

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships			10%	
201	Plant Genome, Genetics, and Genetic Mechanisms			5%	
202	Plant Genetic Resources			7%	
205	Plant Management Systems			9%	
211	Insects, Mites, and Other Arthropods Affecting Plants			4%	
212	Diseases and Nematodes Affecting Plants			5%	
213	Weeds Affecting Plants			7%	
215	Biological Control of Pests Affecting Plants			7%	
216	Integrated Pest Management Systems			2%	
301	Reproductive Performance of Animals			3%	
302	Nutrient Utilization in Animals			2%	
303	Genetic Improvement of Animals			2%	
305	Animal Physiological Processes			2%	
311	Animal Diseases			9%	
403	Waste Disposal, Recycling, and Reuse			2%	
501	New and Improved Food Processing Technologies			4%	
601	Economics of Agricultural Production and Farm Management			5%	
605	Natural Resource and Environmental Economics			6%	
702	Requirements and Function of Nutrients and Other Food Components			4%	
703	Nutrition Education and Behavior			5%	
	Total			100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	15.0	0.0
Actual Paid	0.0	0.0	17.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	1289209	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	1916486	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct scientific research. Publish peer-reviewed journal articles and other publications. Present findings at professional meetings, at field days for growers, and at other venues. Educate undergraduate and graduate students.

2. Brief description of the target audience

Maine crop and livestock farmers, aquaculture industry, food processors and marketers, Cooperative Extension staff, other scientists, state policymakers, regulators, and legislators, classroom teachers

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2014
 Actual: 2

Patents listed

Plant Variety Protection Application, Easton potato variety
 Plant Variety Protection Application, Sebec potato variety

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	49	49

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of other publications

Year	Actual
2014	61

Output #2

Output Measure

- Amount of extramural funds awarded to researchers in this program area

Year	Actual
2014	2838605

Output #3

Output Measure

- # of sheep producers trained to interpret parasite egg count and speciation data reports

Year	Actual
2014	67

Output #4

Output Measure

- # of sheep producers trained to perform their own diagnostics for fecal parasite egg identification using simple microscopic procedures

Year	Actual
2014	23

Output #5

Output Measure

- # of high school students involved in a project on oyster culture and parasite transmission. These students were taught microscopy, animal husbandry and visited oyster farms to learn about oyster farming and aquaculture in coastal waters.

Year	Actual
2014	9

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Enhanced capacity of a sustainable global food system including new/improved plants, animals, technologies, and management systems
2	More sustainable, diverse, and resilient food systems in Maine
3	Improved tools for fighting plant diseases
4	Increase productivity through proper management of weeds, diseases, insect pests, and nutrition
5	Number of new or improved innovations developed for food enterprises
6	Adoption of strategies/tools for increasing productivity of Maine's fruit growers
7	Number of producers (and other members of the food supply chain) that have increased revenue
8	Improved tools for fighting plant and animal diseases
9	Test/develop new, high-yielding, high-quality, and/or pest resistant crops, livestock, and brood stock for Maine farmers and aquaculturists
10	Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources

Outcome #1

1. Outcome Measures

Enhanced capacity of a sustainable global food system including new/improved plants, animals, technologies, and management systems

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Potatoes are the most valuable cash crop in Maine and potato ranks among the top three vegetable crops produced in FL, ME, NC, NY, OH, PA and VA. Cash farm receipts for eastern potatoes during 2011 were approximately \$493 million and multiplier effects in the state and regional economies are many times this amount. Most potato production systems used in the U.S. require high rates of chemical fertilization to maintain yields and frequent chemical sprays for disease control. Improving nutrient-use and chemical-use efficiency in potato production systems will help the Maine potato industry to increase productivity, quality, and efficiency to be successful into the future.

What has been done

MAFES agronomists tested whether a "sufficiency level" approach for K2O fertilizer recommendations could provide comparable yield and quality to the "build and maintain" approach recommended by the University of Maine for many years. They also evaluated a new program that included low rates of at-planting K2O followed by soil- and foliar-applied potassium thiosulfate (KTS). Nine experiments comparing these programs were conducted from 2011 to 2013 using representative fry processing (Russet Burbank) and chipping (Atlantic) potato varieties.

Results

The results demonstrate that the sufficiency-level approach can be used to provide modest potash savings relative to the build and maintain approach (~60 to 100 lbs of K2O per acre) on soils that have moderately high to high potassium fertility. The data do not support decreasing at-planting potash rates to the lowest levels used in these experiments (15 to 60 lbs/A during 2011; 125 to 184 lbs/A during 2012; 55 to 135 lbs/A during 2013). The relatively poor yield and quality

results obtained at the sites and using the systems with the lowest rate of at-planting K2O suggest that the at-planting K2O rate can be reduced too far for optimum yield and quality in our production system. The higher K2O rate build & maintain program would be best used when growing a variety that is particularly blackspot bruise susceptible or has very high specific gravity. The research provided no evidence that the "spoon-feeding" KTS treatments were advantageous relative to at-planting KCI.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
212	Diseases and Nematodes Affecting Plants

Outcome #2

1. Outcome Measures

More sustainable, diverse, and resilient food systems in Maine

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Pollinated food crops are the major source of vegetables, fruits, and nuts worldwide. The current estimate is that pollination services are worth \$18 billion in the U.S. alone. Honey bees have been used in much of this production in the past, but with Colony Collapse Disorder and consistently high levels of colony losses since 2006, alternatives to the honey bee are required. Native wild bees are an ecosystem service that has been largely ignored in crop production, perhaps because there is much annual uncertainty in terms of wild pollinator numbers. Commercial bumble bees, however, are a fairly new pollination resource that has been slowly adopted by farmers. Maine blueberry growers require high levels of pollination and bumble bees are ecologically and behaviorally adapted to this North American native crop.

What has been done

A MAFES entomologist, with a joint appointment with UMaine Extension, assessed the potential of commercial bumble bees for wild blueberry pollination as well as their environmental impact.

Results

The scientist has developed new guidelines for managing commercial bumble bees in wild blueberry in Maine, with a new factsheet to be published by UMaine Extension in the spring of 2015. This research has also resulted in an increase in the use of bumble bees as an alternative pollinator (substitution for honeybees) in Maine's wild blueberry fields. As of spring 2014, 3,100 quads were brought into Maine for pollination. At the recommended rate of 1 quad/acre this suggests that about 3,100 acres of wild blueberry or about 1% of the crop is being pollinated by commercial bumble bees. That blueberry growers are diversifying their pollination tactics, away from a sole reliance on honey bees, will help make Maine's blueberry industry more sustainable and resilient.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #3

1. Outcome Measures

Improved tools for fighting plant diseases

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Potatoes are the most valuable cash crop in Maine and potato ranks among the top three vegetable crops produced in FL, ME, NC, NY, OH, PA and VA. Cash farm receipts for eastern potatoes during 2011 were approximately \$493 million and multiplier effects in the state and regional economies are many times this amount. Most potato production systems used in the U.S. require high rates of chemical fertilization to maintain yields and frequent chemical sprays for disease control. To increase productivity, quality, and efficiency for Maine potato farmers, it is

important to develop new, disease-resistant potato varieties.

What has been done

Late blight resistant varieties (LBRV) have the potential to reduce the reliance on foliar fungicides. To test the concept, field studies were conducted from 2010 to 2014 to compare the performance of susceptible varieties to moderately resistant varieties. Two fungicide schedules were used: (1) a standard program based on UMaine IPM scheduling; and (2) a reduced schedule, ~50% reduction in fungicide applications.

Results

Foliar late blight was not observed during 2010 or 2012. In 2011, 2013, and 2014, when late blight was observed, there was significantly less foliar late blight incidence in the LBRV compared to susceptible checks, especially in the reduced fungicide program. Fungicide program had no effect on total yield or marketable yield in 2010, 2011, and 2012. Yields were higher in the standard program and rot incidence was reduced in one of two experiments during 2013 and in the 2014 experiment. The reduced fungicide programs, however, provide substantial savings in the amount of fungicide used and also reduce fuel, maintenance, and labor costs. Per acre savings were calculated as part of this project. Profits could likely be increased with the implementation of LBRV potatoes and reduced fungicide spray programs, but uncertainty remains due to effects of disease infection dates, weather patterns, and reliability of the storage rot data.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems

Outcome #4

1. Outcome Measures

Increase productivity through proper management of weeds, diseases, insect pests, and nutrition

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

More than 60% of Maine vegetable growers use hoop houses. Primarily the structures are used for the production of summer season tomatoes and/or fall through spring greens with little crop rotation or cover cropping. Little attention is given to maintaining soil health other than application of typically large volumes of compost or manures. Overtime there is a build-up of disease organisms, accumulation of salts, and imbalances in plant nutrients resulting in reductions in yield and quality.

What has been done

Scientists in this integrated MAFES/Extension project used two 26x96-foot hoop houses to investigate possible interactions between irrigation frequency and compost application rates and to develop baseline data for recommendations regarding compost application within high tunnels. The study employed two irrigation treatments: one designed to mimic typical grower practices (2-3 irrigation events per week lasting between 1 and 2 hours), and a second treatment to provide the equivalent of 1-acre inch of water to the crop split into 2 irrigation events per day. They also randomly assigned five compost application rates within each irrigation main plot. ?Big Beef? tomato seedlings were transplanted at 18-inch spacing. The plants were trellised and pruned to a single stem. Yield (number and weight of fruit graded as first, second and cull) was measured from the center three plants of each plot. At the end of the growing season, stem fresh and dry weights were recorded for each plant.

Results

The scientists found no differences in fruit yield between irrigation treatments, possibly due to the frequent high rainfall events which occurred through the summer. Fruit number and total marketable weight was significantly lower in the 10 yd³/acre compost treatment compared to the 20, 50, and control treatments. No significant differences were seen between the 20, 50, 90 yd³ or control treatments. However, fruit number and weight were lower in the 90 yd³ treatment compared to the 20 or 50 yd³ treatments, suggesting an over-application of compost. These data indicate that compost application rates greater than 20 yd³/acre have no additional beneficial effect on yield.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems

Outcome #5

1. Outcome Measures

Number of new or improved innovations developed for food enterprises

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The shellfish industry generates thousands of tons of processing by-products and undersized animals each year that could be used in the production of food ingredients. Additionally, invasive green crabs are very abundant in Maine; however, due to their small size, hand-picking of crab meat is not feasible and there is no commercial fishery for them.

What has been done

MAFES food scientists, working with Maine Wild Caught, evaluated the mechanical processing of green crab, assessing effects of processing on yield and mince quality, and then created a novel food product, an empanada, containing the green crab mince as a primary and tested its consumer acceptability.

Results

This research showed that green crabs could be trapped and processed effectively, with a 50% yield of minced crab meat. The meat mince has excellent nutritional and microbiological quality and can be used in the development of consumer-acceptable food products. In the short term, this project resulted in harvest income for a Maine lobsterman, and the removal of several thousand of these invasive animals from in-shore areas. At least 100 seafood researchers, local fishermen, and economic development specialists became more knowledgeable about this potential method of mitigating the green crab invasion. The data indicate long-term potential for the harvest, mechanical processing, and use of green crab that will add value to the efforts of fisherman and provide a use for a nuisance species.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies

Outcome #6

1. Outcome Measures

Adoption of strategies/tools for increasing productivity of Maine's fruit growers

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

One of the principal desires of producers of specialty horticultural crops is to increase local consumption of locally grown agricultural products. Small-scale producers are often in a comparatively advantageous location that allows access to the most populated regions of the U.S. Yet, small-scale producers must maintain the quality of their perishable commodities and increase storage life in order to recover costs and make a profit. Pricing of perishables is difficult during a short season, being largely determined by supply and demand in the marketplace. Thus, these producers are at a disadvantage when negotiating prices during the peak, high supply harvest period. With the means to extend the storage duration of their produce, growers would have the option to sell when and where the prices are higher and still have the ability to supply top-quality products to the market.

What has been done

A MAFES researcher with a joint appointment with UMaine Extension is part of a multistate integrated project to develop and adapt postharvest strategies to improve quality and market competitiveness of local and small-scale fruit producers with a focus on apple and plum. The research has focused on testing methods that prevent losses in storage while maintaining optimum quality with an emphasis on handling procedures that can be adapted for small-scale producers.

Results

Apple growers in Maine used harvest and storage recommendations developed from this project to store and market Honeycrisp apples throughout fall and winter with minimal losses to chilling injury. The Honeycrisp variety is more profitable than traditional varieties. The researchers also compared seven plum varieties at two stages of maturity to represent plums suitable for shipping and tree-ripened. Fruit quality and health-beneficial compounds were measured to determine if

tree-ripened fruit differs from fruit harvested for shipping.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies

Outcome #7

1. Outcome Measures

Number of producers (and other members of the food supply chain) that have increased revenue

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Demand for local organic food has inspired new interest in growing bread-quality wheat in New England. The region's farmers have long produced small grains for animal feed on dairy and crop farms, but lack local knowledge and research information regarding production for the organic bread market.

What has been done

In this integrated project, MAFES researchers worked with organic farmers, millers, and bakers to develop strategies for organic bread wheat production that satisfy multiple criteria: productivity, profitability, milling and baking quality, and flavor.

Results

A 2013 survey of 30 New England commercial grain farmers revealed that 83% had adopted at least one and, on average, three new management practices based on the project's research results. As a result, farmers reported increases in grain yields (47%), grain quality and crop value (75%), buyers (40%), employment (33%), and wheat acreage (80%). The economic value these farmers placed on the benefits they gained from the project was an average of \$7,000 each. Bakers and distributors reported they increased their knowledge and skills related to local grain

sourcing and use (93%), and, as a result, used more locally grown grains (71%), developed new products (36%), and contacted someone new (86%). They estimated an average of \$5,000 and up to \$20,000 in economic gain to their businesses from the project. Maine Grains at the Somerset Grist Mill provides a specific example of this project's broad impacts. The owner says the tours of local wheat systems in Quebec and Denmark gave her confidence that her business model was appropriate, examples of successful locally scaled mills to share with potential investors, and specific ideas that she implemented for handling and packaging flour. She relies on the project's personnel and resources to provide farmers with technical assistance, and noted a marked increase in farmers' knowledge and skills regarding bread wheat production as a result of the project. Her business now serves markets throughout New England, employs two full- and two part-time workers, and is the anchor for the Skowhegan food hub. Stakeholders credit this project with serving as the cornerstone for a new organic grain sector in New England by inspiring and enabling new markets for other food grains, other end uses (e.g., malt and spirits), and organic or non-GMO feed. Our region now has at least 7 flour mills, 3 malt houses, 5 distilleries, and dozens of bakeries for whom using locally grown organic grains is central to their business model.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #8

1. Outcome Measures

Improved tools for fighting plant and animal diseases

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A major obstacle in the development of truly sustainable aquaculture is the health and welfare of culture fish and shellfish and the interactions between wild and farmed populations. This has

become increasingly pertinent with the development of integrated polyculture aquaculture systems (IPTA) where a more terrestrial model has been adopted for aquaculture systems with the waste nutrients from the main crop being recycled to produce fodder or other cash crops for the farm.

What has been done

To improve the health and welfare of farmed fish, MAFES researchers have worked on the development of several new vaccines formulations. This work was developed using in vitro models before carrying out larger-scale animal based trial.

Results

This research has led to the submission of one new patent, and the scientists are working with two local biotech companies (Kennebec River Biosciences & Fish Vet Group USA) on developing several new vaccines for use in the U.S. aquaculture industry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

Outcome #9

1. Outcome Measures

Test/develop new, high-yielding, high-quality, and/or pest resistant crops, livestock, and brood stock for Maine farmers and aquaculturists

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Diversification of the shellfish culture industry will provide opportunities to exploit new markets as well as to expand to new culture sites that are better suited to alternative species.

What has been done

MAFES researchers began developing culture techniques for the Atlantic jackknife clam (*Ensis directus*), a species that can provide for industry diversification in the Northeast. The scientists conducted multiple spawnings of razor clams in the summer of 2012 using both field-collected, ripe broods and broods conditioned in the lab. They used larvae from these spawns to compare the efficacy of using downwellers versus trays filled with sandy and mud substrates for nursery-phase culture of razor clam offspring, currently a bottleneck in the production of razor clam seed.

Results

Although downwellers are the typical method for early nursery-phase culture of oysters, the scientists observed complete mortality of clams in downwellers, indicating they are unsuitable for razor clams. Sediment-filled trays represent a potential solution to problems often encountered with nursery phase culture of razor clams. The scientists found that the use of sediment-filled trays provided a substantial increase in the growth and survival of immediate post-set razor clams in the hatchery. They also conducted experiments investigating sediment preference for razor clams at 6 months post-settlement. Juvenile razor clams took over five times as long to explore the sediments surface and initiate burrowing when presented with mud sediments when compared to clams presented with sand or mixed sediments. Juvenile razor clams expressed a clear preference for sand or sandy-mud substrates, and clams exposed to mud remain exposed on the surface where they are prone to predation, disturbance, and are unlikely to feed which will affect their growth and survival.

4. Associated Knowledge Areas

KA Code	Knowledge Area
303	Genetic Improvement of Animals
311	Animal Diseases

Outcome #10

1. Outcome Measures

Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Increasing energy costs have driven up the price of chemical fertilizers in recent years. At the same time, conventional and organic growers alike are looking for sources of N that may fortify their soil's shrinking organic matter base, making applied nutrients more efficient to use. Growers throughout New England are increasingly turning to locally available byproducts of the livestock, marine, and plant-based industries to provide nutrient sources that can bolster declining soil organic matter levels, while supplying readily-available nutrients at reasonable costs. Such sources include composted poultry manures, marine waste composts, bloodmeal, fish meals, and various seed meals left after extraction of cooking oils from crops like canola. The N release patterns of these materials have not been well studied and their ecological and economic efficiencies are largely unknown.

What has been done

MAFES scientists conducted field trials to assess the effects of timing of application of an array of "bagged" biologically based fertilizers approved for organic farms. Six different organic fertilizers were evaluated in experiment station fields over five years in triticale, sweet corn, and broccoli. Distinct patterns of N availability emerged from the research indicating the effectiveness of each N source under cold (triticale), cool (broccoli) and warm (sweet corn) soil temperatures and varying rates of plant growth. Soil nitrate and ammonium was monitored on a bi-weekly basis throughout the growth period of each crop.

Results

Over 300 growers (primarily organically certified) gained an improved knowledge of the relative benefits of 8 to 10 biologically based soil amendments, including their relative economic and ecological efficiency in providing nitrogen and other essential nutrients to a range of crops grown in cold, cool, and warm soils in Maine. The findings showed that blood meal provided N most readily at cold and cool temperatures, whereas fertilizers that contained a carbon component, such as soymeal, were slow to mineralize N in cool temperatures, but effective at providing timely N and other nutrients during the warmer summer months. Additionally, while each of the fertilizers was applied to supply the same rate of N, they varied significantly in the proportions of other nutrients, including both macro- and micronutrients. Fish meal, which had a broader array of nutrients than the other sources, consistently led to higher crop yields in each trial than the other applied nutrient sources over all five years and three crops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Evaluations are currently conducted at the project and program levels. At the project level, all projects are reviewed by an internal research council and external peer reviewers when initiated and again at completion by the research council. During the research council final evaluation, the focus is on determining if terminating projects met their stated objectives, secured extramural funding, and produced peer-reviewed publications. For FY14, 10 projects went through the review process in this program area. As for other measures of successful research programs, faculty in this program area published 49 peer-reviewed articles and secured more than \$2,838,605 in extramural funding. Researchers use a variety of methods to evaluate their own research projects including evaluations retrospectively, before-after, and during the life of the project; case studies; and comparisons between treatment/intervention and nontreatment/nonintervention.

At the program level, external NIFA review teams are asked to review the research programs of schools/departments. These teams provide input on the impact and productivity of research programs supported through the station. The station is working to develop a standard program-level evaluation process, which will be used to evaluate each station program area. Our current plans include an approach based on use of expert panels as recommended by the federal Government Accounting Office with individual program evaluations occurring every four to five years on a staggered time table.

Key Items of Evaluation

For FY14, 10 projects went through the review process in this program area. As for other measures of successful research programs, faculty in this program area published 49 peer-reviewed articles and secured more than \$2,838,605 in extramural funding.