

PLAN OF WORK
Update FY2005–FY2006

**Maine Agricultural and Forest
Experiment Station**

The University of Maine

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**Federal Fiscal Years
2005 to 2006**

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INTRODUCTION

This document represents the Plan of Work Update for the Maine Agricultural and Forest Experiment Station (MAFES) for the period FY2005 to FY2006. In accordance with the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA), it describes the research activities of MAFES for the next two years. This Plan of Work Update pertains only to the Maine Agricultural and Forest Experiment Station. The University of Maine Cooperative Extension (UMCE) is submitting a separate Plan. However, the Plans of Work for UMCE and MAFES are consistent in terms of the processes that are/will be used to obtain stakeholder input and plans for future integration of research/extension activities.

As an update of the original Plan of Work, this document only includes sections that have changed since the original document was created. For this reason some sections are not included, including the overview of the state, and the description of organizations referenced in the Plan of Work. Given changes that have occurred in our planned programs under each of the five goals, we have chosen to include updated descriptions of programs for each goal. The narrative was shortened in most cases.

PLANNED PROGRAMS

The Maine Agricultural and Forest Experiment Station received \$1,736,453 in Hatch funds (including multi-state Hatch funds) for fiscal year 2003, with a required match of \$1,736,453, giving a total baseline of \$3,472,906 to allocate to MAFES planned programs. In determining the resources allocated to program areas, we have chosen to include other funds available to MAFES. The financial resources reported under each program description include Hatch funds, state appropriations, industry support, state and federal grants and contracts, other grants, and money generated by farm and timber product sales. This provides us with a total of approximately \$9,587,114 for these planned program areas, thereby demonstrating that the federal funds are being effectively matched. Because some of the funds we are allocating vary from year to year, it is difficult to project future allocations. We believe that all our major funding sources will be relatively constant over the next two years. To this end, we have let the funding allocations remain flat in our allocations tables, while adjusting the scientist years to reflect anticipated changes.

Goal 1—An Agricultural System That Is Highly Competitive in the Global Economy

Issue(s):

Boosting profits for Maine's agricultural producers is critical. One way for producers to remain profitable is through the new and value-added products. MAFES scientists can conduct the long-term research needed to help develop new fruit and vegetable varieties, to create and/or test new value-added products, to develop new and better feeds for livestock, lobster, and aquacultural fish species.

Another way for Maine's agricultural producers to remain competitive is through the adoption of new management techniques that can reduce losses to diseases and pests, reduce the use of pesticides and other off-farm inputs, and increase yield or productivity. MAFES scientists conduct long-range research on crop and livestock management systems that are of particular interest to Maine's producers. Finding ways to produce healthy, genetically superior animals and plants is also important. Genetic engineering is one more tool that cutting-edge scientists are using to improve crop plants, animals, and fish species. Prevention of animal and fish diseases and ways to overcome infertility in valuable dairy cattle are some of the issues that the Experiment Station can address through genetic engineering and selective breeding.

A third way to increase the competitiveness of Maine's agricultural production system is through a better understanding of the effects public policy and economic forces have on this system. MAFES economists investigate the economic and public policy conditions that are unique to Maine in order to help Maine's agricultural industries become more competitive.

Performance Goal(s):

- Develop cold-hardy, disease- and pest-resistant plant varieties via conventional breeding and biotechnology

- Improve soil and fertility management and develop new strategies for controlling pests and diseases in fruit and vegetable cropping systems
- Improve genetic stocks and techniques for monitoring and maintaining animal health for Maine's livestock and aquacultural producers
- Develop value-added food products through research involving innovative processing technologies using Maine agricultural products
- Conduct research to examine production costs, consumer preferences, and marketing opportunities for existing Maine food producers and retailers and to improve our understanding of the technical, economic, and social tradeoffs inherent in agricultural decision-making

Output Indicators:

- New varieties of plants and lines
- New value-added products
- Understanding of virulence of plant pathogens
- Improved cold-weather tolerance of plants and grasses
- New methods for controlling common agricultural pests
- New, sensitive technique for estimating bovine embryo viability
- Improved growth of marine finfish and shellfish
- New feeds for Maine's aquacultural industries
- Quicker, more cost effective methods of identifying fish viruses
- New recommendations on costs and benefits of various agricultural cropping systems
- Identification of new opportunities in which Maine farming systems exhibit a comparative advantage over regional and international competitors

Outcome Indicators:

- Successful adoption of new products, varieties, processes, and marketing strategies in Maine's potato, blueberry, aquaculture, and specialty food producer sectors
- Successful adoption of new management systems by Maine's agricultural industries
- State and federal agencies' use of soil, water, and fertility management practices
- More profitable agricultural industries in Maine
- Economically viable and environmentally sustainable aquacultural industries
- More profitable food producers and food retailing industries in Maine

Key Program Component(s):

- Development and evaluation of new potato and apple varieties
- Weed management techniques
- Conservation of plant genetic resources
- Development and evaluation of pest- and disease-resistant and cold-hardy crops
- Refinement of soil management and crop rotation systems
- Insect behavior and control
- Improved livestock reproductive performance
- Improvement of silage quality
- Diversity and pathogenicity of fungal pathogens
- Development and evaluation of healthy foods

- Enhancing the processing capacity of Maine food producers and processors
- Development of bait alternatives for the lobster industry
- Adding value to seafood by-products
- Development of a hydrodynamic model for soft-shell clam management
- Development and evaluation of diets for marine larval fish
- Population and quantitative genetics of commercially cultured marine bivalves
- Determining factors for optimizing growth in developing fishes
- Molecular diagnostics of fish viruses
- Development of equipment and techniques for Maine's aquaculture and fisheries industries
- Evaluation of market potential for Maine livestock producers
- Managerial aspects of the potato industry
- Evaluating food marketing strategies for producers and retailers in rural areas
- Assessing the impact of strategies to increase competitiveness in agriculture and aquaculture
- Sustaining local food systems in a globalizing environment

Evaluation Methods:

Since the early 1980s the Maine Agricultural and Forest Experiments Station's scientific peer review process has included an "evaluation by experts with scientific knowledge and technical skills to conduct the proposed work whereby the technical quality and relevance to program goals are addressed." This process will continue.

In addition, program outcome indicators will be distributed to all scientists whose projects fall within the program. Principal investigators will be asked to evaluate and assess progress annually. Stakeholders, through such vehicles as the Board of Agriculture and the Maine Agricultural Center, will provide input in the evaluation process. As part of the integrated research and extension activities, increased efforts will be made to work with extension educators to assist with assessments as appropriate.

Scientists submitting new proposals through the Experiment Station are asked to include methods for evaluating outcomes as part of the proposal process. These proposals are required to go through a scientific peer review process that includes both internal and external review. Proposals are to be shared with key stakeholder groups.

Plans for Reporting Outcomes:

The outcomes from this program area will be reported in CRIS AD421 Progress Reports, the national impact database, and in various Station publications and joint Station/Cooperative Extension publications, as well as reported in presentations by the faculty and the director to stakeholder groups.

Internal and External Links:

Collaboration for this research occurs with Cooperative Extension, producer groups, private firms, state and federal agencies, other universities, and other non-governmental agencies

Target Audience:

Target groups for the research outputs include producer groups, private firms, state and federal agencies, and non-governmental organizations

Program Duration:

Long term. This program will extend for the two-year life of this plan.

Allocated Resources:

Years	Funds	SY
FY2005	\$6,000,000	20.4
FY2006	\$6,000,000	20.4

The financial resources reported here include Hatch funds, state appropriations, industry support, state and federal grants and contracts, other grants, and money generated by farm and timber product sales.

Goal 2—To Provide a Safe, Affordable, and Nutritious Food Supply

Issue(s):

Maine is obviously a net food importer, yet food production and processing is important in several key sectors: dairy, fisheries, potatoes, and blueberries, and other fruits and vegetables. Researchers in the Maine Agricultural and Forest Experiment Station, working with these important Maine commodities, are investigating methods for improving food safety and quality and examining the market economics behind Maine’s agricultural industries.

Performance Goal(s):

- Develop technologies and methods to assure access to a safe food supply for Maine people and provide economic information to help Maine’s agricultural industries grow

Output Indicators:

- Technologies to ensure post-harvest food quality
- Methods to monitor and control food-borne pathogens
- Immunoassay methods to rapidly analyze certain fungicides in processed foods
- Processes to enhance the efficacy of chitosan for improving quality of stored fish products

Outcome Indicators:

- Safer food supply
- Development of multi-species aquacultural industry in Maine

Key Program Component(s):

- Methods and technologies to ensure food safety and quality
- Adding value to seafood byproducts

- Market analysis of Maine seafood products
- Economics of Maine’s dairy and potato industry

Evaluation Methods:

See this section under goal 1.

Plans for Reporting Outcomes:

See this section under goal 1.

Internal and External Links:

See this section under goal 1.

Target Audience:

See this section under goal 1.

Program Duration:

Long term. This program will extend for the two-year life of this plan.

Allocated Resources

Years	Funds	SY
FY2005	\$350,000	2.4
FY2006	\$350,000	2.4

The financial resources reported here include Hatch funds, state appropriations, industry support, state and federal grants and contracts, other grants, and money generated by farm and timber product sales.

Goal 3—To Achieve A Healthier, Better Nourished Population

Issue(s):

There is a well-established connection between good nutrition and health. The rising cost of health care is leading to a change from treating chronic diseases to preventing them through improved nutrition. It is important therefore that nutrition research addresses the issues of how various nutrients affect health and how to encourage people to change their diet.

Of particular concern in Maine is the nutrition of elders, because Maine’s population is rapidly aging, and the young, because this is the time when people develop lifelong eating habits. Nutrition intervention materials need to be developed that effectively encourage both of these segments of the population to increase the amount of fruits and vegetables in their diets. Additionally, as more Americans start using herbal and phytonutrient supplements, it is important that the supplements they choose to take actually work.

Performance Goal(s):

- Improve nutrition for all Maine people, especially the elderly and teen population

Output Indicators:

- Better understanding of nutritional status of elderly men and women
- Development of nutrition intervention materials aimed at increasing the consumption of grains, vegetables, and fruits by young adults
- Better understanding of effect of nutrients on health

Outcome Indicators:

- Development of a knowledge base that can be used by clinicians, cooperative extension, public school administrators and teachers, and social service agencies to develop improved interventions and educational programs

Key Program Component (s):

- Stages of change model to promote consumption of grains, vegetables and fruits by young adults
- Assessment of nutritional risk in the elderly
- Manganese and atherosclerosis
- Nutrient bioavailability

Evaluation Methods:

See this section under goal 1.

Plans for Reporting Outcomes:

See this section under goal 1.

Internal and External Links:

See this section under goal 1.

Target Audience:

See this section under goal 1.

Program Duration:

Long term. This program will extend for the two-year life of this plan.

Allocated Resources

Years	Funds	SY
FY2005	\$210,000	1.1
FY2006	\$210,000	1.1

The financial resources reported here include Hatch funds, state appropriations, industry support, state and federal grants and contracts, other grants, and money generated by farm and timber product sales.

Goal 4—Greater Harmony Between Agriculture and the Environment

Issue(s):

Natural resources are the driving force behind most of Maine's export-based industries—paper, wood products, potatoes, blueberries, and seafood. The way in which these natural resources are used and conserved has a tremendous impact on the environmental quality by which Maine people measure their wellbeing. Research in virtually every unit in the Experiment Station addresses the interface between natural resource utilization and environmental quality. Much of the research MAFES supports under goal 4 is funded through the McIntire-Stennis Act and does not fall under the scope of this document.

Performance Goal(s):

- Develop effective and affordable pest management strategies for Maine producers, including biorationale/biointensive approaches, as a means of promoting profitability, food safety, worker health, and environmental protection
- Enhance soil quality and productivity, while utilizing locally available resources, such as animal and green manures, and developing environmentally compatible farming methods
- Improve both surface- and groundwater quality as a way to improve overall health of Maine people and the wildlife and recreational resources of the state
- Develop the technologies, the understanding of wildlife biology and habitat needs, and the public policy strategies so that the use of natural resources in Maine can remain sustainable

Output Indicators:

- Best management practices for herbicides used in blueberry production
- New pathogens for use in insect pest management programs
- Sustainable fertilizer recommendations
- Ability to help reseed seaweed on stressed, overharvested or denuded shores
- Understanding of the biological effects of contaminants such as dioxin on development of finfish and shellfish
- Sensitive bioassessment methods for measuring the health of rivers and streams
- New systems of waste management

Outcome Indicators:

- Reduced pollution of ground- and surfacewater from agricultural and nonpoint sources in Maine
- Reduced reliance on chemical pesticides and herbicides by Maine growers
- Greater reliance by Maine producers on nonchemical soil amendments
- Better understanding of public preferences for land use
- Greater recognition of habitat needs of vulnerable wildlife species
- Statewide land use policy in sync with public preferences
- Sustainable development policies in Maine
- Sustainable fisheries industry

Key Program Component(s):

- Improved soil nutrient management systems
- Soil chemical and biological processes as indicators of soil quality
- Soil genesis, morphology, classification and interpretation
- Effects of residue quality on rates of carbon mineralization and soil solution chemistry
- Transitioning to sustainable agriculture in Maine
- Development, evaluation and safety of entomopathogens for control of arthropod pests
- Diversity and pathogenicity of fungal pathogens
- Developing reseeded and remediation strategies for seaweed
- Conservation of Maine salmonid fishes
- Contaminant effects in early life stages of finfish and shellfish
- Role of harbor and gray seals in the Gulf of Maine Ecosystem
- Understanding the distribution of two rare Atlantic slope freshwater mussels
- Habitat ecology of terns in Maine
- Ecological role of small wetlands in the landscape
- Determining the sources of salt pollution in Maine ground water using isotopic and elemental characterization
- Landscape exports of carbon and nitrogen to aquatic ecosystems
- Application of a landscape framework for evaluating the impacts of regional and local stressors on lakes in Maine
- Economics of waste management
- Benefits and costs of natural resource policies
- Maine/New England commercial fisheries management

Evaluation Methods:

See this section under goal 1.

Plans for Reporting Outcomes:

See this section under goal 1.

Internal and External Linkages:

See this section under goal 1.

Target Audiences:

See this section under goal 1.

Program Duration:

Long term. This program will extend for the two-year life of this plan.

Allocated Resources [SY]

Years	Funds	SY
FY2005	\$2,500,000	10.3
FY2006	\$2,500,000	10.3

The financial resources reported here include Hatch funds, state appropriations, industry support, state and federal grants and contracts, other grants, and money generated by farm and timber product sales.

Goal 5—Enhanced Economic Opportunity and Quality of Life for Americans

In our original Plan of Work report FY2000-FY2004, MAFES had no projects that fit under goal 5. Since that time, however, newly hired faculty members and redirected research programs have enabled us to direct MAFES resources toward goal 5.

Issue(s):

Many challenges exist for Maine's economy and the quality of life of its citizens. For example, only 67% of Maine jobs pay a livable wage; in the mid-1990s 30% more Mainers held multiple jobs to make ends meet than the national average. Maine workers are faced with declining numbers of good-paying manufacturing jobs, slipping from 22% of all jobs in 1980 to 12% in 2000. Furthermore, for 130 years Maine's population has grown more slowly than national average, and in addition to the slow growth rate, Maine's population is rapidly aging. Currently seniors make up 14% of Maine's population; by 2020 seniors are predicted to make up 21% of population as baby-boomers are aging and Maine's young people leave the state. This aging population will put strains on the health care and transportation systems, and on the housing and labor supply.

Maine people, however, are apt to define their quality of life in terms of environmental quality as well as in terms of economic opportunities. Indeed, economic development strategies for Maine historically have begun from the premise that quality of life is the foundation on which all else is built. Of particular concern to Maine's quality of life are the problems of uneven growth (with fast-growing coastal counties, stagnant central counties, and declining northern and eastern counties) and of sprawl. In 1960 36% of Maine people lived in rural areas vs 56% in 2000, and this sprawling development is expensive in terms of school spending, environmental costs (i.e., nonpoint source pollution and auto emissions) and loss of character of communities. Maine people are also concerned about food safety and purity, and Maine policy makers are increasingly asked to impose quality standards or labeling on products sold or produced in Maine. For example, the 120th session of the Maine Legislature has requests to impose production standards and labeling requirements on genetically engineered foods. The demand for these regulatory approaches has presented policy makers and firms with a need to better understand public preferences regarding the non-marketed characteristics of their products.

Experiment Station research under all the USDA goals addresses many issues related to economic opportunity and quality of life. The projects under goal 5 focus on consumer economics and community resource and development economics.

Performance Goals:

- Improve understanding of the issues of food quality standards, local industry agglomeration and changes in employment base, and land use trends to enable Maine to develop policies that improve economic opportunities and quality of life for Maine people.

Output Indicators:

- Development of a tool for forecasting land use trends
- Development of economic model of risk processing appropriate for predicting individuals' willingness to pay for food safety protection
- Development of a database containing information on Maine businesses that received economic development incentives in recent years

Outcome Indicators

- Statewide policies that more effectively encourage business growth
- Sustainable development policies in Maine
- Policies concerning the labeling of food products that balance the concerns of both consumers and businesses.

Key Program Component(s):

- Causes and consequences of land use change in Maine
- Employment change and industry growth in Maine
- Consumer reactions to, and valuation of, changes in product quality

Plans for Reporting Outcomes:

See this section under goal 1.

Internal and External Linkages:

See this section under goal 1.

Target Audiences:

See this section under goal 1.

Program Duration: Long term. This program will extend for the two-year life of this plan.

Allocated Resources:

Years	Funds	SY
FY2005	\$300,000	1.5
FY2006	\$300,000	1.5

The financial resources reported here include Hatch funds, state appropriations, industry support, state and federal grants and contracts, other grants, and money generated by farm and timber product sales.

STAKEHOLDER INPUT PROCESS

The Experiment Station will continue to seek input from all relevant groups and individuals regarding research needs. All persons who participate in the stakeholder input process will be treated with dignity and respect. The specific procedures for collecting stakeholder input will be the same as presented in our original Plan of Work document. A description of yearly activities for gathering stakeholder input is included in our Annual Report of Accomplishments.

SCIENTIFIC PEER REVIEW OF EXPERIMENT STATION PROJECTS

In the early 1980s, the Maine Agricultural and Forest Experiment Station established a scientific peer review process for all new and revised projects funded by the Experiment Station through Hatch, McIntire-Stennis, and Animal Health formula funds. This process will continue to be used during the two years of this Plan of Work Update and is described in detail in our original Plan of Work.

MULTI-STATE RESEARCH PROJECTS

The Maine Agricultural and Forest Experiment Station is currently participating in 21 multi-state research projects. More than 25% (\$505,882) of our Hatch funding is spent on these multi-state, multi-disciplinary projects. Participation in multi-state projects provides an efficient means of gathering data and transferring information by tapping into the individual expertise at participating experiment stations. The sum of efforts generated by individual stations combine to produce a greater whole. Regional projects are also interdisciplinary in nature, giving the project a full spectrum of expertise that assures an integrated approach to the problem being researched.

For Maine, participation in regional projects is of particular importance. Unlike some of the larger stations, the Maine Agricultural and Forest Experiment Station often has only one or two faculty with expertise in a specific area. Through regional participation, an individual faculty member from Maine can share his or her knowledge and gain expertise from others in the discipline to enhance the quality of research provided to the people of Maine.

We believe responsibility for scientific peer review for research programs funded under section 3(c)(3) of the Hatch Act (commonly referred to as Hatch Multi-State Research Funds) is at the regional level. All Maine Agricultural and Forest Experiment Station scientists who wish to participate in a regional project must propose science that is relevant and that meets one or more of the objectives as determined by the participating scientists, the administrative advisor and the CSREES administrative advisor assigned to the project.

Current	FY2005	FY2005
\$505,882	\$505,882	\$505,882

List of MAFES Multi-State Projects

RegNo	Project#	PI	Title
NC-140	ME08318-02	Moran	Rootstock and Interstem Effects on Pome and Stone Fruit Trees
NC-219	ME08550-01	White	Using Stage Based Interventions to Increase Fruit and Vegetable Intake in Young Adults
NCR-148	ME08469	Alyokhin	Migration and dispersal of agriculturally important biota
NCR-3	ME08810	Osher	Soil Genesis, Morphology, Classification and Interpretation
NCR-59	ME08822	Osher	Soil Organic Matter and Soil Quality
NE-1000	ME08824-00	Gallandt	Improved weed control through residue management and crop rotation
NE-1008	ME08103-02	Donahue	Assuring Fruit and Vegetable Product Quality and Safety Through the Handling and Marketing Chain
NE-1012	ME08221-02	Smith	Sustaining Local Food Systems ina Globalizing Environment
NE-1014	ME08805-02	Porter	Development of New Potato Clones for Improved Pest Resistance, Marketability, and Sustainability in the East
NE-172	ME08559	Cook	Nutritional Risk and Antioxidant Status in the Elderly
NE-183	ME08817	Moran	Multidiciplinary Evaluation of New Apple Cultivars
NE-187	ME08807	Langille	Best Management Practices for Turf Systems in the Northeast
NE-9	ME08316	Zhang	Conservation and Utilization of Plant Genetic Resources
NRSP-3	ME08904	Fernandez	The National Atmospheric Deposition Program (NADP)
NRSP-4	ME08314	Yarborough	A National Agricultural Program to Clear Pest Control Agents for Minor Uses
S-222	ME08232	Cheng	Fruit and Vegetable Supply-Chain Management, Innovations, and Competitiveness
S-301	ME08801	Groden	Development, Evaluation and Safety of Entomopathogens for Control of Arthropod Pests
W1002	ME08561	Camire	Nutrient bioavailability--Phytonutrients and Beyond
W-112	ME08310-02	Wallace	Reproductive Performance in Domestic Ruminants
W-133	ME08206-02	Boyle	Benefits and Costs of Natural Resource Policies
WCC-099	ME08512	Rawson	Broodstock management, genetics and breeding programs for molluscan shellfish

We also participate in less formal multi-state activities through sponsored research activity and through programs and activities including the Maine Sea Grant program that provides support, leadership, and expertise for marine research, education and extension in northern New England. Hatch funds help support faculty who conduct research at the Darling Marine Center, a research facility serving the marine interests of faculty, staff, students and visiting investigators from around the world. The annual Potato Conference draws upon expertise from potato growing regions across the country. In return, Station researchers provide scientific expertise to extension staff and to researchers in several other states.

Accomplishments reporting on our multi-state, multi-disciplinary, and integrated activities for our Station will be through the annual Northeast impact statements and the Northeast results reported through institutionally integrated AD-421s. Financial statements on expenditures will come from this station as AD-419s.

INTEGRATION OF RESEARCH AND EXTENSION ACTIVITIES

Research and extension activities are significantly more integrated now than they were at the beginning of the original five-year Plan of Work cycle. We will continue to follow the steps outlined in our original Plan of Work for increasing integration. The progress made toward this goal of integration is described in our Annual Report of Accomplishments.

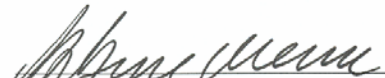
POINT OF CONTACT

All correspondence regarding this Plan of Work should be directed to

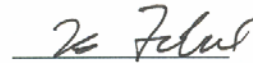
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Dean, College of Natural Sciences, Forestry, and Agriculture
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Date

APPENDIX A—LIST OF HATCH PROJECTS BY GOAL

Projects in this list may show up under more than one goal according to the RPAs chosen for each project. The column “%” indicates the percentage of time dedicated toward the RPA(s) under that particular goal.

% Project #	Multi-state #	PI	Title	
Goal 1 An agricultural production system that is highly competitive in the global economy				
100	ME08101	Riley	Development of Equipment and Techniques for Maine's Aquaculture and Fisheries Industries	
100	ME08103-02	NE-1008	Donahue	Assuring Fruit and Vegetable Product Quality and Safety Through the Handling and Marketing Chain
70	ME08203-01		Leiby	Managerial Aspects of The Potato Industry
20	ME08206-02	W-133	Boyle	Benefits and Costs of Natural Resource Policies
100	ME08211-02		White	Evaluating Food Marketing Strategies for Producers and Retailers in Rural Areas
50	ME08215		Dalton	Impact Assessment of Strategies to Increase Maine Competitiveness in Agriculture and Aquaculture
100	ME08221-02	NE-1012	Smith	Sustaining Local Food Systems in a Globalizing Environment
100	ME08302-01		Hunt von Herbing	Determining factors for optimizing growth in developing fishes
100	ME08303		Kling	Development and Evaluation of Microparticulate Early Weaning Diets for Marine Larval Fish
30	ME08305-02		Smagula	Physiology and Culture of the Lowbush Blueberry
100	ME08306-03		Stokes	Improvement of silage quality and its utilization by dairy cows
100	ME08308-02		Bayer	Development of Bait Alternatives for the Lobster Industry
100	ME08310-02	W-112	Wallace	Reproductive Performance in Domestic Ruminants
100	ME08311		Congleton	Development of a hydrodynamic model for soft-shell clam management
100	ME08314	NRSP-4	Yarborough	A National Agricultural Program to Clear Pest Control Agents for Minor Uses
100	ME08316	NE-9	Zhang	Conservation and Utilization of Plant Genetic Resources
100	ME08318-02	NC-140	Moran	Rootstock and Interstem Effects on Pome and Stone Fruit Trees
100	ME08319-02		Weber	Effect of culture conditions on the protein expression patterns and viability of bovine embryos
100	ME08321-02		Andries	Evaluation of Market Potential and Production Characters Related to Two Specialty Markets for Maine Livestock Producers.
100	ME08456		Campbell	Evolutionary Studies of Amelanchier (Shadbush), Picea (Spruce), and Betula papyrifera (White Birch)
100	ME08461-01		Lambert	Biology and control of soil and seed-borne diseases of potato
50	ME08462-03		Annis	Diversity and pathogenicity of fungal pathogens
100	ME08464		Drummond	Behavior and Ecology of Adult Blueberry Maggot Flies
100	ME08465-03		Schwintzer	Function of hemoglobin in culture and symbiosis
100	ME08466-01		Alyokhin	Interplant movement of potato-colonizing aphids and its role in within-field dispersal of potato virus Y
10	ME08468-02		Kinnison	Adaptive Trait Variation and Conservation of Maine Salmonid Fishes
100	ME08469	NCR-148	Alyokhin	Migration and dispersal of agriculturally important biota
100	ME08506-01		Alford	Deployment Strategies Using Multiple Semiochemicals in the Management of Insect Pests
50	ME08509		Van benden	Contaminant Effects in Early Life Stages of Finfish and Shellfish
80	ME08510		Rawson	Population and Quantitative Genetics of Commercially Cultured Marine Bivalves
100	ME08511-02		Kornfield	Molecular Forensics of Native and Introduced Wildlife Species
80	ME08512	WCC-099	Rawson	Broodstock management, genetics and breeding programs for molluscan shellfish
100	ME08552-02		Camire	Healthy Foods: Development and Evaluation
60	ME08556-03		Skonberg	Adding Value to Seafood By-products
100	ME08750-02		Nicholson	Molecular Diagnostics and Genetic Characterization of Fish Viruses
100	ME08753-02		Kim	Innate immune response to pathogens in the zebrafish, Danio rerio
100	ME08754-01		Singer	Integrated Vaccine Against Vibriosis and Aquatic Birnaviruses
100	ME08756-01		Rumpho	Development of a unique marine model system for studying factors limiting photosynthetic efficiency.
100	ME08758-02		Boettcher	Investigation and Management of Bacteria-related Mortalities of Cultured Oysters
50	ME08802		Porter	Refinement of Soil and Nutrient Management Systems for Potato Cropping Systems

100	ME08805-02	NE-1014	Porter	Development of New Potato Clones for Improved Pest Resistance, Marketability, and Sustainability in the East
80	ME08806-02		Yarborough	Weed Management in Wild Blueberries
75	ME08807	NE-187	Langille	Best Management Practices for Turf Systems in the Northeast
67	ME08816-02		Calhoun	Ecological Role of Small Wetlands in the Landscape
100	ME08817	NE-183	Moran	Multidisciplinary Evaluation of New Apple Cultivars
100	ME08824-00	NE-1000	Gallandt	Improved weed control through residue management and crop rotation
100	ME08825-02		Hutton	Evaluation of Vegetable Varieties and Improvements in Vegetable Crop Management for Maine
40	ME08826-03		Reberg-Horton	Transitioning to Sustainable Agriculture in Maine through Input Substitution and Increased Cover Crop Utilization.
10	ME08904	NRSP-3	Fernandez	The National Atmospheric Deposition Program (NADP)
70	ME08912-02		Porter	Crop Rotation, Soil Management, and Pest Management Systems for Potato.
100	ME0-hazen		Hazen	Enhancing the processing capacity, quality, value, and safety of Maine food producers, processors, and their products
100	ME0-reyes		De los Reyes	Potato breeding

Goal 2 A safe and secure food and fiber system

100	ME08102		Donahue	Technologies for Foodstuff Quality Assurance
100	ME08202		Smith	Technology Choices in the Maine Dairy and Potato Marketing Industries and Returns to Farming
20	ME08203-01		Leiby	Managerial Aspects of The Potato Industry
100	ME08217-02		Cheng	Demand and Market Analysis of Maine Seafood Products
65	ME08555-01		Bushway	Analytical Methods Development and Composition of Organic Minor Constituents in Food and Water
40	ME08556-03		Skonberg	Adding Value to Seafood By-products
10	ME08806-02		Yarborough	Weed Management in Wild Blueberries
100	ME08848	NE1018	Moran	Postharvest biology of fruits
100	ME0-wu		Wu	Rapid methods and application so natural ingredients for food safety and security

Goal 3 A healthy, well-nourished population

100	ME08550-01	NC-219	White	Using Stage Based Interventions to Increase Fruit and Vegetable Intake in Young Adults
100	ME08553-03		Klimis-Zacas	Manganese, arterial functional properties and metabolism as related to cardiovascular disease
15	ME08555-01		Bushway	Analytical Methods Development and Composition of Organic Minor Constituents in Food and Water
100	ME08559	NE-172	Cook	Nutritional Risk and Antioxidant Status in the Elderly
100	ME08561	W1002	Camire	Nutrient bioavailability--Phytonutrients and Beyond

Goal 4 Greater harmony between agriculture and the environment

100	ME08140-02		Reeve	Determining the sources of salt pollution in Maine ground water using isotopic and elemental characterization.
100	ME08201-01		Criner	Waste Management Systems Economics Analysis
10	ME08203-01		Leiby	Managerial Aspects of The Potato Industry
80	ME08206-02	W-133	Boyle	Benefits and Costs of Natural Resource Policies
100	ME08210-03		Wilson	Maine/New England Commercial Fisheries Management
50	ME08215		Dalton	Impact Assessment of Strategies to Increase Maine Competitiveness in Agriculture and Aquaculture
50	ME08216-02		Bell	Causes and Consequences of Land Use Change in Maine: An Economic Analysis of Land Conversion Decisions
70	ME08305-02		Smagula	Physiology and Culture of the Lowbush Blueberry
100	ME08451-02		Tavantzis	Sustainable strategies for managing Rhizoctonia solani in potato
100	ME08455		Cronan	Landscape Exports of Carbon and Nitrogen to Aquatic Ecosystems
100	ME08459-03		Vadas	Developing reseeding and remediation strategies for populations of Ascophyllum nodosum
50	ME08462-03		Annis	Diversity and pathogenicity of fungal pathogens
100	ME08467-02		Webster	Application of a landscape framework for evaluating the impacts of regional and local stressors on lakes in Maine
90	ME08468-02		Kinnison	Adaptive Trait Variation and Conservation of Maine Salmonid Fishes
50	ME08509		Van benden	Contaminant Effects in Early Life Stages of Finfish and Shellfish
20	ME08510		Rawson	Population and Quantitative Genetics of Commercially Cultured Marine Bivalves
20	ME08555-01		Bushway	Analytical Methods Development and Composition of Organic Minor Constituents in Food and Water
100	ME08660-01		Gilbert	Role of harbor and gray seals in the Gulf of Maine Ecosystem
100	ME08661-02		Rhymer	Fish hosts, population structure and landscape control of the distribution of two rare Atlantic slope freshwater mussels
100	ME08662		Servello	Population and Habitat Ecology of Terns in Maine

100	ME08801	S-301	Groden	Development, Evaluation and Safety of Entomopathogens for Control of Arthropod Pests
50	ME08802		Porter	Refinement of Soil and Nutrient Management Systems for Potato Cropping Systems
10	ME08806-02		Yarborough	Weed Management in Wild Blueberries
25	ME08807	NE-187	Langille	Best Management Practices for Turf Systems in the Northeast
100	ME08810	NCR-3	Osher	Soil Genesis, Morphology, Classification and Interpretation
100	ME08814-01		Erich	Effects of residue quality on rates of carbon mineralization and soil solution chemistry
33	ME08816-02		Calhoun	Ecological Role of Small Wetlands in the Landscape
100	ME08818		Ohno	Effects of Crop Residue, Manure, and Biosolids Amendment on Soil Phosphorus Chemistry and Bioavailability
100	ME08822	NCR-59	Osher	Soil Organic Matter and Soil Quality
100	ME08823		Sarrantonio	Crop Rotation, Residue Management and Soil Amendments for Enhanced Soil Quality and Sustainability
60	ME08826-03		Reberg-Horton	Transitioning to Sustainable Agriculture in Maine through Input Substitution and Increased Cover Crop Utilization.
90	ME08904	NRSP-3	Fernandez	The National Atmospheric Deposition Program (NADP)
30	ME08912-02		Porter	Crop Rotation, Soil Management, and Pest Management Systems for Potato.
100	ME0-mayer		Mayer	Environmental toxicology

Goal 5 Enhanced economic opportunity and quality of life for Americans

100	ME08205-03		Teisl	Consumer reactions to, and valuation of, changes in product quality
100	ME08214		Gabe	Employment Change and Industry Growth in Maine
50	ME08216-02		Bell	Causes and Consequences of Land Use Change in Maine: An Economic Analysis of Land Conversion Decisions