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Background

For over forty years, the IR-4 Project has been the major resource for supplying pest management tools for specialty crops by developing research data to support registration clearances. Registrants of agrichemical products conduct only limited research on specialty crops. This results in few pest management options being labeled for specialty crop growers. In 1963, the USDA recognized this need and established the IR-4 Project to provide a means for US growers to have specialty crops included on chemical labels. Specialty crops include most fruits, vegetables, nuts, herbs, spices, nursery, landscape, Christmas tree, turf and floral plants.

The IR-4 Project is a cooperative program funded primarily by U.S Department of Agriculture (USDA) and the State Agriculture Experiment Stations (SAES). The Project, which began as two scientists housed at the New Jersey Agriculture Experiment Station/Cook College, has grown in both size and mission. In 2005, IR-4 employed about 125 full time equivalent staff and had a federal appropriation of over $15.5 million.¹ This direct support is supplemented by in-kind support, from State Agricultural Experiment Stations, conservatively estimated to be equal to the amount of direct federal support. Appendix 1 is a detailed overview of the IR-4 Project.

IR-4’s mission has expanded since 1963, to include registration support for conventional crop protection chemicals, as well as biopesticides on specialty food crops and ornamental horticulture crops.

The purpose of this document, IR-4 Project – Strategic Plan for 2006-2008 is to articulate the mission, vision and objectives of the IR-4 Project for the 2006 to 2008 time frame. This is the third IR-4 Project strategic plan. The first plan, approved in 1989, focused on expanding the efforts of the IR-4 Project to develop new pesticide residue data for specialty crops in the context of the re-registration provisions of the 1988 Amendments to the Federal Insecticide, Fungicide and Rodenticide Act. The second Strategic Plan focused on expanding the efforts of the IR-4 Project to encourage registrations of newer, lower risk pest management technology for specialty crops due to the anticipated loss of older technologies following implementation of the Food Quality Protection Act of 1996. This third Strategic Plan incorporates new program initiatives recommended as a result of the IR-4 Project’s Strategic Planning Conference, which was held in February 15 and 16, 2005 in Arlington, Virginia. The Conference was attended by 115 IR-4 Project Stakeholders, who provided input on future directions for the IR-4 Project.

Accomplishments of the 2001-2005 Strategic Plan

The IR-4 Projects Strategic Plan for the period of 2001 -2005 included the following aspects:

1. Continued commitment to food-use and ornamental minor crop pest management.
2. Accelerate the registration of newer, reduced risk chemistries.
3. Focus on new and safer chemistry-speeding access for minor crop growers.
4. Investigate alternatives for methyl bromide.
5. Conduct efficacy research to identify new minor crop pest management solutions
6. Upgrade IR-4 regional laboratories, field research centers and USDA-ARS facilities
7. Strengthen support for the State Liaison Representatives and other stakeholders

¹ Includes $11.1 million from CSREES, $3.8 million from ARS and $0.5 million from Multi-state Research Funds
IR-4 attained significant accomplishments during the time period covered by the 2001 - 2005 strategic plan. It placed a high priority on developing data to support regulatory clearances of newer, reduced risk pest control products, providing specialty crop growers with an ample cache of solutions. During the period 2001 to 2005, IR-4 data and submissions supported 3782 clearances on food crops and approximately 1800 ornamental clearances. There were more food clearances during this five year period than the previous 38 years of the IR-4 Project’s existence. IR-4 focused approximately 80% of its efforts on EPA classified “Reduced Risk” Products, biopesticides and other chemicals with characteristics that are deemed lower risk. In addition, IR-4 concentrated on internal process improvements designed to accelerate the development time of the required data needed to complete successful regulatory packages. IR-4 set an ambitious 30-month goal to develop and submit the required data for the highest priority research projects. Approximately 75% of the packages met this goal.

The IR-4 Project also had a significant impact in identifying alternatives for methyl bromide alternatives. Based on IR-4 funded research, a treatment regimen has become a standard replacement for methyl bromide in California strawberry production. Furthermore, the IR-4 Project’s research has positively impacted the weed management capabilities in Southeastern tomato production. Additionally, IR-4 data has been used in the Critical Use Exemption process to support continued use of methyl bromide on cut flowers, cucurbits and other commodities where an adequate alternative has not been identified.

IR-4 allocated resources to provide state-of-the-art equipment for field and laboratory research sites to improve process efficiencies. IR-4 invested in the purchase of new chromatography instruments that are coupled with mass spectrometry, allowing for efficient and precise analysis of commodity samples. IR-4 also invested in upgrading field research equipment, such as sprayers, tractors and freezers. Additionally, IR-4 invested in a pilot program to test an electronic pen technology that will allow field researcher to use an ink pen that captures field data electronically, as well as on paper.

Due to Federal government funding shortfalls, IR-4 completed limited efficacy research, with the majority of work deferred to 2005 to be completed during a pilot comparative product testing program. This program identified, three critical pest management voids; the management of onion thrips on onion, the management of Phytophthora capsici in cucurbit and pepper and the safety of selective herbicides in leafy greens and herbs. In all three studies, multiple products were tested at numerous locations under a common protocol. The results of this pilot program were very encouraging. In the Phytophthora capsici and the herbicide safety testing programs, some products were identified as potential solutions to the critical pest management void. However, the research project participants felt that a second year of data was appropriate before starting magnitude of the residue studies. In the onion thrips program, two products exhibited excellent performance at all locations. Because of the high degree of consistent, positive performance, IR-4 is facilitating and expediting the regulatory clearance of these two products.

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2 A clearance is the ability to add an addition crop or an additional pest to an EPA approved product registration.
Finally, IR-4 intended to strengthen the support for the IR-4 State Liaison Representatives. A problem exists because most IR-4 State Liaison Representatives are given the duties with little direct support to accomplish the appropriate tasks. The IR-4 Regions have been able to provide a small stipend to assist in travel and other expenses. However, this key position within IR-4 system remains under-funded.

**IR-4 Project Mission Statement**

The mission of the IR-4 Project is to provide safe and effective pest management solutions for growers of specialty crops.

**Vision and Guiding Principles**

To achieve this mission, the IR-4 Project will provide domestic growers of specialty crops with safe and effective crop protection tools to economically produce crops that enhance the diet and lifestyle of the public, while respecting the environment.

In pursuing this mission, the IR-4 Project will be guided by the principles of transparency in decision making, partnership and teamwork in achieving objectives, and excellence in service to all stakeholders.

**Beneficiaries of the IR-4 Project**

- The primary beneficiaries of the IR-4 Project are the growers of food and non-food specialty crops as well as food processors. IR-4’s work over the past 40 years has provided an array of safe and effective pest management tools for specialty crop growers. These tools help them compete economically in both domestic and international markets.

- The general public also benefits from the efforts of the IR-4 Project. The public has access to a healthy and diverse food supply at a reasonable cost. Specialty food crops include fruits, vegetables, herbs and nuts that nutritionists recommend as essential for a balanced and healthy diet. The non-food ornamental crops, which IR-4 work helps to sustain, enrich the environment and improve the quality of life.

- The IR-4 Project also contributes to homeland security. There is a realistic concern that people will not have enough food for active, healthy lives because terrorists will be able to disrupt our food supply through intentional release of invasive animal, plant, or microbial species that significantly damage domestic production and reduce the availability of food crops or by adulterating domestically produced and imported food with chemical contaminants. The IR-4 Project’s effort to develop newer reduced risk products gives our government and growers the tools to battle invasive pests. Additionally, the IR-4 Project's regional analytical laboratories are unique resources within the SAES and constitute an important national resource for the monitoring of the food supply and the identification of contaminants in the event of intentional contamination.
Program Objectives and Performance Standards

The first three strategic goals contained in this plan describe programmatic objectives for established research programs over the next three years (2006-2008). A set of performance measures is identified for each objective to track progress in attaining the stated objective. Achieving these goals are contingent upon the IR-4 Project receiving sufficient funding as outlined in the “Cost of Strategic Plan” section. Two additional objectives, the Global Specialty Crop Initiative (Objective 4) and the Aquatic Herbicide Initiative (Objective 5) will be added only if additional funding becomes available. The Global Specialty Crop Initiative is a relevant enhancement and expansion for the existing IR-4 Food, Ornamental Horticulture and Biopesticide programs and will potentially remove trade barriers for specialty crop growers. The Aquatic Herbicide Initiative is a totally new research area that will assist growers by helping increase the availability of adequate water to grow their crops.

Objective 1- Food Program
To obtain and maintain regulatory clearances of effective crop protection agents for high value, specialty food crops and for minor uses on major food crops with special emphasis on lower risk chemicals and uses that are compatible with Integrated Pest Management programs.

Performance measure: The specific goal is to obtain at least 500 clearances each year, with at least 75% of the clearances focusing on lower risk technologies and uses suited for IPM systems.

Objective 2 – Biopesticide Program
To support research to enhance the development and registration of biopesticides for use in food and non-food pest management programs.

Performance Measure: The specific goal is to fund at least 40 research projects annually that will evaluate and demonstrate the use of biopesticides in IPM systems and to facilitate registration of at least 20 clearances each year

Objective 3 – Ornamental Horticulture Program
To support research on crop protection products that will expand their uses on ornamental crops (nursery, floral, turf, and other non-food crop systems) to allow management of new and important pest species.

Performance Measure: The specific goal is to obtain at least 150 new clearances for ornamentals each year.

Implementation & Funding Enhancements of Existing Programs (Objectives 1, 2 & 3)
If appropriate funding is provided, the IR-4 Project will enhance its research and registration support capabilities in all three Program Objective areas. During the timeframe of this Strategic Plan, the IR-4 Project will expand the existing food use, ornamental horticulture and biopesticide programs to better serve the needs of the growers and develop data that may be needed to support critical specialty crop pest management product uses that are vulnerable to cancellation or use restriction as a result of registration reviews that are mandated by the Food Quality Protection Act of 1996. Additionally, and in relation to homeland security, IR-4 will initiate a rapid response system for pest management needs associated with the attack of invasive insect, plant disease or weed species. Through the Global Specialty Crop Initiative, the IR-4 Project will fill a critical void for US specialty crop growers who export their produce. IR-4 will enhance participation in
international data sharing and data harmonization on food crops in order to remove trade barriers for export of US produced specialty crops.

For the Food Use Program, IR-4 requests an additional $900,000 of CSREES funds and an additional $225,000 of ARS funds for a total increase to $1,125,000 over FY 2005 levels. This will allow the IR-4 Project to maintain current levels of activity and undertake at least 12 more high priority research projects annually that will provide growers access to newer, lower risk pest management chemistries. As always, IR-4’s stakeholders will be given the opportunity to identify the most pressing needs that will direct IR-4’s research program. If deemed necessary and important, IR-4 will fund and conduct crop safety and/or product performance trials to determine the best available option(s) to control target pests. IR-4 will also begin a Seed Technology Program that will assist in the registration of products as seed treatments. Seed technology has recently emerged as the preferred mechanism to deliver crop protection chemicals where they can be most effective and provide the greatest benefit while reducing the chemical load in the environment.

The pool of resources for the IR-4 Ornamental Horticulture Program would be expanded by $500,000 ($400,000 from CSREES sources and $100,000 from ARS) over FY 2005 levels to better meet the needs of this rapidly expanding segment of specialty crop agriculture. This would allow IR-4 to increase field research capabilities by establishing and funding sites where more product performance research could be conducted. These additional resources will allow IR-4 to have a greater positive impact on providing data to support adding new pests and/or new plant species to the labels of lower risk chemical products.

The Biopesticide Program funding and associated research activities will be increased by 25% or $100,000 over FY 2005 levels. It is anticipated that these resources would be directed predominately into the cooperative IR-4/ EPA Biopesticide and Pollution Prevention Division (BPPD) Biopesticide Demonstration Grant Program to show growers that biopesticides can be useful tools in IPM Programs. Monies could also be used for advanced stage research programs that support registration expansions for many existing products.

The IR-4 Project will establish a reserve funding pool of $250,000 ($200,000 from CSREES and $50,000 from ARS) to provide the ability to rapidly respond to the introduction or emergence of invasive pest species that threaten the US food supply or specialty crop production. This reserve funding pool will allow IR-4 to participate in coordinated efforts to minimize damage from pests such as Asian Soybean Rust on edible legumes or the Q-biotype of whitefly on greenhouse ornamental crops. Through IR-4’s unique and broad knowledge of the newest pest management technology, the availability of a nationwide network of dedicated applied field research facilities, and close working relationship with US EPA, IR-4 can play an extremely important role in identifying and supporting the timely registration of pest management solutions for invading pests. Having the ability to find and register tools rapidly will assist the nation in securing its food supply.

The US EPA, through the provisions of the Food Quality Protection Act, is required to re-examine the data supporting all crop protection product registrations every 15 years. This process will begin in 2006. It is anticipated that this Registration Review will trigger new
data requirements for some critical specialty crop pest management uses that registrants will not fund. This will be similar to the situation after the 1988 Amendments to FIFRA and IR-4 will be able to defend some of these uses through the development of the required data. IR-4 successfully defended over 600 specialty crop uses resulting from FIFRA re-registration. IR-4 requests $500,000 from CSREES funds and $125,000 of ARS funds to initiate a registration maintenance program for crop protection tools deemed important by specialty crop growers for critical pest management needs.

IR-4 is requesting an additional $400,000 of CSREES funding and $125,000 of ARS funding to procure upgraded and enhanced field and laboratory research equipment. This influx of new resources will allow IR-4 to purchase technology that supports electronic data collection as well as continue the strategic equipment upgrades that have been hugely successful in increasing the productivity of IR-4.

The IR-4 Project will continue to strengthen the participation of stakeholders by the communication of research priorities, inclusion of stakeholder input in decision making processes, and further refining effective mechanism of outreach. The funding needed to enhance the existing IR-4 Program objectives are summarized as follows:

**Objective 4- Global Specialty Crop Initiative**

To support international competitiveness of US specialty crop producers by using IR-4 data and resources to harmonize international Maximum Residue Levels (MRL') and other regulatory barriers to international trade.

*Performance measure:* The specific goal is to submit to international regulatory bodies at least 20 data packages annually to establish harmonized MRL’s.

Over the past decade, the agrichemical industry has developed a range of new, safer technology and products. IR-4’s 1995 strategic plan provided for an increased focus on these new, reduced or lower risk products and made special efforts to quickly get them to market for specialty crop growers. IR-4 has been successful, IR-4 has facilitated close to 4,000 clearances of this newer pest management technology in the period of 1999 to 2005. However a problem began to emerge and magnify; some US specialty crop growers could not use some of these new products if their commodities had potential to be exported to countries that did not have an established MRL of the new chemical on the crop. Because of this, growers are forced to use the older products for produce being shipped abroad.

IR-4, through the Global Specialty Crop Initiative, will provide additional support to specialty crop growers by providing expertise to minimize trade issues and support international harmonization of product registrations. IR-4 would assist US growers by taking IR-4’s existing data, supplementing it with other data and information and submitting it to foreign regulatory bodies to establish harmonized MRL’s. The initiative would support a number of staff members who would gather and re-format data packages, (either from IR-4 or from the registrants) in order to submit it to CODEX, the European Union or any other country or entity as a means to help reduce potential US export barriers. This initiative would have the ability to work with a broad community without a special interest, as IR-4 has done so often with their US stakeholders and partners. This initiative could also play a major role in assisting with international reviews or by participating more actively on CODEX and OECD.
committees. This Global initiative would enhance global registrations and reduce trade barriers, while at the same time further promote the use of new, safer pest control products. IR-4 will work on processing approximately 20 packages annually. IR-4 will need $1,000,000 to initiate this program.

**Objective 5 – Aquatic Herbicide Registration Initiative**

To facilitate and develop the appropriate data to establish registrations by the EPA for new herbicides for use in aquatic environments

*Performance measure*: If adequate funds are provided IR-4 intends to work on the data requirements of at least two herbicides annually

Aquatic weeds, particularly non-native invasive species, are serious threats to the natural and production-based ecosystems in the U.S. They have become a major national problem; the proliferation and continued spread of these weeds restricts water movement in flood control canals, increases sedimentation rates in reservoirs, reduces biodiversity, threatens endangered species (plants and animals), degrades water quality, increases mosquito breeding habitats, and causes major economic loss to recreation, fisheries, electric power generation, and property values. In addition, agriculture is often dependent upon timely delivery of irrigation water via reservoirs, canals and other conveyances and aquatic weeds directly impact the movement of water in these delivery systems. There are only eight herbicides that are registered for aquatic sites. Some of these products have restrictions that preclude their use in irrigation water. Many of these registered herbicides were introduced in the 1950’s and resistance has been documented in several important aquatic weeds. Moreover, new aquatic weed species are entering the U.S on a regular basis and products currently registered do not control them effectively. This lack of herbicides for aquatic use is mainly a problem of economics. The cost of data development far exceeds the potential return on investments for agriculture chemical companies.

Consequently, the IR-4 Project stakeholders have recommended that IR-4 establish a new program initiative to provide leadership, study management and data to support the regulatory clearance of safe and effective aquatic herbicides for irrigation canals, ponds and lakes. The Aquatic Herbicide Registration Initiative is an additional objective that will receive new funding from a variety of public and private sources independent of current funding sources except for $150,000 that will be used for program and research management. It is anticipated that it will require $2,000,000 to establish this program. The actual costs to develop data to support clearances in this area will be dependent upon the proposed use site and the quantity and quality of supporting data. The first priority for this new program will likely be the clearance of products for irrigation canals.
Proposed Yearly Funding Enhancements in FY 07 to FY 09 for IR-4’s Food Use, Ornamental Horticulture and Biopesticide Objectives

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<td>Expansion of Ornamental Research</td>
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Proposed Total Funding for IR-4 during FY 2007 – FY 2009 ($)

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\(^3\) Multi-state Research Funds
Appendix 1 – IR-4 Project Overview

History

Specialty crops, or minor use crops, are defined in FIFRA as any crop grown on 300,000 acres or less. The USDA uses a broader classification which includes most vegetables, fruit, nuts, herbs, spices, nursery, landscape plants, greenhouse and flowers. Almost all food crops are minor use crops except for the large acreage crops like corn, soybeans, wheat, oats, rice and cotton. According to USDA’s 2002 Census of Agriculture, specialty crops account for over $43 billion dollars in annual sales, which is about forty-six percent of the total agricultural sales for the US. Despite the high value of specialty crops, there are frequently insufficient financial incentives for agrichemical companies to invest in registering crop protection tools for these crops. Development, testing, registration and personnel time are huge expenses. To maximize the return on investment, most pest control products are targeted on major crop markets where there is potential for large sales. Specialty crops and minor uses on major crops often end up with few pest control tools despite their high value and importance. This is true for conventional chemical pest control tools as well as biological pest control agents or biopesticides.

The Directors of State Agricultural Experiment Stations recognized this problem in 1963. Working with the USDA, they organized the Interregional Research Project No. 4, commonly known as the IR-4 Project, to assist in obtaining registrations of crop protection chemicals in order to ensure a supply of essential pest management tools for specialty crops growers. The IR-4 Project is a cooperative government and industry effort consisting of the USDA’s Agriculture Research Service (ARS) and Cooperative State Research, Education, and Extension Service (CSREES), the land grant university system, the US Environmental Protection Agency (EPA), the registrants of biological and chemical pest control tools, commodity groups and growers.

The IR-4 Project’s mission is to provide safe and effective pest management solutions for specialty crop growers. During the first 13 years of the Program, the focus was on facilitating the registration of conventional crop protection chemicals on fruits, vegetables, herbs and nuts. In 1976 a new aspect of the program was added to include data development to support the registrations of crop protection chemicals on nursery, floral, forestry seedling, Christmas trees and turf grass crops. In 1982, the IR-4 Project initiated a biopesticide program, which was expanded in 1994, to provide competitive grant funding to support studies on early development stage biopesticides for minor crop uses. Beginning in 1999, funding was also provided to develop efficacy and performance data on biopesticides currently being commercialized to expedite these newer technologies. These newer biopesticide products are included in integrated pest management programs and will provide resistance management alternatives. In addition, some of these new biopesticides can be used by organic growers for this increasingly popular production system. The IR-4 Project’s Biopesticide Program was further expanded in 2004 with the establishment of a jointly funded project with EPA’s Biopesticide and Pollution Prevention Division (BPPD) to support large scale demonstration studies to convince growers that biopesticide can be effective when the products are used correctly in IPM Programs.

Other IR-4 Project initiatives include a methyl bromide alternative research program. In 1999, IR-4 began field trials in a Methyl Bromide Alternatives Program to find replacements for critical uses at risk of elimination by the required phase-out of methyl bromide by 2005. This program has been successful in demonstrating that for many (but not all) crops and
geographic locations under study, methyl bromide can be satisfactorily replaced. However, this may involve the use of a combination of products and increased expense to the growers.

The IR-4 Project’s success can be measured by the large number of specialty crop pest control clearances established or retained as a result of the Project’s efforts. A high priority is placed on those products classified as Reduced Risk by EPA or deemed a lower risk alternative. Additionally, priorities are also assigned to products that can be used in IPM programs. Since the program’s inception in 1963, IR-4 has been granted over 9,300 food use clearances. In 2005, IR-4 obtained a record 991 new specialty crop food use clearances from EPA. According to EPA, IR-4 data supports more that 50 percent of all EPA new uses for existing chemical registrations. For ornamental crops, the IR-4 Project has assisted with the registration of over 10,000 crop protection chemicals and biological pest control agents on nursery stock, flowers, and turf grass since 1977. The ornamental industry accounts for over 37% or $16 billion of the total specialty crop value in the U.S. Biopesticides for ornamental use have been an important IR-4 focus since 1982. EPA granted over 300 biopesticide clearances since the biopesticide research objective began.

As noted earlier, the IR-4 Project was established and is still needed today because there are insufficient financial incentives for the agrichemical industry to invest in registering their products for specialty crops. Additionally, there are potential liability issues from crop injury, in low acreage, high value crops, that may create larger, unfavorable risk-reward relationships for registrants. The IR-4 Project bridges this gap to develop data to support these registrations. In doing so, IR-4 helps to improve international competitiveness of US agriculture. As the agrochemical industry continues to undergo worldwide consolidation, the resources devoted to specialty crops and minor uses continue to diminish. This makes the role of the IR-4 Project increasingly critical for maintaining the efficient and competitive production of these high value US crops.

How the IR-4 Project Operates

The IR-4 Project operates as a partnership between the Land Grant University System and the USDA (both ARS and CSREES) to accomplish its goal. The Headquarters (HQ) staff, including the Executive Director, is located at New Jersey’s Agricultural Experiment Station at Rutgers University, the USDA-ARS management is located in Beltsville, Maryland, and the four regional staffs (each with a Regional Director) are located at Cornell University/Geneva, Michigan State University, the University of California/Davis, and the University of Florida. All of these units operate collaboratively but relatively independently. Daily integration of activities is generally supplied through IR-4 Project HQ. Long-term policy, coordination and integration are provided by the IR-4 Project Management Committee (PMC) with oversight from the Administrative Advisers.

The IR-4 PMC consists of the IR-4 Project Executive Director, the four Regional Directors, the ARS Coordinator, the six Administrative Advisers (1 each from the four regions, the ARS administrator and the CSREES administrator), the USDA-CSREES IR-4 National Program Leader, and the Chair of the Commodity Liaison Committee (CLC). The Administrative Advisers, CLC Chair, and the USDA-CSREES representative positions are non-voting. The PMC meets three times a year to review the status of ongoing programs, develop policy and procedures, set operational budgets, develop strategic plans, and ensure that the program’s overall goals are being met. Others, such as a representative from the USDA IPM Centers and members of the Senior Management Team at IR-4 Headquarters attend on an ad-hoc basis.
The IR-4 research planning process involves input from its many stakeholders. Most proposals for IR-4 assistance are transmitted from growers through federal and state research and extension scientists involved in high value specialty crop pest management. IR-4 also receives proposals (called Project Clearance Requests) directly from growers and/or organizations representing a commodity. To maximize grower awareness of the program and their input, IR-4 personnel regularly attend grower meetings and tours. In some cases, state level IR-4 meetings are held in which growers are invited to attend and submit Project Clearance Requests. The only group prohibited from submitting requests are representatives of crop protection companies.

IR-4 Project stakeholders are encouraged to attend the annual IR-4 Food Use and Ornamentals Workshops where project proposals are prioritized. These workshops are critically important because IR-4 can conduct research on only 10-15% of the proposed researchable projects each year. These Workshops are open forums attended by up to 200 growers, commodity organization representatives, and federal and state research/extension scientists. At the workshops, every potential project is discussed in detail and its importance is considered on the basis of factors such as the availability and efficacy of alternatives, pest damage potential, performance of the proposed chemical, and its compatibility with integrated pest management programs.

The output of these meetings is a list of projects designated as having “A”, “B” or “C” priority, or as being eliminated from the research project list. In order to better serve the needs of growers, in 1999 IR-4 committed to a 30 month study completion policy for those projects classified as “A” priorities. Previously, most studies had taken 4-5 years to complete. While a 100% compliance with the 30 month policy is not feasible for several reasons, it is the goal of the program to raise the success rate from 70% to 80-85%. IR-4 also conducts research on as many Priority “B” projects as possible (currently less than 25% of the total). Resources are not sufficient to allow for more “B” or even “C” research priority projects.

Following the Workshops, a National Research Planning Meeting is held to assign field and laboratory sites for the next year’s research projects. About 100 food use residue projects (crop-chemical combinations) involving 700 field trials are undertaken annually, some in close cooperation and coordination with Canada’s Pest Management Centre of Agriculture and Agri-Food Canada.

Once projects are chosen and assigned, research protocols are drafted, which contain the proposed pattern of use, the number and location of field trials and instructions for the analysis of the chemical and metabolites in the commodity as specified by the EPA. The EPA requires that this research be conducted and documented following exacting procedures outlined in the Good Laboratory Practice (GLP) guidelines.

IR-4 has established 31 field research centers at strategic locations throughout the US and has a network of four regional, three ARS and two satellite analytical laboratories that determine the amount of residues remaining in the crop. All data from IR-4 sponsored studies are transferred from field sites and/or analytical laboratories to the IR-4 Headquarters where the Study Directors critically review the data and place it into a petition format, required for submission to EPA. The data are also reviewed by the cooperating chemical company. Once complete, the petition is submitted to the EPA.

Scientists in the EPA’s Health Effects Division conduct a comprehensive review of the IR-4 residue and supporting registrant toxicology data. If the data show that the use would not expose consumers or the environment to unreasonable adverse effects, the EPA publishes a tolerance or maximum residue limit (MRL) as a Final Rule in the Federal
Register. This is the amount of the agricultural chemical in or on the crop that is considered safe and legally acceptable.

IR-4 also conducts an average of 600 efficacy and crop tolerance trials for ornamental projects that were prioritized at the Ornamental Horticulture Workshop. For non-food crops, the research and registration process is much simpler because GLP residue studies supporting MRL’s are not required. The co-operating company can add the ornamental crop(s) and/or pest species to their registration once they feel comfortable that the use is safe to the ornamental plants and the chemical is effective against the target pests.

Priority setting and research within the Biopesticides Program objective are different. In this program, IR-4 publishes a “Call for Proposals” that requests interested university and USDA researchers to submit proposals to obtain grant funding for biopesticide research. The company that holds the biopesticide registration is involved in supporting the proposal. IR-4 annually receives approximately 100 of these proposals and funds about 40 of them. The data are sent to the cooperating company to support expansion of the registration or to show stakeholders that biopesticides, when use correctly and in conjunction with IPM, can be an effective pest management tool.