide funding directed at specific research on new pest control tools critical for growers of their specialty crops.

As mentioned above, the crop protection industry provided $1.044 million in direct funds. IR-4 used 78% ($821,474) of these resources to supplement research activities with additional research trials, sample processing and other miscellaneous costs. Over $57,500 was used to pay for the IR-4 Workshops and national meetings, $135, 663 supplemented IR-4 HQ operating expenses, such as salary, publications and technical support and $45,795 was used to update/upgrade the IR-4 Food Use Database, which is available on line at ir4.rutgers.edu.

Future Directions

IR-4 conducted a Strategic Planning Conference in December of 2008 to obtain stakeholder input on program directions for 2009 to 2014. This plan serves as the roadmap for IR-4 activities over the next five years and was designed to strengthen the existing core food, ornamental and biopesticide programs by enhancing them with additional efficacy testing, management of invasive species that attack specialty crops, activities that reduce or eliminate trade barriers caused by pesticide residues and support for organic specialty crop production. The Strategic Plan also included the new cooperative initiative to provide regulatory assistance to facilitate the registration of pesticides to manage arthropod pests of medical concern.

Specific Activities in 2011

IR-4 will continue to seek input and technical guidance from all of its stakeholders, including state and federal agricultural scientists, state extension agents and specialists, commodity groups, growers, the crop protection industry, food processors, CDPR and the EPA to insure the program maintains focus on important specialty crop needs. IR-4 goes through an extensive process, including priority setting workshops (2010 Food Use Workshop was conducted September 13 & 14 in Summerlin, NV) and reviewing proposals each year to obtain input on the most critical pest control needs of specialty crop producers; and to prioritize those research needs using committees of regional and national level agriculture experts to best match the program's resources with current unmet needs.

Food Use Program research for year 2011 will consist of approximately **83** residue studies supported by **566** field trials. The distribution of 2011 field trials within the IR-4 Project consists of 424 conducted by the IR-4 units associated with the state agricultural experiment stations, 75 conducted by USDA-ARS and 67 by Canada. The Canadian Minor Use Program will be fully managing 4 cooperative studies, including sponsorship, study director duties and report writing.

Food Use Efficacy and Crop Safety (E/CS) Research Activities: IR-4 allocated $250,000 for E/CS research in 2011. Although funding was doubled from 2010, E/CS research is still limited to IR-4's commitment to complete on-going projects which require additional E/CS data prior to registration. Therefore, additional research will still be needed to address many of the 2011 projects.

To focus IR-4 E/CS research planning on those projects deemed most important, at the 2010 Food Use Workshop stakeholders established priorities for 2011 E/CS projects in a manner analogous to the process used for residue studies. For 2011, research is being conducted to address E/CS needs in 32 projects, including 71 state university and 19 ARS trials. The Canadian Minor Use Program is also generating E/CS data that will be useful to help address the needs for a number of joint projects.

At the 2010 workshop, additional discussion focused on a new category of E/CS projects: "Pest Problem Without Solution" or "PPWS." In the past 5 years IR-4 has conducted a number of E/CS studies when stakeholders at the workshop chose to replace an "A" residue priority with an efficacy or crop safety "PPWS-like" screening study (e.g., screening studies on onion thrips, greens crop safety and Phytophthora blight on peppers and cucurbits). Stakeholders were encouraged to submit requests for "PPWS" projects, and 14 such projects are now in the IR-4 database. For 2011 research, stakeholders replaced 5 "A" priority residue studies with PPWS projects, supported with 18 trials that will be conducted by state university researchers.

Ornamental Horticulture: In 2011, the research program will focus on high priority projects established at the 2009 workshop (October 6-8, Cleveland OH): bacterial efficacy, pythium efficacy, fungicide crop safety, scale insect efficacy, thrips efficacy and IPM strategies, insecticide crop safety, 2010 herbicide crop safety, early post emergence control, and liverwort efficacy. The 2011 research program will maintain each regional coordinator's discretionary funds to sponsor research of regional interest. In 2011, the program will continue studying an invasive disease, gladiolus rust, through a USDA-APHIS grant.

Biopesticide and Organic Support Program: For 2011, IR-4 received a total of 73 proposals. Out of the 73 proposals 23 are Early Stage, 30 are Advanced Stage and 20 are Demonstration Stage proposals. The final approvals will occur in February of 2011.

International: IR-4 will continue to move forward assisting U.S. specialty crop growers to compete in international trade, by aiding in the harmonization of pesticide use and country-specific Maximum Residue Levels (MRLs) that often differ between the U.S. and its global trading partners. IR-4 remains active in global harmonization efforts of NAFTA, the Codex Committee of Pesticide Residues (CCPR) and Organization for Economic Co-operation and Development (OECD). IR-4 has received a grant from USDA-Foreign Agriculture Service to allow IR-4 to take existing data, upgrade the submission format and provide the information to foreign regulatory authorities to establish MRLs to reduce US grower problems in the export of their produce. IR-4 research cooperators finished much of the field research and laboratory research with the global residue study in 2010, and we'll initiate a new global residue study in 2011 for a novel new active ingredient, with submission in 2012.

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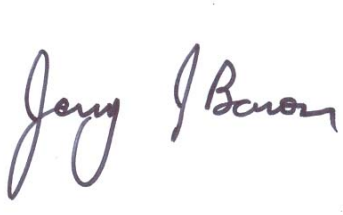
Approved by:



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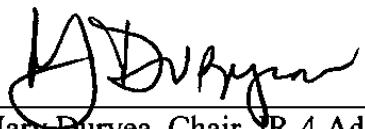

Mary Duryea, Chair, IR-4 Administrative Advisers
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ATTACHMENT 1

Participants in the Process

Stakeholder Representatives

These are the primary customers for IR-4 Project services. A concerted effort is always made to seek input from growers/commodity group representatives for establishing research priority setting policies. IR-4 has the **IR-4 Commodity Liaison Committee (CLC)**. The CLC provides input to the IR-4 Project Management Committee on overall operations and program direction. They are often effective communicators to Congress on the importance of the IR-4 Project and its deliverables to specialty crop agriculture in the United States. Members include:

Dr. Michael Aerts, Florida Fruit and Vegetable Association
Mr. Mark Arney, Nat'l Watermelon Promotion Board
Mr. Kirk Baumann, Ginseng Board of Wisconsin
Dr. Lori Berger, California Specialty Crops Council
Dr. Michael Bledsoe, Village Farms, L.P.
Dr. A. Richard Bonanno, Bonanno Farm Trust
Mr. Bruce Buurma, Buurma Farms Inc.
Mr. James R. Cranney, California Citrus Quality Council
Dr. Brian R. Flood, Del Monte USA
Mrs. Ann E. George, Washington Hop Commission
Mr. Hank Giclas, Western Growers Association
Mr. John Keeling, National Potato Council
Mr. Phil Korson, Cherry Marketing Institute
Mr. Rocky Lundy, Mint Industry Research Council
Mr. Eric Maurer, Engage Agro
Ms. Laura Phelps, American Mushroom Institute
Mr. Ray Prewett, Texas Vegtable Association
Mr. Ray Ratto, Ratto Brothers
Ms. Lin Schmale, Society of American Florists
Mr. Todd Scholz, USA Dry Pea & Lentil Council
Dr. Alan Schreiber, Agriculture Development Group, Inc.
Dr. Marc Teffeau, American Nursery and Landscape Assoc.
Mr. Dave Trinka, MBG Marketing
Mr. Tyler Wegmeyer, American Farm Bureau Federation

Cooperating Government Departments and Agencies

Agriculture and Agri Food Canada
California Department of Pesticide Regulation
Health Canada
State Agricultural Experiment Stations/Land Grant Universities
U.S. Department of Agriculture, National Institute of Food and Agriculture
U.S. Department of Agriculture, Agricultural Research Service
U.S. Department of Agriculture, Foreign Agriculture Service
U.S. Department of Agriculture, Animal and Plant Health Inspection Service
U.S. Environmental Protection Agency

ATTACHMENT 1 Continued

Crop Protection Industry

AgBio Development Inc.
AgraQuest Inc.
AgroSource Inc.
Amvac Chemical Corporation
Arkion Life Sciences
Arysta LifeScience North America Corp.
BASF Corporation
Bayer CropScience USA
Certis USA
Cheminova
Chemtura AgroSolutions
Dow AgroSciences
DuPont Agricultural Products
FMC Corporation
Gowan Company
Isagro, USA
ISK Biosciences
Janssen Pharmaceutica
K-I Chemical USA Inc.
Lonza Inc.
Makhteshim-Agan N.A. Inc.
Marrone Organic Innovations, Inc.
Monsanto Company
Nichino America, Inc.
Nisso America, Inc.
Nufarm Americas, Inc.
Sankyo Agro Co., Ltd.
Syngenta Crop Protection Inc.
UPI
Valent Bioscience
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ATTACHMENT 1 Continued

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ATTACHMENT 1 Continued

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ATTACHMENT 1 Continued

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J. Redekop	SK
G. Riddle	ON
D. Ulrich	SK
D. Wardle	BC
M. Weber-Henricks	ON
P. White	ON

ATTACHMENT 2
2010 Food Use Research Projects – Residue Trials

CHEMICAL	CROP	PR #
• Abamectin	Strawberry	8019
• Acetamiprid	Clover (Red) (Seed Crop)	9600
• Anthraquinone	Canola	10365
• Anthraquinone	Sunflower (Seed Treatment)	10366
• Beta-Cyfluthrin	Flax	9026
• Bifenazate	Banana	10002
• Bifenthrin	Grape	10074
• Carfentrazone-Ethyl	Asparagus	10278
• Chlorantraniliprole	Artichoke (Globe)	10083
• Chlorantraniliprole	Pomegranate	10362
• Chlorothalonil	Almond	10367
• Chlorothalonil	Greens (Mustard)	5423
• Chlorothalonil	Radish	148
• Clethodim	Okra	10383
• Clopyralid	Pear	3624
• Clopyralid	Radish	10437
• Clothianidin	Cherry	10377
• Clothianidin	Grapefruit	10168
• Clothianidin	Plum	10376
• Cyantraniliprole (HGW86)	Cucumber (GH)	10313
• Cyazofamid	Chives	10265
• Cyprodinil + Fludioxonil	Guava	7127
• Difenoconazole + Cyprodinil	Artichoke (Globe)	10387
• Dimethomorph	Bean, Lima (Succulent & Dried Shelled)	7261
• Dimethomorph	Greens (Mustard)	7247
• Diquat	Canola	10091
• Endigo ZC & Revus Top	Fruit Vegetables	10529
• Etofenprox	Alfalfa, Lettuce (Leaf), Grasses	10315
• Famoxadone + Cymoxanil	Carrot	8875
• Fenpropathrin	Barley	7667
• Fenpropathrin	Greens (Mustard)	9266
• Fenpropathrin	Sweet Potato	7946
• Fenpyroximate	Cherry	10436
• Fenpyroximate	Peach	10468
• Fenpyroximate	Plum	10469
• Flonicamid	Bean (Dried Shelled)	10475
• Flonicamid	Tomato (Field & GH)	8556
• Fluazifop-P-Butyl	Blueberry	2083
• Fluazifop-P-Butyl	Caneberry	3947
• Fluazifop-P-Butyl	Grasses (Seed Crop)	9825
• Fluazifop-P-Butyl	Lettuce (Head & Leaf)	2072
• Fluazifop-P-Butyl	Rhubarb	2404
• Fluazinam	Spinach	6890
• Flubendiamide	Blueberry	9981
• Fluopicolide	Basil	10121
• Fomesafen	Pea (Dry)	10476
• Fomesafen	Strawberry (Perennial)	10439
• Glyphosate	Onion (Dry Bulb)	8056
• Glyphosate	Pepper (Chili)	10285
• Glyphosate	Strawberry	6312
• Halosulfuron	Grape	7768
• Halosulfuron	Pear	9722
• Imidacloprid	Oyster	10553
• Lambda-Cyhalothrin	Rice (Wild)	8850
• Malathion	Flax	10082
• Mandipropamid	Bean (Snap)	10324
• Mandipropamid	Tomato (GH)	10485
• Metaldehyde	Bean & Pea (Edible Podded)	10334
• Metaldehyde	Pea (Succulent Shelled)	10333
• Metconazole	Bean (Dry Shelled)	10386
• Metconazole	Pea (Dry)	10389
• Metconazole	Sunflower	10390
• Methoxyfenozide	Caneberry	10470
• Methoxyfenozide	Citrus	9367
• Methoxyfenozide	Date	10154
• Metrafenone	Cantaloupe	10477
• Metrafenone	Cherry	10370
• Metrafenone	Hops	10466
• Metrafenone	Squash (Summer)	10478
• Metrafenone	Tomato	10467
• Permethrin	Collard	10360
• Permethrin	Tomato	10359
• Prohexadione Calcium	Strawberry	7773
• Prometryn	Carrot	1682
• Prometryn	Parsley	3618
• Propiconazole	Radish	6385
• Pyrifluquinazon	Tomato (Field & GH)	10126
• Pyrimethanil	Cucumber (GH)	10284
• Quinclorac	Asparagus	8295
• Quinclorac	Blueberry	10435
• Quinclorac	Caneberry	10436
• Quinoxyfen	Hops	10084
• Spirotetramat	Clover (Red) (Seed Crop)	10426
• Tolfenpyrad	Avocado	10427
• Tolfenpyrad	Blueberry	10380
• Trifloxysulfuron	Tomato	10458
• Triflumizole	Tomato (GH)	9299

Attachment 3: 2010 Efficacy/Crop Safety (E/CS) Research Program

Entomology:

Chemical	Crop	PR#	Comments	CS trials planned	E trials planned	ARS trials	State trials
spirotetramat	pepper	10306	Add thrips to label, need 4-5 good trials	none	3	--	FL, WI (2)

Weed Science:

Chemical	Crop	PR#	Comments	CS trials planned	E trials planned	ARS trials	State trials
sulfentrazone	apple	07770	Complete 2nd yr of 2-yr CS trials	4	none	--	NY, WV, NC, MI
pendimethalin	green onion	05097	do at least 4 trials in 2010	6	none	SC, GA, TX, CA	AR, OH
napropamide	basil	03439	do at least 4 trials in 2010	7	none	SC, GA, TX, CA	NY, AR, MI
pendimethalin	eggplant	06287	1st yr CS to add crop to marketing label	5	none	SC, GA	NY, AR, NC
pendimethalin & s-metolachlor	Brassica crops	06504 06773 06507 06506 02256	1st yr CS to add crop to marketing label	7	none	CA	AR, NC, MI, OH, CA, NY
saflufenacil	succulent pea	10358	1st yr CS to add crop to marketing label	3	none	--	NY, FL, AR
flufenacet + metribuzin	hay	10372	2010 residue study – need CS before reg.	1	none	WA	--

Plant Pathology:

Chemical	Crop	PR#	Comments	CS trials planned	E trials planned	ARS trials	State trials
triflumizole	GH cucumber	09300	repeat trial – no disease in 2009 (p. mildew)	none	1	--	AZ
cyazofamid	spinach	09265	repeat trial – no disease in 2009 (d. mildew)	none	1	--	AZ
cyazofamid	snap beans	09532	no disease in 2009; need more trials	none	2	--	NY, MI
mefenoxam + copper	turnip greens	09387	need more CS data	2	none	OH, SC	--
acibenzolar	strawberry	07817	CN did 3 trials in 2009, more in 2010	collect from E trials	none in US	--	--
boscalid	tomato	10443	add timber rot to label; need 4-5 good trials	collect from E trials	3	--	GA, KY, NY
acibenzolar	pepper	07116	add bell pepper to label; need many trials	3	none	TX	GA, NY
famoxadone + cymoxanil	cabbage, m. greens	09312 09313	add bacterial spot to label; need 5 trials	none	1	--	NY

Attachment 3: 2010 Efficacy/Crop Safety (E/CS) Research Program

Plant Pathology (cont'd):

Chemical	Crop	PR#	Comments	CS trials planned	E trials planned	ARS trials	State trials
metrafenone	summer squash	10478	2010 residue study, need E/CS data before reg., CN doing trials in 2010	collect from E trials	1	--	NY
metrafenone	hops	10466	2010 residue study, need E/CS data before reg., CN doing trials in 2010	collect from E trials	none in US	--	--
metrafenone	cherry	10370	2010 residue study, need E/CS data before reg., CN doing trials in 2010	collect from E trials	none in US	--	--
metrafenone	canteloupe	10477	2010 residue study, need E/CS data before reg., CN doing trials in 2010	collect from E trials	1	--	NY
fluazinam	spinach	06890	2010 residue study, need E/CS data before reg., CN doing trials in 2010	collect from E trials	none in US	--	--
mandipropamid	snap bean	10324	to be covered w/efficacy work on 09532/07262	none	see 09532 (above)	--	--
Bacillus subtilis	blueberry	08768	single efficacy trial approved as a PUP	none	1	--	MI

ATTACHMENT 4 – Registration Packages Submitted in 2010

Completed Petitions or Final Reports Submitted to EPA or to MFG for submissions to EPA

Pest Control Agent / Type*		Commodity or Crop Group	PR#	Date
Spiromesifen	I	Pea, dry	09369	Jan 13 2010
		Mint	09753	
Etoxazole	I	Tea	10552	Mar 03 2010
Thiacloprid	I	Stone Fruit, group 12	07811 07812 08038	Mar 05 2010
Zeta-cypermethrin	I	Artichoke	09365	Apr 9 2010
		Barley	08812	
		Pistachio	10579	
Novaluron	I	Sweet Corn	09838	Apr 20 2010
Tetraconazole	F	Low growing berry, subgroup 13-07G Small fruit, vine climbing, except fuzzy kiwifruit, subgroup 13-07F (to replace grape tolerance)	A9662 ---	Jun 18 2010
Abamectin	I	Onion, bulb, subgroup 3-07A Chive (fresh and dried) Bean, dry	07237 07102 05001 06594	Jun 24 2010
Metconazole	F	Vegetable, tuberous and corm, subgroup 1C Bushberry subgroup 13-07B	09861 09501	Jun 30 2010
Paraquat	H	Pomegranate	10127	Jul 12 2010
		Star fruit	10093	
		Lychee	10096	
		Mango	10097	
		Sugar apple	10140	
Hexythiazox	I	Tomato (greenhouse uses only)	08137	Sep 23 2010
2,4-D and Dicamba	H	Teff	10195	Oct 05 2010
Bifenazate	I	Basil (fresh and dried)	08846	Oct 05 2010
Quizalofop	H	Sorghum (grain) Rapeseed subgroup 20A, except flax, seed	10092 07340	Oct 22 2010
Zeta-cypermethrin	I	Avocado	09396	Nov 03 2010
Rimsulfuron	H	Caneberry subgroup 13-07A	09661	Nov 19 2010
		Bushberry subgroup 13-07B	09691	
9,10-Anthraquinone	BR	Corn seed treatment	9613	Dec 02 2010
Acibenzolar	F	Berry, low growing, subgroup 13-07G	07817	Dec 14 2010
Spirodiclofen	I	Lychee Guava Sugar apple Persimmon Longan Spanish lime Rambutan Pulasan Cherimoya Atemoya Custard Apple Ilama Soursop Biriba Feijoa Jaboticaba	09327 09329 09330 10729	Dec 16 2010

ATTACHMENT 4 – Registration Packages Submitted in 2010

Completed Petitions or Final Reports Submitted to EPA or to MFG for submissions to EPA

Spirodiclofen (Continued)	**I**	Wax Jambu Starfruit Passionfruit Persimmon Acerola		

Amended Petitions or Final Reports Submitted to EPA or MFG for Label support or expansion.

Pest Control Agent / Type*		**Additional Commodities**	**PR#**	**Date**
Kasugamycin	F	Tomato	09797	Jan 04 2010
		Pepper	09802	
		Walnut	09772	
		Pear	09619	Jan 06 2010
		Apple	09773	
Etoxazole	I	Eggplant African eggplant Pea eggplant Scarlet eggplant Martynia Okra Pepino Roselle	09234	Jan 29 2010
Boscolid + Pyracrostrobin	F	Hops	08889	Feb 21 2010
Cyprodinil	F	Lemon (processed)	A8297	Mar 02 2010
Napropamide	H	Mint	A3441	Mar 15 2010
Zeta-cypermethrin	I	Citrus fruit (to support ULV applications)	10101	Jun 28 2010
Buprofezin	I	Cantaloupe	09226	Aug 16 2010
Buprofezin	I	Cucumber	06143	Aug 16 2010
Buprofezin	I	Squash (Summer)	09278	Aug 16 2010
Chlorantraniliprole	I	Cucumber (GH), label amendment	10004	Sept 2 2010
Chlorantraniliprole	I	Bean, Succulent (conditional registration) Pea, succulent (conditional registration)	10046 10003	Sept 21 2010
Boscolid + Pyracrostrobin	F	Sugarcane	09901	Dec 15 2010
Etoxazole	I	Plum (conditional registration)	A9046	Dec 15 2010

New or Revised Crop Groups

Crop Group or Subgroup	**Date**	**No. of Uses**
Tropical and subtropical fruit, edible peel, group 22	Nov 10 2010	108
Tropical and subtropical fruit, inedible peel, group 23	Nov 15 2010	104

ATTACHMENT 4 – Registration Packages Submitted in 2010

Commodities Requested in Submission to JMPR for Establishment of Codex MRL values

Pest Control Agent / Type*	Commodity		Date
Novaluron	I	Berries	Jan 12 2010
		Beans	
		Brassica group	
		Cucurbits group	
		Fruiting Vegetables	
		Stone fruit group	
Etoxazole	I	Melon subgroup 9A	Feb 16 2010
		Cucumber	
		Fruit, stone, group 12, except plum	
		Plum	
		Mint	
		Tomato (greenhouse)	
Fenpyroximate	I	Vegetable, fruiting, group 8	Feb 16 2010
		Melon subgroup 9A	
		Okra	
		Mint	
		Hop	
Boscalid + Pyraclostrobin	F	Hop	Mar 05 2010

ATTACHMENT 5 - New Tolerances and Approvals – 2010

Permanent Tolerances published in the Federal Register

Pest Control Agent / Type*		Date	Commodity or Crop Group	PR#	No. of Uses	No. of Tolerances
Novaluron	I	1/27/10	Vegetable, fruiting group 8** Okra** Cocona** African eggplant** Pea eggplant** Scarlet eggplant** Goji berry** Garden huckleberry Martynia** Naranjilla** Roselle** Sunberry** Bush tomato** Currant tomato** Tree Tomato**	08985 08634	22	14
			Vegetable, cucurbit, group 9**	08988 08989 08990	14	1
			Berry, low growing, subgroup 13-07G, except lowbush blueberry**	09782 10050	8	1
			Swiss chard	09745	1	1
			Bean, snap, succulent	08128	1	1
			Bean, dry	09781	22	1
Pendimethalin	H	1/17/10	Grasses**	08310	3	3
Chlorantraniliprole	I	2/3/10	Acerola**	03023	1	1
			Alfalfa		3	1
			Animal feed, nongrass, group 18**		1	2
			Artichoke, globe**		1	1
			Asparagus**		1	1
			Atemoya**		1	1
			Avocado**	09581	1	1
			Banana**	10232	2	1
			Biriba**		1	1
			Brassica, head and stem, subgroup 5A**		11	1
			Brassica, leafy greens, subgroup 5B**		8	1
			Cacao bean**		1	4
			Cactus**		1	1
			Canistel**		1	1
			Cherimoya**		1	1
			Cherry, sweet and tart**		2	2
			Coffee**	10205	1	2
			Corn, field**	09732	1	4
			Corn, pop**		1	3
			Corn, sweet**	09732	1	3
			Crambe**		1	1
			Custard apple**		1	1
			Feijoa**		1	1

*F=fungicide, H=herbicide, I=insecticide/acaricide, M=molluscide, P=plant growth regulator, R=rodenticide
**This use (some crops) has been found on an approved market label.

ATTACHMENT 5 – Continued

Permanent Tolerances published in the Federal Register

Pest Control Agent / Type*		Date	Commodity or Crop Group	PR#	No. of Uses	No. of Tolerances
Chlorantraniliprole (continued)	I	2/3/10	Fig**		1	1
			Caneberry subgroup 13-07A**	09344	5	1
			Fruit, citrus, group 10	10200 10201 10202	14	1
			Fruit, pome , group 11, except mayhaw**		6	1
			Fruit, small, vine climbing, except fuzzy kiwifruit, subgroup 13-07F**		6	2
			Fruit, stone, group 12, except cherry, Chickasaw plum, and damson plum**		7	1
			Grass, forage, fodder and hay, group 17	10250	3	1
			Guava**		1	1
			Hare's ear mustard**		1	1
			Herb subgroup 19A**	10219	40	2
			Hop**		1	1
			Ilama		1	1
			Jaboticaba**		1	1
			Jojoba**		1	1
			Lesquerella**		1	1
			Longan**		1	1
			Lunaria**		1	1
			Lychee**		1	1
			Mango**		1	1
			Mayhaw**		1	1
			Milkweed**		1	1
			Mustard**		1	1
			Nut, tree, group 14**		12	2
			Oil, radish**		1	1
			Okra**	10537	1	1
			Olive**		1	2
			Papaya**		1	1
			Passionfruit**		1	1
			Mint**	09642	1	2
			Perisimmon**	10536	1	1
			Pineapple		1	2
			Pistachio**		1	1
			Plum, Chickasaw**		1	1
			Plum, damson**		1	1
			Pomegranate**		1	1
			Poppy seed**		1	1
			Pulasan**		1	1
			Rambutan**		1	1
			Rapeseed**	10208	3	1
			Rice**	10136	1	2
			Rose hip**		1	1

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ATTACHMENT 5 – Continued

Permanent Tolerances published in the Federal Register

Pest Control Agent / Type*		Date	Commodity or Crop Group	PR#	No. of Uses	No. of Tolerances
Chlorantraniliprole (continued)	I	2/3/10	Sapodilla	10539	1	1
			Black sapote**		1	1
			Mamey sapote**		1	1
			White sapote		1	1
			Sesame**		1	1
			Soursop**		1	1
			Spanish lime**		1	1
			Spice, subgroup 19B**	10538	30	1
			Star apple**		1	1
			Starfruit**		1	1
			Strawberry**	09850	1	1
			Sugar apple**		3	1
			Sugarcane**		1	2
			Tallowwood**		1	1
			Tea oil plant		1	1
			Vegetable, cucurbit, group 9**		14	1
			Vegetable, foliage of legume, except soybean, subgroup 7A**		2	2
			Vegetable, fruiting, group 8**	09477	9	1
			Vegetable, leafy, ex brassica, group 4**		29	1
			Vegetable, legume, group 6, except soybean**		41	1
			Vegetable, tuberous and corm, subgroup 1C**		17	1
			Wax jambu**		1	1
Acetamiprid	I	2/10/10	Fruit, small, vine climbing, except fuzzy kiwifruit, subgroup 13-07F**	09057	6	1
			Tea	10316	1	1
			Clover (regional registrations)	09600	1	2
Flumioxazin	H	2/24/10	Vegetable, cucurbit, group 9 (replaces tolerance on Melon subgroup 9A)**	08317 08318	11	1
			Leaf petioles subgroup 4B**	08646	7	1
			Hop**	09371	1	1
Clopyralid	H	3/24/10	Bushberry subgroup 13-07B**	05433 09602	19	1
			Swiss Chard	05435	1	1
			Strawberry (tolerance for regional registration)	08132	1	1
Thifensulfuron methyl	H	4/14/10	Safflower**	03454	1	1
Difenoconazole	F	4/28/10	Nut, tree, group 14:: Pistachio**	09620	12	3
Cyromazine	I	4/28/10	Bean, succulent**	03909	14	1

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**This use (some crops) has been found on an approved market label

ATTACHMENT 5 – Continued

Permanent Tolerances published in the Federal Register

Pest Control Agent / Type*		Date	Commodity or Crop Group	PR#	No. of Uses	No. of Tolerances
Spirodiclofen	I	5/5/10	Avocado** Mango** Papaya** Black sapote** Canistel** Mamey sapote** Sapodilla** Star apple**	09326 09325 09328	8	8
Clethodim	H	5/12/10	Artichoke, globe	09013	1	1
			Bushberry, subgroup 13-07B (except lowbush blueberry)	05234	18	1
			Caneberry subgroup 13-07A	05233 06060	5	1
			Peach	06875	2	1
Fluazinam	F	5/12/10	Bushberry subgroup 13-07B (replaces tolerances on subgroup 13B and 12 commodities)**		2	1
			Onion, bulb, subgroup 3-07A**	07092	11	1
			Lettuce, head Lettuce, leaf	06892	2	2
Diquat	H	5/26/10	Canola**	10091	1	2
Cyazofamid	F	7/14/10	Brassica, head and stem, subgroup 5A**	09082 09717	11	1
			Brassica, leafy greens, subgroup 5B**	09083 09084	8	2
			Turnip greens**		3	
			Spinach**	09265	1	1
			Hop**	09823	1	1
Halosulfuron methyl	H	8/4/10	Vegetable, tuberous and corm, subgroup 1C	07281 08937	17	1
			Pea and bean, succulent shelled, subgroup 6B**	07286	12	1
			Pea and bean, dried shelled, except soybean, subgroup 6C**	08976 09114	24	1
			Bushberry subgroup 13-07B**	09243	19	1
			Apple**	07769	1	1
			Okra**	08838	1	1
			Rhubarb**	09407	1	1
Mancozeb	F	8/18/10	Atemoya** Mango** Sugar apple* Canistel** Cherimoya** Custard apple** Mamey sapote** Sapodilla** Star apple** White sapote	03131 03028 03130	10	10
			Ginseng**	00992	1	1
			Vegetable, cucurbit, group 9 (replaces individual crop tolerances)**		11	1

*F=fungicide, H=herbicide, I=insecticide/acaricide, M=molluscide, P=plant growth regulator, R=rodenticide
**This use (some crops) has been found on an approved market label.

ATTACHMENT 5 – Continued

Permanent Tolerances published in the Federal Register

Pest Control Agent / Type*		Date	Commodity or Crop Group	PR#	No. of Uses	No. of Tolerances
Bifenazate	I	9/1/10	Avocado** Sugar apple** Atemoya** Biriba** Cherimoya** Custard apple** Ilama** Soursop**	08269 08927	8	8
			Berry, low growing, subgroup 13-07G (replaces strawberry tolerance)**	10085	8	1
			Fruit, small, vine climbing, except fuzzy kiwifruit, subgroup 13-07F (grape tolerances are already established)**		5	1
Spiromesifen	I	9/1/10	Pea, dry	09369	2	1
			Mint**	09753	2	2
S-metolachlor	H	9/17/10	Vegetable, root, except sugar beet, subgroup 1B, except carrot (replaces radish tolerance)**		16	1
			Onion, bulb, subgroup 3-07A (additional crops in new subgroup) Onion, green, subgroup 3-07B (additional crops in new subgroup)**		15	2
			Brasica, leafy greens, subgroup 5B	01216 02255 06577 09354	8	1
			Melon subgroup 9A	06178 06181 06655	3	1
			Caneberry subgroup 13-07A	02617 03497 04994	5	1
			Bushberry subgroup 13-070B	02616	19	1
			Carrot**	08981	1	1
			Cucumber	06657	1	1
			Okra	09726	1	1
			Sesame seed**	06516	1	1
			Sorghum, sweet	03840	1	1
			Turnip, greens**	02578	3	1
Acequinocyl	I	11/17/10	Vegetable, fruiting, group 10 Okra	08858 08605 08356 09275	10	2
			Bean, edible podded	08673	6	1
			Hop	09370	1	1
Flutolanil	H	12/22/10	Vegetable, brassica, leafy, group 5 Turnip, greens	08760 08840 08841 09263 10227	22	2
				Totals	786	219
				Total uses found on labels	614	

*F=fungicide, H=herbicide, I=insecticide/acaricide, M=molluscide, P=plant growth regulator, R=rodenticide
**This use (some crops) has been found on an approved market label.

ATTACHMENT 5 – Continued

New or Revised Crop Groups

Crop Group or Subgroup	Date	No. of Uses
Vegetable, fruiting, group 8-10	Dec 08, 2010	21 (previously 9)
Tomato subgroup 8-10A		11
Pepper/eggplant subgroup 8-10B		10
Nonbell pepper/eggplant subgroup 8-10C		9
Fruit, citrus, group 10-10	Dec 08, 2010	28 (previously 14)
Orange subgroup 10-10A		12
Lemon/lime subgroup 10-10B		12
Grapefruit subgroup 10-10C		5
Fruit, pome, group 11-10	Dec 08, 2010	12 (previously 7)
Oilseed group 20	Dec 08, 2010	32

ATTACHMENT 6 – PENDING FOOD PROGRAM SUBMISSIONS
Final Report in Progress (All Data Received at HQ)

Product	Crop(s)
1,3-Dichloropropene	Pineapple
2.4-D	Strawberry
2,4-DB	Lentil
Acequinocyl	Bean (Succulent Shelled), Caneberry, Cantaloupe, Cherry, Cucumber, Low growing berry subgroup, Small fruit vine climbing subgroup, except fuzzy kiwifruit
Acetamiprid	Asparagus
Anthraquinone	Corn
Atrazine	Sorghum (Sweet)
AVG	Cherry, Peach, Plum
Azoxystrobin	Onion (Bulb) Subgroup, Onion (Green) Subgroup, Bushberry Subgroup, Caneberry Subgroup, Low growing berry subgroup, Small fruit vine climbing subgroup, except fuzzy kiwifruit
Azoxystrobin + Fludioxonil + + Difenoconazole	Potato
Boscalid	Onion (Bulb) Subgroup
Boscalid + Pyraclostrobin	Artichoke (Globe), Celeriac, Endive, Hops, Oilseed Group, Persimmon
Bromoxynil	Millet
Buprofezin	Cantaloupe, Citrus Fruit Group, Cucumber, Fruiting Vegetables Group, Greens (Mustard), Pome Fruit Group, Squash (Summer), Tea
Captan	Ginseng
Carfentrazone-ethyl	Onion (Dry Bulb)
Chlorantranilprole	Bean (Snap), Blueberry, Cranberry, Cucumber, Pea (Edible Podded & Succulent Shelled)
Clethodim	Blueberry (Lowbush), Low Growing Berry Subgroup, Onion (Bulb) Subgroup, Camelina, Cuphea, Fruiting Vegetables Group, Goji Berry, Oilseed Group, Pear
Clomazone	Broccoli, Pea (Southern), Rhubarb
Clopyralid	Apple
Clothianidin	Grapefruit, Greens (Mustard) (Seed Treatment), Lemon, Orange, Pistachio
Cyazofamid	Lettuce (Head & Leaf)
Cyprodinil	Bushberry Subgroup, Caneberry Subgroup , Low Growing Berry Subgroup, Onion (Bulb) Subgroup, Onion (Green) Subgroup, Small Fruit Vine Climbing Subgroup Except Fuzzy Kiwifruit
Cyprodinil + Fludioxonil	Pepper (Bell & Non-Bell), Pepper (Bell & Non-Bell) (GH), Spinach
DCPA	Asparagus, Carrot, Prickly Pear Cactus
Dinotefuran	Cranberry, Onion (Dry Bulb), Onion (Green), Peach, Small Fruit Vine Climbing Subgroup, except Fuzzy Kiwifruit, Tuberous/Corm Vegetables, Watercress
Diquat	Watercress

ATTACHMENT 6 – PENDING FOOD PROGRAM SUBMISSIONS Continued
Final Report in Progress (All Data Received at HQ)

Diuron	Apricot, Cherry, Plum
Emamectin Benzoate	Cantaloupe, Cucumber, Squash
EPTC	Watermelon
Ethalfluralin	Camelina
Ethephon	Sweet Potato, Tomato
Ethofumesate	Cilantro, Dill
Ethylene	Pineapple
Etoxazole	Plum
Famoxadone + Cymoxanil	Bean (Lima) (Succulent & Dried Shelled), Greens (Mustard)
Fenamidone	Bean (Lima) (Succulent & Dried Shelled), Bean (Snap), Ginseng, Onion (Bulb) Subgroup, Onion (Green) Subgroup
Fenhexamid	Kiwifruit (Preharvest), Onion (Bulb & Green) Subgroups
Fenoxaprop-Ethyl	Grasses (Seed Crop)
Fenpyroximate	Bean (Snap), Cucumber, Tea
Flonicamid	Canola, Cucumber (GH), Strawberry
Fluazinam	Cantaloupe, Mayhaw, Pepper (Bell & Non-Bell)
Flubendiamide	Blueberry
Flucarbazone-Sodium	Grasses (Seed Crop)
Fludioxonil	Blueberry, Ginseng, Pineapple (Post Harvest)
Flumioxazin	Artichoke (Globe), Cabbage, Guayule, Olive, Peach, Pomegranate, Prickly Pear Cactus
Fluopicolide	Arracacha, Collard
Flutolanil	Ginseng, Radish
Fomesafen	Cantaloupe, Cucumber, Edamame, Pea (Edible Podded & Succulent Shelled), Squash, Tomato
Glyphosate	Mustard (Seed), Sesame, Sweet Potato, Teff
Halosulfuron	Artichoke (Globe), Caneberry (Blackberry)
Hexythiazox	Pepper (Bell & Non-Bell)
Imazalil	Mushroom
Imidacloprid	Blueberry (High Bush)
Indoxacarb	Bean (Dried Shelled), Bean (Snap), Low Growing Berry Subgroup, Except Strawberry, Small Fruit Vine Climbing Subgroup, Except Fuzzy Kiwifruit
Iodomethane	Asparagus, Caneberry, Eggplant, Pepper (Bell & Non-Bell)

ATTACHMENT 6 – PENDING FOOD PROGRAM SUBMISSIONS (Continued)
Final Report in Progress (All Data Received at HQ)

Lambda-Cyhalothrin	Asparagus, Carrot, Greens (Mustard), Millet, Pearl, Okra, Onion (Bulb) Subgroup, Radish, Rutabaga, Tea, Turnip (Roots)
Linuron	Coriander (Fresh & Seed), Dill
Malathion	Taro
Mancozeb	Blueberry, Guava, Lychee
Mesotrione	Currant (Red)
Metaldehyde	Celery, Corn (Field), Grasses (Seed Crop), Mint, Rhubarb, Soybean, Swiss Chard, Taro (Wetland)
Methiocarb	Artichoke (Globe)
Methoxyfenozide	Carrot, Radish
Methyl Bromide	Asparagus, Okra
Metribuzin	Pea (Edible Podded & Succulent Shelled), Tanier
NAA	Almond, Avocado, Grapefruit, Orange, Plum, Rambutan, Tangerine, Walnut
Nicosulfuron	Sorghum (Grain)
Novaluron	Cucumber
Oxamyl	Caneberry
Oxyfluorfen	Broccoli, Broccoli (Direct Seeded), Cabbage, Cauliflower, Kenaf, Onion (Green), Shallot; Strawberry (Transplants), Tomato
Paraquat	Mayhaw, Okra
Pendimethalin	Cantaloupe, Edamame, Greens (Mustard), Kiwifruit, Lettuce (Leaf)
Permethrin	Dragon Fruit
Prohexadione Calcium	Strawberry
Promalin	Carambola
Prometryn	Bean (Snap)
Pronamide	Grasses (Orchard, Seed Crop), Grasses (Pasture), Lettuce (Leaf), Safflower
Propiconazole	Bean (Dried Shelled), Bean (Snap), Bean, Lima (Succulent & Dried Shelled), Citrus (Post Harvest)
Pyraclostrobin + Metconazole	Sugarcane
Pyrifluquinazon	Tomato (Field & GH)
Pyrimethanil	Low Growing Berry Subgroup, Onion (Bulb) Subgroup, Onion (Green) Subgroup, Cucumber, Ginseng, Cmall Fruit Vine Climbing Subgroup, Except Fuzzy Kiwifruit
Pyriproxyfen	Basil (GH), Bulb Vegetable Group, Bushberry Subgroup, Caneberry Subgroup, Citrus Group, Fruiting Vegetable Group, Herbs, Low Growing Berry Subgroup, except Strawberry, Pome Fruits, Tomato
Quinclorac	Rhubarb
S-metolachlor/metolachlor	Cilantro, Lettuce (Leaf)
Sethoxydim	Grasses, Vernonia

ATTACHMENT 6– PENDING FOOD PROGRAM SUBMISSIONS (Continued)
Final Report in Progress (All Data Received at HQ)

Spinosad	Caneberry
Spiromesifen	Cantaloupe, Cucumber, Grasses, Okra, Squash (Summer)
Spirotetramat	Artichoke (Globe), Blueberry, Cranberry, Onion (Dry Bulb), Taro (Leaves), Watercress
Sulfentrazone	Blueberry, Rhubarb, Turnip (Roots & Tops), Wheat
Terbacil	Grasses (Seed Crop), Peach, Strawberry
Thiacloprid	Blueberry
Thiamethoxam	Dragon Fruit
Thiazopyr	Apple, Cherry, Peach, Pear, Plum
Thidiazuron	Grape
Thifensulfuron	Chicory (Roots)
Thifensulfuron-Methyl	Tomato
Thiophanate Methyl	Pepper (Field and GH)
V-10136	Blueberry, Caneberry, Ginseng
Zeta-Cypermathrin	Orange
Zinc Phosphide	Grasses (Seed Crop)

ATTACHMENT 7 – 2010 ORNAMENTAL HORTICULTURE PROGRAM

FIELD COOPERATORS

NORTHCENTRAL REGION

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Dr. M. Hausbeck	MI
Dr. W. Kirk	MI
Dr. H. Mathers	OH
Dr. M. Mickelbart	IN
Dr. D. Nielsen	OH
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NORTHEAST REGION

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Dr. J. LaMondia	CT
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Dr. B. Edmunds	CA
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Dr. J. Klett	CO
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Mr. R. Frank	MD
Mr. T. Freiberger	NJ
Dr. N. Grunwald	OR
Dr. J. Harvey	WA
Dr. M. Reding	OH
Mr. P. Wade	SC

ATTACHMENT 8 – 2010 ORNAMENTAL HORTICULTURE PROGRAM

RESEARCH ACTIVITIES

Discipline	Project Title	Number of Products	Number of Crops	Number of Trials
Plant Pathology	Acibenzolar Crop Safety *	1	20	38
	Bacterial Efficacy *	16	6	75
	Copper Hydroxide Crop Safety	1	6	6
	Fluopicolide (V-10161) Crop Safety *	1	3	3
	Foliar Nematode Efficacy	9	2	18
	Fusarium Efficacy*	13	2	38
	Leaf Spots	10	1	10
	Metconazole Crop Safety *	1	17	40
	Pythium Efficacy *	22	7	147
	Rust Efficacy	11	3	28
	Triticonazole Crop Safety *	1	17	40
Weed Science	Dimethenamid-p Crop Safety *	1	29	44
	Early Post Emergent Efficacy for Broadleaved Weeds *	5	0	20
	F6875 Crop Safety	2	13	27
	Flumioxazin Crop Safety *	2	21	35
	Halosulfuron Plant Back Crop Safety	1	16	25
	Imazamox Crop Safety	1	15	15
	Isoxaben Crop Safety	1	7	13
	Liverwort Efficacy *	13	2	112
	Mesotrione Crop Safety	1	19	29
	Ornamental Grass Crop Safety to Herbicides	3	2	6
	Oxyfluorfen + Prodiamine Crop Safety *	1	16	43
	Pendimethalin + Dimethenamid-p *	1	55	97
	Sulfosulfuron Crop Safety *	1	42	80
	Trifluralin + Isoxaben Crop Safety	1	48	88
Entomology	Borer & Beetle Efficacy *	6	1	6
	Impact on Beneficial Organisms *	5	0	16
	Mealybug Efficacy *	11	3	36
	NNI-0101 Crop Safety *	1	8	17
	Pyridalyl Crop Safety *	1	8	18
	Q-Biotype Whitefly Efficacy	7	1	7
	Scale Efficacy *	14	7	90
	Spirotetramat Crop Safety *	1	8	16
	Thrips Efficacy *	17	2	69
	Tolfenpyrad Crop Safety *	2	8	29
	Mite Efficacy	13	2	21
	Mollusc Efficacy	8	1	8
PGRs	Herbaceous Shelf Life *	7	2	26

* High Priority Projects

For a detailed list of research activities visit ir4.rutgers.edu.

ATTACHMENT 9 – SUMMARIES OF 2010 ORNAMENTAL HORTICULTURE RESEARCH

Bacterial Disease Efficacy

During 2008 and 2009, 45 products were tested through the IR-4 Program as drench or foliar applications against bacterial pathogens. Species tested included: *Erwinia chrysanthemi, Pseudomonas chicorii, P. marginalis, P. syringae, Pseudomonas* spp., *Xanthomonas campestris* and *Xanthomonas* spp. In general, all products, including the standard copper containing bactericides (Camelot, CuPRO, Cuprofix, Cuprofix MZ, Junction, Kocide, Phyton 27 and ReZist), provided no to poor control of these bacterial pathogens. Further research is needed to obtain additional efficacy data to recommend actions to register or amend labels for these pests.

Dimethenamid-p + Pendimethalin Crop Safety

From 2007 to 2009, IR-4 completed 387 trials on Freehand G (BAS 659 G; dimethenamid-p + pendimethalin). The data contained in this report was generated to register uses of dimethenamid-p + pendimethalin on and around ornamental horticulture plants with over-the-top applications. The Freehand rates in this testing program were 2.65, 5.3 and 10.6 pounds active ingredient per acre (lb ai per A) as the 1X, 2X and 4X rates. Freehand G had been applied to 137 plant genera or species. Of these, 45 exhibited no or minimal transient injury after application at all three rates. Ten crops exhibited no phytotoxicity at 2.65 and 5.3 lb ai per acre, but did have some injury at 10.6 lb ai per acre: *Acer rubrum, Campanula sp., Catharanthus roseus, Cotoneaster sp., Heuchera sp., Ligustrum sp., Nepeta x faasseni, Oenothera sp., Phlox subulata, and Vinca sp*. Eleven crops exhibited significant phytotoxicity at even the lowest rate: *Amsonia hubrichtii, Aquilegia sp., Armeria maritima, Calamagrostis acutiflora , Coreopsis auriculata, Festuca ovina glauca, Impatiens sp. (New Guinea Hybrids), Lamium galeobdolon, Phlox paniculata, Scabiosa sp.,* and *Veronica spicata.*

Borers, Beetles, and White Grub Efficacy

Collectively, managing coleopteran insects can be challenging because the adult and larval stages may both cause damage and sometimes occur on different hosts or on different plant parts. While organophosphates, pyrethroids, and neonicotinoids can provide good to excellent control of coleopteran insects, not all products work equally well in all situations. Treatments for borers are very different than treatments targeting white grubs. Developing newer classes of chemistry is important to reduce the environmental consequences and to minimize the development of resistance. Starting with the 2004 Annual Workshop, screening a number of products to manage coleopteran insects became one of the high priority projects for entomology. From 2005 through 2009, 51 products representing 34 different active ingredients were tested for management of adult and larval stages of coleopteran insects. In addition, 10 products representing 10 active ingredients were evaluated for lepidopteran clearwing borers in 2008 and 2009. These products represented both biological and chemical tools. Some products were already registered but more data were needed or they were considered standards to measure the level of efficacy achieved with other materials. Other products were in development but have not yet been registered with the EPA. While a number of coleopteran and lepidopteran species were tested, only enough experiments were able to be completed on the coleopteran species black vine weevil, Japanese beetle, oriental beetle and viburnum leaf beetles to recommend actions to register or amend labels for these pests.

Cyprodinil and Fludioxonil Crop Safety and Efficacy

From 2000 to 2007, IR-4 researched crop safety and efficacy of Medallion (fludioxonil), Vanguard (cyprodinil), and Palladium (Switch 65WG, cyprodinil + fludioxonil). Medallion impact on 19 crops was tested, while 6 crops where studies with Palladium. Tests for efficacy included experiments on *Botrytis cinerea*, *Phaeocryptopus gaeumannii*, several *Phytophthora* sp, *Sclerotium rolfsii var. delpinii*, and *Thielaviopsis elegans*.

Dimethenamid-p Crop Safety

From 2007 to 2009, IR-4 completed 244 trials on Tower EC (dimethenamid-p). The data contained in this report was generated to register uses of dimethenamid on and around ornamental horticulture plants with over-the-top applications. The dimethenamid rates in the testing program were 0.97, 1.94 and 3.88 pounds active ingredient per acre (lb ai per A) as the 1X, 2X and 4X rates. Tower EC was applied to 82 plant genera or species. Of these, 36 exhibited no or minimal transient injury after application at all three rates. Three crops exhibited no phytotoxicity at 0.97 and 1.94 lb ai per acre, but did have some injury at 3.88 lb ai per acre: *Rhododendron sp., Salvia nemorosa/sylvestris* and *Viburnum nudum*. One crop, *Viburnum opulus*, exhibited significant phytotoxicity at even the lowest rate.

ATTACHMENT 9 - Continued

Diuron Crop Safety

Data in this report were generated to expand registered uses of diuron on ornamental species. Diuron rates in these experiments ranged from 0.5 to 16 lb ai/A. Direx 80DF and Karmex 80WP were tested on 26 plant genera or species between 1978 and 2002. Two bulb species exhibited no injury with soil applications after planting: *Lilium sp* and *Narcissus sp.* Two species exhibited mortality with over the top applications: *Quercus palustris* and *Washingtonia robusta*. The remaining species were tested either as directed sprays or under the greenhouse bench applications. More information is needed on these crops because only 1 or 2 trials were conducted.

Downy Mildew Efficacy

During 2008 and 2009, 14 products were tested through the IR-4 Program as foliar applications against four downy mildew pathogens. Species tested included: *Peronospora lamii, Peronospora sp., Peronospora sparsa* and *Plasmopara viburni*. This summary also includes information offered by researchers to present a fuller picture on downy mildew efficacy. All products tested in the IR-4 protocols reduced incidence or severity of downy mildew in at least one experiment. Of the products not yet registered for downy mildew control, Adorn (V-10161) was effective for lamium downy mildew (*Peronospora lamii*) and downy mildew on snapdragon (*Peronospora sp*); BAS 651F provided good to excellent control of coleus downy mildew, lamium downy mildew (*Peronospora lamii*) and downy mildew on snapdragon (*Peronospora sp*); NOA 446510 performed well against lamium downy mildew, snapdragon downy mildew and coleus downy mildew; and Regalia exhibited good control of lamium downy mildew (*Peronospora lamii*), downy mildew on snapdragon (*Peronospora sp*), and Viburnum downy mildew (*Plasmopara viburni*) at the higher rate.

Early Post Emergence Efficacy

During 2008 and 2009, twelve pre-emergent herbicides were tested across the United States through the IR-4 Ornamental Horticulture Program to determine whether they have potential use in controlling emerged weeds at the cotyledon to 1 leaf or 2 to 4 leaf stage. Three troublesome weeds were targeted including bittercress, oxalis, and spurge. Bittercress was controlled at the early postemergence application timings with Certainty (sulfosulfuron) at 0.035 to 0.094 lb ai/A, EXC3898 at 2.1 to 3.1 lb ai/A, and Gallery 75 DF (isoxaben) at 1.0 lb ai/A. Emerged oxalis seedlings showed significant impact from Broadstar VC1604 (at 0.375 lb ai/A) and V-10142 at 0.38 to 0.75 lb ai/A; however, the impacts from these products were inconsistent and additional research on several other products is needed. Spurge control at early postemergence was demonstrated with 4.0 lb ai/A of Pendulum (pendimethalin). Limited experiments including Broadstar 0.25G, Casoron Freehand, HGH-63, and Tower showed promise on at least one weed species.

F6875 (Sulfentrazone + Prodiamine) Crop Safety

Since IR-4 has completed 201 trials with products containing sulfentrazone + prodiamine (F6875 0.3G and F6875 4SC) on 76 crops. The data contained in this report was generated to register uses of sulfentrazone + prodiamine formulation on and around ornamental horticulture plants with over-the-top applications. The rates tested were 0.375, 0.75 and 1.5 pounds active ingredient per acre (lb ai per A) as the 1X, 2X and 4X rates. F6875 4SC was applied to 14 crops, but no conclusions can be drawn from this minimal set of data. F6875 0.3G was applied to 62 plant genera or species. Of these, 14 exhibited no or minimal transient injury after application at all three rates. Nine crops (*Buddleia davidii, Echinacea sp., Hemerocallis sp., Hosta sp., Iris sp., Lobularia maritima, Ophiopogon sp., Phlox paniculata,* and *Phlox subulata*) exhibited phytotoxicity at even the lowest rate.

Flumioxazin Crop Safety

During 2008 and 2009, IR-4 completed 169 trials on Broadstar 0.25G VC1604 (flumioxazin). The data contained in this report was generated to confirm register uses of flumioxazin on and around ornamental horticulture plants with over-the-top applications. The flumioxazin rates in the testing program were 0.375, 0.75, and 1.5 pounds active ingredient per acre (lb ai per A) as the 1X, 2X and 4X rates. Broadstar 0.25G VC1604 was applied to 78 plant genera or species. Of these, 63 exhibited no or minimal transient injury after application at all three rates. No crops exhibited significant phytotoxicity at even the lowest rate, but 12 species or genera need additional information to clarify crop response.

ATTACHMENT 9 - Continued

Halosulfuron Crop Safety

Since 1995 IR-4 has completed 355 trials with products containing halosulfuron (Sedgehammer, Manage) on 124 crops. The data contained in this report was generated to expand the current SedgeHammer label to include both directed and over the top applications on certain plant species along with adding nursery production sites. The halosulfuron rates in the 2006 and 2007 testing programs were 0.045, 0.09 and 0.18 pounds active ingredient per acre (lb ai per A) as the 1X, 2X and 4X rates. In 2008 and 2009, halosulfuron rates used were 0.031, 0.063 and 0.125 lb ai per A; the lowest registered rate is 0.031 lb ai per A. Of the 124 plant genera or species examined, 29 exhibited no or minimal transient injury after application at all three rates. Six crops exhibited no phytotoxicity at 0.045 lb ai per acre, but did have some injury at the higher rates. Thirty-five crops exhibited phytotoxicity at even the lowest rate tested (0.031 or 0.045 lb ai per A).

Mesotrione Crop Safety

From 2007 to 2009, IR-4 completed 110 trials on Mesotrione SC. The data contained in this report was generated to register uses of mesotrione on and around ornamental horticulture plants with over-the-top applications. The mesotrione rates were 0.187, 0.25 and 0.37 pounds active ingredient per acre (lb ai per A) as the 1X, 1.5X and 2X rates. Mesotrione SC was applied to 42 plant genera or species. Of these, five exhibited no or minimal transient injury after application at all three rates. Twenty crops exhibited significant phytotoxicity at even the lowest rate: *Buddleia davidii, Dianthus gratianopolitanus, Echinacea purpurea, Hydrangea quercifolia, Ilex sp., Lagerstroemia indica, Liriope sp. , Ophiopogon sp., Phlox paniculata, Phlox subulata, Picea sp., Pseudotsuga menziesii , Rosa sp., Salvia sylvestris, Spiraea sp., Taxus sp., Thuja occidentalis, Veronica sp., Viburnum sp.,* and *Vinca sp.*

Phytophthora Efficacy

From 2003 to 2009, 45 products were tested through the IR-4 Program as drench or foliar applications against nine *Phytophthora* species causing root rots and stem/leaf blights. *Phytophthora* species tested included: *P. cactorum*, *P. cinnamomi*, *P. citricola*, *P. cryptogea*, *P. dreschleri*, *P. nicotianae*/*parasitica*, *P. palmivora, P. ramorum*, *P. syringae,* and *P. tropicalis*. Control of *P. cinnamomi* root rot was achieved primarily with drench applications onto azaleas. When this pathogen was tested on rhododendrons, the data were either inconclusive or the products did not perform as well as on azaleas with the exception of Magellan and Fenamidone. For *P. dreschleri* root rot, good to excellent efficacy was achieved with several products including BioPhos, Segway, Stature DM, and Terrazole. For *P. nicotianae*, consistent efficacy across crops was difficult to achieve, but the best performers included Aliette, Biophos, Fenamidone, Insignia, Segway and Stature DM. The best control of *P. citricola* blight was achieved with foliar applications of the phosphorus acid generators Aliette, Biophos and Magellan. For *P. ramorum* blights, Subdue MAXX provided the most consistent control. Adorn, Fenamidone, Insignia, Segway, and Stature also provided good control. For *P. tropicalis*, the best control was achieved with Adorn and Stature.

Pyrifluquinazon Crop Safety and Efficacy

Pyrifluquinazon is a new active ingredient for the management or sucking pests, such as aphids, thrips, whiteflies and more. Its mode of action is to halt insect feeding so that they starve. This prevents additional damage to plant tissues and limits spread of viral diseases. Pyrifluquinazon was initially registered in Japan in 2007, and Nichino America is planning on submitting the US registration package in 2010. IR-4 started including pyrifluquinazon into the efficacy testing program in 2006. Pyrifluquinazon demonstrated efficacy on several scale species including *Melanaspis deklei*, euonymus scale, and false florida red scale, but the level of efficacy did vary among species and between experiments. Pyrifluquinazon provided some reduction of western flower thrips immatures but this was highly variable from some suppression to little impact. For chili thrips, pyrifluquinazon did provide excellent efficacy through 20DAT. No significant phytotoxicity was observed.

Scale and Mealybug Efficacy

Several neonicotinoids (Celero 16WSG/Aloft SC, Flagship 0.22G/25WP, Safari 2G/20SG, and TriStar 30SG/70WSP), insect growth regulators (Distance and Talus 40SC), and other pesticides were tested against scales and mealybugs. All products tested provided excellent control of elongate hemlock scale and cryptomeria scale, generally mediocre to good control of Fletcher scale, and poor control of armored scale and false oleander scale. Control of Florida wax scale was excellent with Flagship and TriStar, but poor with Talus. Conversely, Talus was the

only foliar product providing excellent control of oystershell scale; Safari applied as drench also provided excellent control. Cottony maple scale control was mediocre to good with Flagship, none to mediocre with Safari and TriStar, and poor with Talus. Control of cottony cushion scale was good with TriStar and poor with Safari. Euonymus scale control was good with Aloft, Distance, and Talus, mediocre to good with Flagship and Safari, and mediocre with TriStar. Calico scale control was good with Safari, the only product tested for this species. Control of false Florida red scale was good with Flagship and Safari, mediocre with Distance, and poor with Talus and TriStar. Tea scale control was good with Safari, but poor with Talus. Aloft was the only product providing good holly pit scale control; Distance, Flagship, Safari, Talus and TriStar provided mediocre control. All products tested on citrus mealybug and Mexican mealybug, including Aria, Flagship, Safari, Talus, and TriStar, generally provided good to excellent efficacy on these species. A trial on Madeira mealybug showed excellent control when TriStar was mixed with Capsil surfactant and poor control without Capsil; Safari and Talus provided good to excellent control of this species. Phormium mealybug control was good to excellent with all neonicotinoids tested – Flagship, Safari and TriStar.

Simazine Crop Safety

Princep 80W, 90W, 4G, 4L and Caliber 90 DG were tested on 54 plant genera or species over a sixteen year period (1973- 1989). Data in this report were generated to expand registered uses of simazine on ornamental species. Simazine rates in trials included 2, 4, and 8 lb ai/A as the 1X, 2X, and 4X rates. Fifteen genera or species in the trials conducted have successfully been added to the Princep label, as well as, six weed species, based partially on IR-4 research. Studies showed satisfactory crop safety on additional genera/species not currently registered. Seven crops offer potential for label expansion (*Acer rubrum, Acer saccharum, Buxus microphylla var. koreana, Leucothoe sp, Lilium longiflorum, Photinia sp, and Pyracantha sp.).* Two crops demonstrated little to no injury at the 1X rate but the 2X or 4X rate did cause significant injury (*Forsythia and Rhododendron)*. Enough damage was found on two ornamental crops to warrant not using this product: *Arctostaphylos,* and *Euonymus radicans*. Five weed species appeared to be susceptible to simazine treatments and merit further evaluation prior to label expansion including horseweed, London Rocket, oxalis, spotted spurge, and wild strawberry. IR-4 research previously supported adding 10 weeds to simazine labels.

Kontos (Spirotetramat) Crop Safety

Spirotetramat was registered as Kontos for use on ornamentals applied foliar or drench in the United States in 2008. The label recommends use on ornamental horticulture plants except a few species or genera specified in the label. From 2007 to 2009, the IR-4 Project conducted 86 trials on 30 ornamental plant species examining phytotoxicity related to Kontos applications. In these trials, only 5 crops (*Begonia* sp*, Coleus x hybridus, Petunia* sp.*, Pelargonium* sp. and *Viola* sp.) exhibited noticeable, significant injury and that was a slight height reduction, leaf curling, bleaching of flowers or plant death at the 2X and 4X rates applied as drench. Based on this information, it is recommended that the label prohibits drench application on *Begonia* sp.*, Coleus x hybridus, Petunia* sp. and *Viola* sp. The current label does not recommend use of Kontos on *Pelargonium* spp. Foliar application on these species may be recommended with the precautionary statements in the CROP TOLERANCE section of the current Kontos label.

Sulfosulfuron Crop Safety

Since 2005 IR-4 has completed 98 trials with sulfosulfuron (Certainty 75WDG) on 81 plant genera or species. The data contained in this report was generated to register uses of sulfosulfuron on and around ornamental horticulture plants with over-the-top applications. The sulfosulfuron rates in the testing programs were 1.25, 2.5 and 5 oz product per acre (0.0586, 0.117, and 0.188 lb ai per acre) as the 1X, 2X and 4X rates. Of the 74 plant genera or species tested, no crops exhibited no or minimal transient injury after application at all three rates in 3 trials. Three crops (*Armeria maritima*, *Buddleia sp*, and *Lavandula angustifolia*) exhibited minimal or transient injury at the lowest rate, but there was commercially unacceptable injury at the higher rates. For 12 crops, there was significant injury even mortality: *Agastache sp , Asclepias tuberosa, Clematis sp., Chrysogonum virginianum var austral, Cornus sericea, Helianthus sp., Juglans nigra, Lamium maculatum, Pseudotsuga menziesii, Quercus alba, Ruscus hypophyllum,* and *Viburnum dentate.* For the remaining crops, more trials are needed to determine response.

Hachi-Hachi 15EC (tolfenpyrad) Crop Safety and Efficacy

Hachi-Hachi 15EC (tolfenpyrad) was registered July 28, 2010 for the control of aphids, leafhoppers, scales, thrips, whiteflies, and early instar lepidopteran larvae on ornamental horticulture crops grown in greenhouses. An expansion of this label for outdoor uses is planned. Since 2006, IR-4 tested Hachi-Hachi for efficacy on coleopteran insects and

thrips. Efficacy for beetles and borers was variable, but good to excellent efficacy was observed for thrips populations. In general crop safety did not appear to be an issue in the efficacy testing with the exception of gladiolus and impatiens. Preliminary results for crop safety screening, however, indicate additional testing is warranted to clarify which crop species may be sensitive. With the limited results so far, impatiens is definitely sensitive to Hachi-Hachi applications.

Trifluralin + Isoxaben Crop Safety

Several good herbicide products are available to manage weeds in and around nursery crops. Because growers produce many different plant species and cultivars and because many new crops are grown every year, this research was undertaken to expand the three pre-emergent herbicide labels: Pendulum 2G (pendimethalin), Pennant Magnum (s-metolachlor), and Snapshot 2.5TG (trifluralin + isoxaben). This report covers only Snapshot 2.5TG. The rates chosen for this research were 2.5, 5, and 10 pounds active ingredient per acre (lb ai per A) as a 1/2X, 1X and 2X rates. From 2004 to 2009, IR-4 completed 285 trials on Snapshot 2.5TG. One hundred thirty four different species were examined. Of these, 39 exhibited no or minimal transient injury after application at all three rates. Six crops exhibited no phytotoxicity at 2.5 or 5.0 lb ai per acre, but did have some injury at the higher rate of 10 lb ai per acre. Twenty-three species exhibited phytotoxicity at the 5 lb ai per acre rate. For the remaining 57 crops, IR-4 would recommend generating additional data because either fewer than 3 trials were conducted or different locations exhibited different responses.

V-10142 Crop Safety

From 2006 to 2009, IR-4 conducted 293 trials with V-10142 0.5G and V-10142 75WDG (imazasulfuron) on more than 60 crops. This research was undertaken to determine the level of crop safety these formulations have when used as over-the-top applications. The imazasulfuron rates were 0.5, 1.0 and 2.0 pounds active ingredient per acre (lb ai per A) as the 1X, 2X and 4X rates. Of the tested crop and formulations, only 14 exhibited no or minimal transient injury after application at all three rates. Twelve species for V-10142 0.5G and 19 for V-10142 75WDG exhibited phytotoxicity at even the 0.5 lb ai per acre rate.

ATTACHMENT 10- Biopesticide and Organic Support Program

Biopesticide Grant Proposals Funded 2010

Grant Stage—Early

- Evaluation of Biopesticides for managing Yellowmargined Leaf Beetle, *Microtheca ochroloma* in Organic Vegetable Production.
- Evaluation of the efficacy of soil-set for managing bacterial wilt on tomato
- Evaluation of Isaria fumosorosea against the Asian citrus psyllid, Diaphorina citri.
- Determine the efficacy of biological fungicides for control of pythium stem & root rot in poinsettia
- Management of carob moth on dates using pheromone mimic

Grant Stage—Advanced

- *Metarhizium anisopliae* Strain F52, an entomopathogenic insecticide against thrips on onions.
- Evaluation of SPLAT-MAT with Spinosad and Methyl Eugenol or Cue-Lure for Suppression/Eradication of Oriental and Melon Fruit Flies (Diptera: Tephritidae)
- The potential of entomopathogenic fungi for control of potato psyllid (*Bactericera cockerelli*), compatibility with fungicides used in potato, and their effect on natural enemies.
- Evaluation of CX-9090 for management of powdery mildew on cantaloupe.
- Evaluation of Prophyt for management of Pythium diseases of vegetable transplants.
- Integration of biofungicides and conventional fungicides for management of Peach Brown Rot.
- Efficacy of biofungicide products at the advanced stage of development for Downy Mildew of Basil.
- Evaluation of biopesticides for control of bacterial wilt on tomato
- Postharvest control of Muscadine grape fungal pathogens
- Integration of mycopesticides in management strategies for chilli thrips, *Scirtothrips dorsalis* in Florida
- Field Evaluation of *Metarhizium anisopliae* F52 for Grasshopper control in Natural Habitats (Rangeland).
- Development of a management strategy to control Chilli Thrips on "Jalapeno" pepper using botanical & biological pesticides.
- Efficacy of biofungicide products at the advanced state of development for Downy Mildew of Basil.
- Efficacy of Biofungicide products at the advanced stage of development for downy mildew in organically-produced cucumber.
- Evaluating biopesticides for disease control in blueberries.
- Evaluating biopesticides for management of black root rot in established strawberry plantings.
- Managing *Phytophthora capsici* on Pepper and summer squash with combinations of Tenet (Bioten) & conventional fungicides.
- Lab efficacy and field residues of anthraquinone as a starling repellent for blueberry production.
- Use of GA3 to increase yield of the "Hass" Avocado: Demonstration of a Dose Response.
- Evaluation & efficacy of biopesticides against *Candidatus liberibacter solanacearum*, causal agent of zebra chip of potato.

ATTACHMENT 10 – Continued

Biopesticide Grant Proposals Funded 2010

Grant Stage—Demonstration

- Using biopesticides in Strawberries & GH Vegetables for Insect Pest Control
- Evaluation of a fungal biopesticide using a new and novel application method in commercial tart cherry & apple production.
- Evaluation of biopesticides for control of powdery mildew on strawberry.
- Efficacy of biofungicide products at the demonstration stage of development for downy mildew in organically-produced cucumber
- Demonstration of efficacy of Contans in soybeans and dry beans.
- Efficacy of biofungicide products at the demonstration stage of development for Downy Mildew of Basil.
- Biopesticide Products Effective for Powdery Mildew in Pumpkin Evaluated in Integrated Programs on Other Cucurbit Crop Types.
- Management of Root Knot Nematodes in Tomatoes using MelCon WG and a potential Synergist as Alternatives to Methyl Bromide
- Improving the efficacy of Bio-Save for control of Rhizopus soft rot of sweetpotato.
- The efficacy of SoilGard and Contans within a management system for sclerotinia drop of lettuce
- Evaluation of Alternative nematicides for the control of Root-Knot Nematodes of Carrots.

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ATTACHMENT 10 – Continued

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Biopesticide Registration Packages Submitted in 2010

Product	Crop	PR Number	TYPE	Registration Type
HoneySweet Plum	Plum	0377B	Fungicide	Amendment
Acetic acid	All food Crops and ornamentals	0370B	Herbicide	Amendment
Trichoderma hamatum 382	All Food Crop and ornamentals	0049B	Fungicide	Amendment
Bacteriophage of *Clavibacter Michiganensis*	Tomato	0430B	Bateriacide	Amendment
Tobacco Mild Green Mosaic Tobamovirus	All Food Crops	0367B	Herbicide	Amendment
Aspergillus flavus AF36	Corn	0378B	Fungicide	Amendment
9,10- Anthraquinone	Corn	09613	Bird repellent	Section 3
Oriental Beetle Pheromone	Numerous crops	0240B	Insecticide	Section 3
Lactoperoxidase	All food crops	0752B	Inert	New inert

Registrations Associated with Registration and Tolerance Packages Submitted to EPA

Pest Control Agent / Type*		Commodity or Crop Group	PR#	No. of Uses	No. of Tolerances
C5 HoneySweet Plum	F	Stone fruit and almond	0377B	12	1
Trichoderma hamatum isolate 382	F	Vegetable bedding plants			1

ATTACHMENT 10 – Continued

		Vegetable, fruiting, group	0049B	21	
		Vegetable cucurbit, group		14	
		Herbs and Spices group		70	
		Ornamentals		3700	
Acetic acid	H	All Food Commodities	PR# 370B		1
		Vegetable root and tuber group 1		8	
		Vegetable, leaves of root and tuber, group 2		16	
		Vegetable, bulb, group 3		26	
		Vegetable, leafy, except brassica		29	
		Vegetable, brassica, leafy , group 5		19	
		Vegetable, legume, group 6		42	
		Vegetable, foliage of legume, group 7		3	
		Vegetable, fruiting, group 8-10		21	
		Vegetable cucurbit, group 9		14	
		Fruit, citrus, group 10-10		28	
		Fruit, pome, group 11-10		12	
		Fruit, stone, group 12		11	
		Berry and small fruit group 13-07		46	
		Nut, tree, group 14		12	
		Grain, cereal, group 15		14	
		Grass, forage and fodder group		3	
		Animal feed, nongrass group 18		11	
		Herbs and spices group 19		70	
		Oilseed group 20		32	
		Fungi, edible, group 21		20	
		Tropical fruit		210	
		Betel nut		1	
		Aloe vera		1	
		Sugar maple		1	
		Sweet sorghum		1	
		Peanut		1	
		Sugarcane		1	
		Artichoke		1	

ATTACHMENT 10 – Continued

		Jojoba		1	
		Hemp		1	
		Tobacco		1	
		Tea		1	
		Coffee		1	
		Food Use Totals	776		
		Ornamental total	3,700		
	Registration Grand total		4,476		

New Uses Supported by the Biopesticide Efficacy Grant Program

Active Ingredient	Crop	PR Number
Trichoderma asperellum, T. gamsii	*Pepper*	*721B*
	Strawberry	*726B, 816B*
	Squash	*726B, 820B*
Laminarin	Apple	437B
Extract of *Chenopodium ambrosiodae*	Cucumber	837B
	Pepper	676B
	Squash	765B
	Strawberry	840B
	Tomato	835B
Tea tree oil	Basil	787B
	Cucurbits (14)	850B

TOTAL 24

FIFRA Section 18 -Seed Treatment Labels

- **Avipel Liquid for Corn** Louisiana, Michigan, Minnesota, Mississippi, North Dakota, South Dakota, Texas, Wisconsin
- **Avipel Dry for Corn** Louisiana, Michigan, Minnesota, Mississippi, North Dakota, South Dakota, Texas, Wisconsin
- **AV-1011 for Rice** Louisiana, Mississippi, Missouri

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