

**Massachusetts Agricultural
Experiment Station
&
UMASS Extension**

FY 2000 Annual Report

Executive Summary

The Massachusetts Agricultural Experiment Station at the University of Massachusetts in Amherst is reporting on 12 Multistate Research Projects, which have an integrated component to Extension. Nineteen projects are not reported on in this annual report due to the fact that they have not yet reached a degree of maturity and will be reported on in subsequent years. The stakeholder input on research projects “piggy-backs” with Extension and it is that Extension element that drives the research. Stakeholder issues include those elements such as land use, marketing and economic development use of chemicals, production and management technologies, labor, child and elder care, food safety, food sanitation, regulations and good manufacturing practices, poverty, hunger, agrochemicals, public knowledge and education, global markets and the environment, land vs. population, and children, youth and families at risk. Certainly, all of the projects address the needs of the under-served and under-represented populations of the State as well as those in all sectors of the Commonwealth population. In particular projects NE-185 and NC-223 targeted the under-served under-represented populations of the State.

Each National goal is represented by at least 1 or more Multistate Research Projects.

Goal 1. An agricultural system that is highly competitive in the global economy.

Total Dollars	FTEs	Integrated Projects
\$196,357.00	10.4	11

- Biological control of Chestnut Blight in commercial orchard setting. (NE140)
- Plant genomics of chestnut trees identifies molecular marker to distinguish species. (NE-140)
- Storage potential of new apple cultivars evaluated which is important for new niche markets. (NE-103)
- Recommend apple rootstocks that are fully dwarfing for areas with increased urbanization and reduction of agriculturally viable land maintaining profitability of our apple crop. (NC-140)
- Characterization of tomato genes to establish SI as an efficient means of hybrid seed

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- production. (NE-009)
- Identified a number of new apple varieties (Honeycrisp the best) to have fruit quality and storage potential to become a dominant apple grown in New England in the future. (NE-138)
- Asian farmers received technical information for growing vegetable crops for their markets in addition to preferences among Latinos for ‘aji dulce’ peppers. (NE-185)
- Feed rations balancing to beef and dairy cattle improves reproductive animal efficiency. (NE-161)

- Genetic improvement for the efficiency of genetic manipulations in primary cultures of bovine fibroblasts allowing better nuclear transplantation and cloning. NC-209

Goal 2. A safe and secure food and fiber system

Total Dollars	FTEs	Integrated Projects
\$120,885.00	3.0	4

- Analysis of domestic and international food systems, including prices and values to consumers and producers, its competitiveness whereby the decisions are made to the private and public sector. (NE-165)

Goal 3. A healthy, well-nourished population.

Total Dollars	FTEs	Integrated Projects
\$42,286.00	.6	2

- Nutritional assessment as it relates to antioxidant intake to promote consumer awareness regarding human nutrition and health care. (NE-172)
- Dietary antioxidants exist in both meat and cereal products and contribute to the total dietary antioxidant intake. (W-133)

Goal 4. Greater harmony between agriculture and the environment.

Total Dollars	FTEs	Integrated Projects
\$307,888.00	9.3	11

- Bioindicators for ozone were identified and the public made aware of plant injury by ozone. (NE-176)
- Assisted farmers on agricultural waste problems and better nutrient planning and utilization on farm nutrient sources. (NE-132)

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Goal 5.—Enhance economic opportunity and quality of life for Americans

Total Dollars	FTEs	Integrated Projects
\$30,778.00	1.1	3

- Documentation of welfare reform impacts on hunger and malnutrition in low-income families in Massachusetts. (NC-223)

Note: UMass Extension will provide a profile of expenditures when its' annual report for the state legislature is completed 2000 later this spring.

Planned Programs

Programs and Project Impacts Listed by Goal

Goal 1 - *An agricultural system that is highly competitive in the global economy*

Key Themes in Massachusetts:

<p>Adding Value to New and Old Agricultural Products Agricultural Competitiveness Agricultural Profitability Animal Genomics Animal Health Animal Production Efficiency Apiculture Aquaculture Biobased Products Biofuels Biotechnology Bioterrorism Diversified/Alternative Agriculture Emerging Infectious Diseases GIS/GPS Grazing Home Lawn and Gardening</p>	<p>Innovative Farming Techniques Invasive Species Managing Change in Agriculture New Uses for Agricultural Products Niche Market Organic Agriculture Ornamental/Green Agriculture Plant Genomics Plant Germplasm Plant Health Plant Production Efficiency Precision Agriculture Sustainable Agriculture Rangeland/Pasture Management Risk Management Small Farm Viability Tropical Agriculture Urban Gardening</p>
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NE-140 (Tattar, T., Mount, M. S., Bernatzky, R.) (MAS00066)

Department of Microbiology & Department of Plant & Soil Science

Therapeutic and preventative use of bacteria and fungi antagonistic to the chestnut blight pathogen provide biological protection to American chestnut trees in nursery, orchard and forest locations. This research will lead to a biological control of the chestnut blight disease and allow

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commercial nut culture and wood product production from 100% pure American chestnut trees. Tattar reported on survival of 300 American seedlings in orchard plantings in Massachusetts that have been protected with a bacterium which will add to the Agricultural Profitability of the species. Using **biotechnology** and **plant genomics** Bernatzky has looked at 20 to 25 molecular markers in Chinese, American, and hybrid chestnuts and found one that is a good candidate for distinguishing species. States involved: CTH, GA, KY, MA, MI, MN, NJ, NYC, TN, TX, VA, WV, USDA/SIFG

Source of Funding: Hatch

Long-Term Critical Issues.

NE-103 (Bramlage, W.) (MAS00517) Department of Plant & Soil Science

Storage potential of new apple cultivars was evaluated. Honeycrisp continues to show promise although it is subject to decay, pitter pit, and soft scald. A collaborative study with 4 other states did not identify the etiology of soft scald other than its linkage with late harvest. Late harvest also leads to an off-flavor in Honeycrisp. Arlet develops greasiness in storage. Golden Supreme can be a beautiful fruit but is subject to superficial scald. Shizuka is inferior to Mutsu (Crispin). Cameo has more flavor than Delicious but is less attractive. Florina appears to be a promising scab-resistant cultivar. These results are beneficial to farmers who want to grow niche cultivars of apple for local markets, and need to develop consumer demand by providing consistently high quality fruits and add value to new and old agricultural products. The results thus promote small farm viability thus increasing family farming by diverse ethnic groups. It is essential that reliable information on storage quality be known before initiating widespread planting of perennial crops like apple. Otherwise severe damage can be done to the grower through long-term investment in cultivars for which market demand cannot be created. Thus it is especially important for growers targeting local retail markets and increasing **agricultural profitability**. CA, DC, GA, MA, MD, MI, NC, NYC, NYG, OR, PA, WA, CANADA, USDA/ARS

Source of Funding: Hatch

Long-Term Critical Issues.

NC-140 (Autio, W., Greene, D., Cooley, D.) MAS00539 Department of Plant & Soil Science

Massachusetts's growers have planted nearly 80% of all new apple trees on rootstocks defined by these trials and those conducted previously as superior. One result has been a gradual increase in the quality of fruit produced. Further, all recommended rootstocks are fully dwarfing, resulting trees size less than one half of those planted in the 1970's and 1980's. These trees, therefore, require less than half of the pesticides required by the larger trees planted in 1970's and 1980's. Reduced tree size also results in more efficient harvest and tree training. With increased urbanization and reduction of agriculturally viable land, the necessity to manage change in agriculture to address situations such as this has been beneficial to maintain the **agricultural**

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profitability of our apple crop. IL, IN, IA, KS, MI, MN, MO, OH, SD, WI, AR, CA, CO, GA, KY, MA, MD, ME, NC, NJ, NYG, OR, PA, SC, TN, UT, VA, VT, WA, WV.

Source of Funding: Hatch

Long-Term Critical Issues.

NE-009 (Bernatzky, R.) MAS00647 Department of Plant & Soil Science

Characterization of the tomato genes may help to establish SI as an efficient means of hybrid seed production. This information will also be used to establish relationships between SI and wider breeding barriers in plants. The pepper project has led to **diversified/alternative agriculture** encouraging local growers to produce 'aji dulce' for fresh market, thus improving the nutritional opportunities for the Latino communities in Massachusetts adding value to new agricultural products. CTH, CTS, DE, ME, MD, MA, NH, NJ, NYG, NYC, PA, RI, VT, WV, USDA/ARS

Source of Funding: Hatch

Intermediate to Long-Term Critical Issues.

NE-183 (Greene, D. W., Autio, W. R., Cooley, D. R.) MAS00747

Department of Plant & Soil Science

This project was initiated in large part to help identify new apple varieties that are best suited for local markets. It requires over \$10,000. to plant an acre of apples and an additional 6 or 7 years of maintenance costs before an orchard comes into near full production. Therefore, growers must initially select varieties that have a high probability of being accepted by the public and that have yield and pest resistance characteristics to make growing these varieties more **agriculturally profitable**. Honeycrisp, Sansa, Ginger gold, Cameo, and Golden Supreme have been identified as varieties that have a high probability of succeeding in New England. Further, Honeycrisp appears to have the fruit quality and storage potential to become the dominant apple grown in New England in the future. AR, CTH, GA, MA, ME, MI, MO, NC, NH, NJ, NYC, NYG, OH, OR, PA, VA, VT, WA, WI, WV, PA/RODALE, WV (USDA), CANADA

Source of Funding: Hatch

Long-Term Critical Issues.

NE-185 (Mangan, F., Carter, A.) MAS00828 Department of Plant & Soil

Twenty-five non-Asian farmers were given information on new crops to be introduced into their markets and over 20 Asian farmers received technical information on production of crops for

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their markets. Knowledge was gained on the preferences of three Asian groups for vegetable crops and knowledge was gained about preferences among Latinos for aji dulce peppers. Issue addressed was **diversified/alternative agriculture**. CA, IA, KS, LA, ME, MI, MN, MO, NJ, NYC, NC, PA, PR, TX, WA, WV, WI

Source of Funding: Hatch

Intermediate to Long-Term Critical Issues.

NE-161 (Duby, R.) (MAS00620) Department of Veterinary & Animal Science

Fertility of the high producing dairy cow can be increased by feeding rations that favor fermentation of carbohydrates to acetic acid. Embryos collected from cows on these rations were more developmentally competent than those collected from cows fed highly fermentable carbohydrates that favored formation of the fatty acid, propionate. Propionate favors the formation of glucose, which at times in early embryonic development can be detrimental. Careful detail to ration balancing could decrease the length of time from calving to the next successful breeding by improving the quality and developmental competence of oocytes and embryos and offers beef and dairy cattle producers a simple method for improving reproductive **animal production efficiency**. CTS, ME, MA, NH, NY, OH, PA, WV

Source of Funding: Hatch

Intermediate to Long-Term Critical Issues.

NC-209 (Jerry, D. J.) (MAS00714) Department of Veterinary & Animal Science

Genetic improvement of dairy cattle using molecular markers has increased our knowledge in **animal genomics** and allowed us to be able to clone the entire bovine P53 gene and cDNA. The p21/WAF1 cDNA has been cloned as well. These are being used to demonstrate the feasibility of targeted mutations in primary bovine fibroblasts. This data will improve the efficiency of genetic manipulations in primary cultures of bovine fibroblasts and improve the efficiency of nuclear transplantation. IL, IA, MI, MN, OH, SD, WI, AZ, CA, MA, VA, USDA/ARS.

Source of Funding: Hatch

Long-Term Critical Issues.

Title of Program: Northeast Local Food School

Key Contact Person: Cathy Roth

Email: croth@umext.umass.edu

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Theme: Agricultural Profitability

Brief Description of Program or Activity: The Local Food School engages community groups in actively learning about and supporting local agriculture. Leaders of these groups chose to become Local food School “Fellows” who are trained to provide community leadership for direct marketing and greater local food consumption. Three key training areas were chosen based on ease of replication and proven effectiveness. These include: 1) building restaurant/farmer

partnerships, 2) establishing contracts directly between farmers and local public school food service managers, and 3) developing agricultural educational curriculums for K-12 classrooms.

Short Impact/Accomplishment Statement: Over 65 “Fellows” and leaders who represent 3000 community members from 10 northeast states have received training. In one Massachusetts county alone (Berkshire) participating farmers have increased net income by \$5,000 over a two-year period by participating in a restaurant/farmer partnership established by the community-based organization called Berkshire Grown. In the state of New York an entire school district is buying all its apples from local growers through the leadership of the community-based organization called NY Farms. The project is in its infancy, but has the potential to engage thousands of community leaders in organizing active support for local food and farms.

Source of Funding: State, Smith-Lever 3b&c, revenue based trust fund

FTE's: 1

Scope of Impact: Multistate Extension (MA, VT, NH, ME, RI, CT, NY, PA, NJ, DE, MD, WV, DC)

Title of Program: Understanding of the modes of action of plant hormones and plant growth regulators development.

Key Contact Person: Douglas Cox

Email: dcox@pssci.umass.edu

Theme: Plant Production Efficiency

Brief Description of Program or Activity: Non-traditional uses of chemical plant growth retardants were evaluated including late season applications of paclobutrazol drenches to poinsettia and application of paclobutrazol by subirrigation. The efficacy of these uses was tested because chemical plant growth retardant applications can be costly and are subject to many of the same restrictions as other agricultural chemicals.

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Short Impact/Accomplishment Statement: The results of the work have been disseminated through to growers through state newsletter articles and national trade publications.

Source of Funding: private industry grants

FTEs: 1

Scope of Impact: state specific

National Goal: 1[and 4]

Title of Program: Enhancing adoption of new apple cultivars in Massachusetts

Key Contact Person: Duane W. Greene

Email: dgreene@pssci.umass.edu

Theme: Agricultural profitability, plant germplasm, sustainable agriculture

Brief Description of Program or Activity: A number of apple cultivars have been under trial at the University of Massachusetts Horticultural Research Center for several years. The intent of this research has been to identify cultivars particularly suited to Massachusetts climatic conditions and to roadside-stand sales. Information and recommendations have been transmitted to fruit growers through educational programs, the periodical *Fruit Notes*, the newsletter *Healthy Fruit*, and the website *UMass Fruit Advisor*.

Short Impact/Accomplishment Statement:

- Approximately 60 acres of new apple cultivars were planted by commercial orchardists.
- New apple cultivars resulted in increase sales at roadside stands of 20%.

Source of Funding: Smith-Lever, RRF NE-183, Massachusetts Fruit Growers= Association

FTEs: 0.5

Scope of Impact: Multistate Integrated Research and Extension (MA, RI, CT, NY, VT, NH, ME)

National Goal: 1

Title of Program: Storage of Honeycrisp apples

Key Contact Person: Sarah Weis

Email: sweis@pssci.umass.edu

Theme: Agricultural profitability, plant germplasm, sustainable agriculture

Brief Description of Program or Activity: The most planted new apple cultivar in Massachusetts is Honeycrisp. It lasts better than virtually any other apple cultivar; however, quality can vary greatly depending upon harvest time and conditions of storage. Research is underway to determine best conditions for short- and long-term storage of Honeycrisp grown in Massachusetts. Information and recommendations will be transmitted to fruit growers through educational programs, the periodical *Fruit Notes*, the newsletter *Healthy Fruit*, and the website *UMass Fruit Advisor*.

Short Impact/Accomplishment Statement:

- Appropriate harvest time of Honeycrisp was identified to ensure optimal fruit quality after storage.
- Best storage conditions for Honeycrisp were identified.

Source of Funding: Smith-Lever, RRF NE-183, Massachusetts Fruit Growers= Association

FTEs: 0.2

Scope of Impact: Multistate Integrated Research and Extension (MA, RI, CT, NY, VT, NH, ME)

National Goal: 1 [and 4]

Title of Program: Enhancing adoption of new rootstock cultivars for fruit trees in Massachusetts

Key Contact Person: Wesley R. Autio

Email: autio@pssci.umass.edu

Theme: Agricultural profitability, plant germplasm, IPM, sustainable agriculture

Brief Description of Program or Activity: A number of apple and peach rootstocks have been under trial at the University of Massachusetts Horticultural Research Center and at a few commercial orchards for several years. Particular attention has been paid to rootstocks that provide a reduction in tree size, thus reducing labor required to prune and harvest and reducing the amount of pesticide needed per acre. Also, rootstocks have been selected that are well adapted to our weather conditions and are resistant to normal pest pressures. Information and

recommendations have been transmitted to fruit growers through educational programs, the periodical *Fruit Notes*, the newsletter *Healthy Fruit*, and the website *UMass Fruit Advisor*.

Short Impact/Accomplishment Statement:

- Approximately 150 acres of new dwarfing apple rootstocks were planted by commercial orchardists.
- Current year=s planting, and planting during the previous four years resulted in overall pesticide-use reduction of approximately 10%.
- Current year=s planting and planting during the previous four years resulted in approximately a 10% increase in profitability.

Source of Funding: Smith-Lever, RRF NC-140, Massachusetts Fruit Growers= Association
FTEs: 0.5

Scope of Impact: Multistate Integrated Research and Extension (MA, RI, CT, NY, VT, NH, ME)

Title of Program: Agroecology Program IPM Team

Key Contact Person: William M. Coli

Email: wcoli@umext.umass.edu

Theme: Integrated Pest Management (IPM)

Brief Description of Program or Activity: A major focus of Massachusetts IPM Projects is to develop effective devices for monitoring, and in some cases, controlling important insect pests.

Short Impact/Accomplishment Statement: Over the past 5 years, substantial progress has been

made to develop and deploy two traps that have the potential to dramatically affect apple IPM Programs in most of the major fruit-growing regions of North America. One trap, effective against the apple maggot fly (AMF), consists of a croquet-ball sized wooden sphere painted with red enamel latex paint containing insecticide and capped with a sugar block. The principal behind this trap, is that adult AMF are attracted to its shape, and to slowly-released apple odor volatiles used in conjunction with the visual stimulus. Upon landing, flies feed upon the sugar which drips onto the sphere from the slowly-dissolving block, and consequently ingest enough pesticide to cause death. This so-called “attract and kill” strategy results in complete elimination of any block-wide sprays of insecticide against this key summer pest.

The second trap, aimed at monitoring the Plum Curculio (PC), consists of a 3 foot tall black triangle (mimics a tree trunk) capped with a small wire cage. Curculios fly or crawl to the trap, climb upward on them, enter the wire cage, and are trapped there. Another variant of this trap is a black plastic tube (mimics a tree branch) also topped with the wire cage. With this trap, PC already in the tree, crawl upward on the branch mimic, enter the cage and are again trapped. This trap has the potential to both identify when PC , which over-winter as adults in woods outside of orchards, are migrating into orchards and, perhaps even more importantly, when they have stopped migrating inward. Knowing the latter means that growers can stop spraying for the pest sooner than they normally might.

Source of Funding: Smith-Lever 3d, State, Grant/Contract

FTEs: 2.0

Scope of Impact: Multistate Extension (Potential impact wherever Plum Curculio and Apple Maggot occur)

National Goal: 1 [and 4]

Title of Program: IPM in Butternut squash and pumpkin

Key Contact Person: Ruth Hazzard

Email: rhazzard@umext.umass.edu

Theme: IPM, Plant Health, Niche markets, new uses for agricultural products, agricultural profitability

Brief Description of Program or Activity: Squash and pumpkins are grown by approximately 500 farmers on 4,700 acres in Massachusetts and plays an important role on vegetable farms, providing a magnet for customers at roadside stands, a late season crop for fall income, and a

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storage crop that can be sold throughout the winter. Acreage in increasing for these crops and the importance of these crops in direct sales and niche markets has increased their value. A value-added product, peeled butternut, is sold throughout the winter and provides farm income during the off season.

The goal of this multi-year project of the Vegetable Team is to improve crop yield and quality of cucurbit crops, especially butternut squash and pumpkin, using through multiple IPM tactics. Program activities included the following: survey of grower practices and priority needs, evaluation of cultural practices, development of a threshold for pre-side dress nitrate test,

demonstration trials with cooperating farmers, disease surveys on cooperating farms, evaluation of spray schedules for disease management in stored butternut squash, identification of the cause of new disease symptoms in pumpkin and butternut and development of strategies, publication of fact sheets, newsletters, and web-based information, and educational programs in winter meetings and on farms. Fact sheets on insect, disease, deer, and weed management were published and distributed to 300 growers. Timely alerts on insect and disease conditions and management were published weekly throughout the growing season to 300 growers.

Short Impact/Accomplishment Statement:

In 1999 and 2000, disease surveys and diagnostic testing determined *Erwinia tracheiphila*, the bacterial wilt pathogen to be the primary cause of new wilt disease symptoms in pumpkin and butternut. Thresholds were adjusted to reduce the disease by controlling the vector (striped cucumber beetles). 400 growers received training and 30 growers reported achieving better control and testing new techniques for control.

Field trials determined that there was no increase in butternut squash yield when side-dressed nitrogen was added if the nitrate-N level was above 30 ppm. 40 growers used the PSNT to adjust sidedressed N, resulting in lower nitrogen use with no reduction in yield.

Research trials with butternut squash and calabaza demonstrated an increase in yield of 30% using transplants instead of direct-seeded crops, 15% using black plastic, and 10% using floating row cover. These cultural practices also improved earliness. 300 growers received information about these results and 50 incorporated one of these methods into their production practices resulting in improved yields.

Research trials on spray schedules and thresholds for fungicides for control of powdery mildew showed that transplanted squash is more likely to resist infection with black rot compared to direct-seeded squash, and it required more sprays to protect direct-seeded squash, although treatment differences were mitigated during long-term storage at 55 °F. 120 growers received information on the results of this trial.

Grower surveys identified deer damage as a significant cause of crop loss in butternut and pumpkins. A fact sheet on preventing deer damage, with designs for cost-effective electric

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fencing, was published and distributed to 350 growers. Fencing was demonstrated to 120 growers at on-farm meetings. Approximately 30 growers adopted fencing and reduced crop loss as a result.

Cucurbit crops on 30 cooperating farms were scouted over 5 seasons, and farmers received recommendations on management practices and timing. Growers reported better timing of sprays and cultivation, better control of bacterial wilt and other diseases, improved crop growth from sidedressed nitrogen when needed, better understanding of diseases, and better harvest quality as a result of better timing.

Ten major and two minor diseases were identified in statewide surveys, including two diseases new to Massachusetts.

Recipients of newsletter reported better understanding of diseases, use of appropriate disease control measures, timeliness of management tactics, use of new technologies, weed control measures, and alerts to scout for certain pests.

Source of Funding: State IPM , Smith-Lever 3b&c, industry grants

FTEs: 3.5

Scope of Impact: Multi-state Integrated Research and Extension (MA, ME, VT, NH, CT)

Title of Program: Agricultural Land Preservation

Key Contact Person: Daniel Cooley

Email: dcooley@microbio.umass.edu

Theme: Agricultural Communications

Brief Description of Program or Activity: A project was designed to increase public understanding of the value of agricultural land to a community. The pilot was run in Amherst, MA, a town with an agricultural land zoning law designed to preserve the best farmland in a parcel slated for development. A team of Extension and Massachusetts Department of Food and Agriculture, and USDA NQCS personnel contributed to the effort.

Short Impact/Accomplishment Statement:

- A brochure containing general information and contacts was produced and has been distributed to communities around the state.
- Team of federal, state and university professionals formed to work with communities on agricultural land preservation.
- Plan for pilot site modified to reduce impact on best agricultural land.

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Source of Funding: Smith-Lever 3d/In kind state and federal

FTEs: 3.0

Scope of Impact: State specific

Goal 2 - *A safe and secure food and fiber system*

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Key Themes in Massachusetts:

Food Accessibility and Affordability Food Handling Food Quality Food Recovery/Gleaning Food Resource Management	Food Safety Food Security Foodborne Illness Foodborne Pathogen Protection HACCP
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NE-165 (Caswell, J., Rogers, R., Lavoie, N) MAS00625

Department of Resource Economics

This project provides current analysis of the performance of the domestic and international food system. It analyzes how the system operates domestically, the prices and values it offers to consumers and producers, its competitiveness in international markets, and its ability to assure food quality, particularly **food safety**, food security and nutrition. The results of this project are used in decision making by the private and public sectors. AR, CA, CTS, FL, GA, IL, IN, IA, KS, LA, MD, MA, MI, MN, MT, NE, NH, NJ, NYC, NC, OH, RI, TX, VA, WI, USDA/ERS, USDA/RBS, USDA/AMS, USDA/PSA, CDCP, FDA, GAO

Source of Funding: Hatch

Short-Term Critical Issues.

Key Themes – Food Safety, Food borne Illness, HACCP, Food Handling

Program: Food Safety Education Program for Food Workers and Consumers

Key Contact Person: Rita Brennan Olson, ritabo@nutrition.umass.edu

Brief Description: UMass Extension NEP promotes and conducts food safety education for regulators and professional and nonprofessional staff who serve vulnerable populations. Participants increase knowledge of key food safety principles and improve food-handling practices.

Impacts/Accomplishments: In FY=00:

A. 775 human service professional, food workers and volunteers attended 52 Food Handling is a Risky Business and Cooking, Cooling, Contamination & Kids workshops in collaboration with state and local educational agencies, elder and child care providers, and emergency food networks.

70% of participants increased knowledge of safe food practices: wash hands, thaw, cook, cool and store foods safely, and clean and sanitize utensils and equipment properly.

68% of participants planned to change food practices to prevent FBI (Food Borne Illness).

71% indicated they plan to improve food storage practices.

66% indicated they plan to improve practices such as hand washing

61% indicated they plan to improve thawing practices

B. 732 food workers and regulators serving high-risk populations attended 24 12- hour ServSafe courses held in 6 regions across the state:

87% of participants achieved a passing score (75) and obtained nationally recognized food sanitation certification with National Restaurant Association.

50% of participants indicated they plan to change food practices such as setting up flowcharts, checking temperatures, setting up record keeping systems and training staff in safety procedures.

C. UMass Extension has continued to make food safety education materials available to

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professionals, and educators through a Directory of Food Safety Education materials, USDA/CES, MA Department of Education, the MA Department of Public Health and other national publications such as the Food Protection Report. Information about Food Safety Education programs and resources is maintained and made accessible through the UMass Extension web page.

UMass Extension continues to provide leadership and coordination of food safety education efforts in the Commonwealth through the Massachusetts Partnership for Food Safety Education (MPFSE) enhancing outreach efforts by collaborating with health, education, human service,

child and elder care agencies and organizations to promote training and resources for over 100,000 regulators, food service personnel and consumers.

Six MPFSE meetings were held.

Over 400 hours of volunteer time were contributed from collaborating agency staff:

Partnership activities were promoted to over 300 professionals attending the New England Conference on Food Protection and the Society for Nutrition Education Annual Meeting.

Partnership food safety education materials were distributed to over 5,000 food workers at the Northeast Foodservice & Lodging Exposition & Conference. Safe food handling brochures (Key Food Safety Principles for Food Workers, Keeping Your Food Safe If the Power Goes Out, and Keeping Your Family Fed If the Power Goes Out) were developed and 10,000 were distributed through Partnership agencies, food banks, retail food establishments and local news outlets.

Source of funding: Smith Lever 3b & c – FSQ Initiative
Grant/Contract – Nat'l Assoc of Food and Drug Officials
County

Revenue Based

FTE's: 3.0

Scope of Impact: State Specific (Massachusetts only)

Program Title: Food Safety Education Program for Food Producers and Processors

Key Contact Person: Rita Brennan Olson, ritabo@nutrition.umass.edu

Brief Description: UMass Extension continues to promote and deliver accurate and timely information, education, and resources through collaboration of state and federal agencies and associations representing workers and consumers from farm to table.

Impacts/Accomplishments:

A. Food safety education resources are made available through The New England Small Food Processors Project and HACCP Resource Center and Lending Library.

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B. The UMass Extension Food Safety Team (UMEFST - consisting of representatives from Food Science, Plant and Soil Sciences and IPM) and the NE Food Safety Education Team successfully submitted proposals for two food safety education projects which will assess status of Food Safety issues in Massachusetts producer and processing communities and maximize resources in response to regional food safety issues.

NE Directors Planning Grant (\$1000) - as a result of this grant a strategic plan was developed for the region to address three major food safety issues: Emerging Pathogens, Sanitation and New Technologies.

Using Good Agricultural Practices for Small Farm Production (\$471,000) a New England-wide research, teaching and Extension project is designed to improve food safety knowledge and practices of small farms producing fruits and vegetables. Massachusetts will survey growers on food safety knowledge, attitudes and practices, participating microbial testing of products and developing and implementing an educational program for growers

Source of funding: Smith Lever 3 b & c, FSQ Initiative

FTEs: .5

Scope of Impact: Multistate Integrated Research and Extension (MA, ME, CT, RI, NH, VT)

Goal 3 - *A healthy, well-nourished population*

Key themes in Massachusetts:

Birth Weight
Health Care
Human Health
Human Nutrition
Infant Mortality
Medicinal Plants
Nutricueticals

NE-172 (Cohen, N. L., Laus, M. J.) MAS00663 Nutrition

MA researchers continue to explore methods to improve nutritional assessment and the relationships between dietary intake, in particular the antioxidant intakes contributed by fruit and vegetable consumption, and other health parameters. These results are being used to promote increased consumer awareness regarding **human nutrition** and **health care**, promote healthy eating styles, and develop nutrition education programs. CTS, DC, ME, MD, MA, NH

Source of Funding: Hatch

Long-Term Critical Issues.

W-133 (Clydesdale, F., Decker, E.) MAS00762 Department of Food Science

The results of this research generate information on dietary antioxidants. Dietary antioxidants are linked to the prevention of **health care** diseases such as atherosclerosis, cancer and aging. This research has shown that dietary antioxidants exist in both meat and cereal products. These antioxidants exhibit significant activity at concentrations found in a single serving of these products. Results suggest that both cereals and meat products could contribute to our total dietary antioxidant intake. CA-B, CA-D, CO, CT, GA, IA, MA, ME, MI, MN, MT, NM, NV, NY, OH, OR, TN, UT, WA, WV, WY.

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Source of Funding: Hatch

Long-Term Critical Issues.

Key Theme – Human Nutrition

Program: Expanded Food and Nutrition Education Program (EFNEP) - Adult

Key Contact Person: Lisa Sullivan-Werner, lwerner@umext.umass.edu

Brief Description: EFNEP paraprofessional educators provide nutrition education to limited resource families with young children. EFNEP participants gain knowledge and skills to plan low cost nutritious meals, prepare food safely, and manage available food resources.

Impacts/Accomplishments: In FY '00 1,853 families participated in EFNEP and 912 (49%) completed (graduated from) the program. Almost all participants (98%) were reached through group education methods. Impacts noted on entry and exit Food Recalls and Food Behavior Checklists include:

- 91% of participants made a positive change in consumption of at least one food group at exit from the program
- 83% of homemakers showed improvement in at least one food resource management practice
- 90% of participants showed improvement in at least one nutrition practice
- 63% of participants showed improvement in at least one food safety practice

Source of funding: Smith Lever 3d

FTEs: 11.3

Scope of Impact: State Specific (Massachusetts only)

Program Title: Expanded Food and Nutrition Education Program (EFNEP) - Youth

Key Contact Person: Lisa Sullivan-Werner, lwerner@umext.umass.edu

Brief Description: EFNEP paraprofessional educators provide nutrition education to youth from limited resource families to encourage healthy food choices and behaviors.

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Impacts/Accomplishments: In FY '00 1,378 youth participated in EFNEP. Thirty-eight percent were between 6-8 years old and 49% were between 9-12 years old. After participating in EFNEP:

- 50% of youth increased their knowledge of human nutrition
- 57% of youth increased their ability to select low-cost, nutritious foods
- 37% of youth improved practices in food preparation and safety

Source of funding: Smith Lever 3d

FTEs: 3.2

Scope of Impact: State Specific (Massachusetts only)

Program: Family Nutrition Program (FNP) - Youth

Key Contact Person: Lisa Sullivan-Werner, lwerner@umext.umass.edu

Brief Description: FNP provides nutrition education to youth from families receiving or eligible for food stamps. Nutrition education activities that encourage and build skills for healthy food choices are provided through school, after-school, and recreation programs.

Impacts/Accomplishments: In FY '00, 77,006 youth contacts were made, reaching an estimated 24,350 individual youth. Pre and post surveys with youth indicate that after participating in FNP the youth:

- Were more willing to try new foods
- Were more likely to try vegetables
- Were eating a greater amount of fruit
- Were more likely to try to choose healthy snacks
- Were bringing healthier foods to school for snacks

Parent and teacher surveys confirmed that youth were more willing to try new foods after participating in FNP.

Source of funding: Grant/Contract (Food Stamp Nutrition Education Program – USDA funding through a contract with Massachusetts Department of Transitional Assistance)

FTEs: 15.22

Scope of Impact: State Specific (Massachusetts only)

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Program: Family Nutrition Program (FNP) - Adult

Key Contact Person: Lisa Sullivan-Werner, lwerner@umext.umass.edu

Brief Description: FNP provides nutrition education to adults receiving or eligible for food stamps. Nutrition education activities that provide information and build skills to improve

dietary quality and food behavior practices are provided through group lessons and workshops at a variety of community agencies.

Impacts/Accomplishments: In FY '00, 42,813 contacts were made, reaching an estimated 21,046 individual adults. Workshop participants who completed a post program survey indicated that:

- 73% planned to improve their diet
- 64% planned to increase the variety of foods eaten
- 61% planned to eat more foods from the grain group
- 75% planned to eat more fruits and vegetables
- 62% planned to eat more foods from the dairy group
- 69% planned to eat more foods from the meat/protein group
- 65% planned to eat fewer foods high in fats, oils, and sugars.

Source of funding: Grant/Contract (Food Stamp Nutrition Education Program – USDA funding through a contract with Massachusetts Department of Transitional Assistance)

FTEs: 5.22

Scope of Impact: State Specific (Massachusetts only)

Program: Family Nutrition Program (FNP) – Asian Crops Farmers Market Project

Key Contact Person: Lisa Sullivan-Werner, lwerner@umext.umass.edu

Brief Description: This special project promoted the availability and use of locally grown Asian vegetables available at Farmers' Markets serving low-income populations in the Boston area. Project staff provided support to growers at Farmers' Markets about Asian vegetables and conducted nutrition education activities (food demonstration and recipe distribution) to promote consumption of these vegetables.

Impacts/Accomplishments: Project staff conducting displays and food demonstrations at

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Farmers' Market sites reached 2,375 adults and 256 youth (note: these contacts are also reported above as FNP youth or adult program contacts).

Source of funding: Grant/Contract (Food Stamp Nutrition Education Program – USDA funding through a contract with Massachusetts Department of Transitional Assistance)

FTEs: .75

Scope of Impact: State Specific (Massachusetts only)

Program: Family Nutrition Program (FNP) – Food Pantry Project

Key Contact Person: Lisa Sullivan-Werner, lwerner@umext.umass.edu

Brief Description: This special project assessed nutritional needs and risks of food pantry and Brown Bag for Elders recipients in Western Massachusetts and provided education appropriate to meet those needs.

Impacts/Accomplishments: One hundred thirty-four food pantry participants were randomly selected and interviewed to determine dietary intake and to assess food security issues. Intakes of energy, fiber, calcium and folacin fell below those recommended for both men and women. Additionally, intake of vitamin A was low for women. Fifty-four percent of the participants reported being food insecure or food insecure with hunger. Three fact sheets targeting dairy foods, fruits, and grains were developed and distributed to 8,400 food pantry participants (note: this number is also recorded in the FNP Adult program). This project is continuing next year with curriculum development and training.

Source of funding: Grant/Contract (Food Stamp Nutrition Education Program – USDA funding through a contract with Massachusetts Department of Transitional Assistance)

FTEs: 1.15

Scope of Impact: State Specific (Massachusetts only)

Family Nutrition Program (FNP) – Supplement Use in High School Students

Key Contact Person: Lisa Sullivan-Werner, lwerner@umext.umass.edu

Brief Description: This special project assessed the level of nutrition supplement knowledge and the extent of nutrition supplement use in low-income high school students and then developed nutrition education programming appropriate to the needs identified.

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Impacts/Accomplishments: Thirty-nine high school students in a low-income school reported taking the following supplements:

- 40.3% reported taking a vitamin C
- 26.7% reported taking an iron supplement
- 23.5% reported taking a calcium supplement
- 19.4% reported taking a fluid replacement solution such as Gatorade

- 14.9% reported taking a multivitamin
- 13.6% reported taking a protein supplement
- less than 5% reported taking supplements for vitamin A, B-complex, vitamin E, carbohydrates, amino acids, or herbal supplements

Twenty-two students (experimental group) participated in a 5 week nutrition education program (note: these contacts are also reported in FNP – Youth). The remaining 17 students (control group) did not participate in the nutrition education. Supplement knowledge scores (possible score of 28) of the students participating in the nutrition education significantly improved (pretest mean = 6.18, posttest mean = 15.27) compared to the students not participating in the nutrition education (pretest mean = 9.41, posttest mean = 9.12).

Source of funding: Grant/Contract (Food Stamp Nutrition Education Program – USDA funding through a contract with Massachusetts Department of Transitional Assistance)

FTEs: 1.0

Scope of Impact: State Specific (Massachusetts only)

Nutrition and Health Education Programs

Key Contact Person: Rita Brennan Olson,
ritabo@nutrition.umass.edu

Brief Description: Nutrition and Health Programs provide nutrition education and training to educators, caregivers and agency staff. Through traditional workshops and distance learning opportunities such as home study courses and videoconferences, program participants increase knowledge and improve food practices relating to the U.S. Dietary Guidelines of target groups include child and elder care providers and other agency staff who work with children, youth and elderly. NEP collaborates with state education, public health and human service agencies for program promotion.

Impacts/Accomplishments: In FY' 00:

Learn-at-Home courses, Nutrition for Young Children, and Fit in Five providing 5-10 continuing education credits were offered to family day care providers.

145 family day care providers, educators and parents of young children participated in home study courses Nutrition for Young Children and Fit in 5.

86% planned to read food labels more often;

83% planned to change meals served to children to increase whole grains

76% planned to increase vegetables and iron-rich foods;

63% planned to lower the fat -rich foods served to children.

(Revisions of the course Nutrition for Young Children were begun to reflect new Dietary Guidelines for Americans)

Three regional conferences and videoconferences on current nutrition issues were offered to over 140 allied professionals increasing their knowledge about nutrition issues affecting children. These conferences were sponsored in cooperation with the MA Dept. of Public Health, the MA Department of Education and the MA Dietetic Association.

2 videoconferences on "Complementary and Alternative Nutrition in Pediatrics" and "How Nutrition Affects Cognition"

1 regional conference "Current Issues in Working with Special Health Care Needs - Birth to 3 and Beyond"

Two editions of the "Nutrition News and Reviews" newsletter provided easy-to-read articles on timely nutrition topics to agencies serving high risk groups. Reproducible fact sheets and information on NEP programs and resources are included in each issue. Over 3000 agencies

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received the newsletters focusing on "Helping Children Maintain a Healthy Weight" and the changes in the US Dietary Guidelines and disseminated the nutrition information to approximately 100,000 elderly, children and adults.

650 child and elder care givers and consumers participated in ten programs on the Food Guide Pyramid, the US Dietary Guidelines and osteoporosis.

Source of funding: Smith Lever 3b & c

County
Revenue based

FTEs: 1

Scope of Impact: State specific (Massachusetts only)

Goal 4 - *Greater harmony between agriculture and the environment*

Key Themes in Massachusetts:

<p>Agricultural Waste Management Air Quality Biodiversity Biological Control Drought Prevention and Mitigation Endangered Species Energy Conservation Forest Crops Forest Resource Management Global Change and Climate Change Hazardous Materials Integrated Pest Management Land Use Natural Resources Management</p>	<p>Nutrient Management Permaculture Land Management Pesticide Application Recycling Riparian Management Soil Erosion Soil Quality Sustainable Agriculture Water Quality Weather and Climate Wetlands Restoration and Protection Wildfire Science and Management Wildlife Management Yard Waste/Composting</p>
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NE-176 (Manning, W. J.) **MAS00686 Microbiology**

Our results are fundamental to understanding factors that affect O₃ uptake and plant injury. This has direct bearing on **air quality** standards for plants and people. We are also identifying new bioindicators for O₃ that will increase public awareness of the O₃ problem. AL, MD, MA, MN, NJ, NYC, PA, TX, VA, BTI, USEPA, USDA-ARS

Source of Funding: Hatch

Long-term Critical Issues.

NE-132 (Herbert, S.) **MAS00763 Plant & Soil**

Farmsoft is an **agricultural waste management** program that we developed to assist farmers with better nutrient planning and utilization of on farm nutrient sources. This program contains a site vulnerability index to show the appropriateness of applying additional nutrients to fields. IL, IN, MD, MA, MI, NJ, NYC, PA, UT, WA, WI, WV, USDA/ARS

Source of Funding: Hatch

Long-Term Critical Issues

Title of Program: Narragansett Bay

Key Contact Person: Scott Jackson

Email: sjackson@umext.umass.edu

Theme: Water Quality, Land Use, Natural Resources Mgmt, Biodiversity

Brief Description of Program or Activity: The primary objective of this project is to develop a watershed model and outreach plan that can be used as a prototype for technical assistance in other watersheds. The process of developing a sustainable watershed plan requires integration of socioeconomic, ecological, biophysical and historic information to develop land use decisions aimed at long-term sustainability. This project will also demonstrate the utility of a Geographic Information System (GIS) in planning for watershed management by illustrating the interaction of multiple resources and objectives. The database management and analytical capabilities of GIS make it a useful tool for projecting long range growth, habitat loss and potential pollution loading, while its mapping capabilities make it an effective tool for sharing information with local officials and stakeholders

Short Impact/Accomplishment Statement

- Approximately 500 square feet per year of wetland impacts avoided in the town of Mendon due to narrower roads & shared driveways
- 20 volunteer biomonitors collecting data to assess and monitor watershed health
- 4 stream teams and volunteer monitoring groups collecting data on watershed health
- 25 municipal officials reported increased knowledge and confidence in fulfilling their regulatory and administrative responsibilities
- 5 educators engaged in environmental action projects and community-based learning
- Over 400 youth report or demonstrate gains in knowledge and skills

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Source of Funding: Smith-Lever 3d Grant/Contract

FTEs: 1.2

Scope of Impact: State Specific (MA only) Integrated Research and Extension

Title of Program: MA Watershed Initiative

Key Contact Person: Scott Jackson

Email: sjackson@umext.umass.edu

Theme: Water Quality, Natural Resources Mgmt, Biodiversity, Land Use

Brief Description of Program or Activity: Although recognized nationally as a model for watershed innovation, the MA Watershed Initiative (MWI) is still in its formative stages. Critical to the success of the Initiative will be strategies to raise watershed awareness, promote community involvement in resource protection and enhance capacity at the local level to understand and address environmental issues.

Short Impact/Accomplishment Statement:

- Draft MA Watershed Initiative Outreach and Marketing Strategy
- 28 versions of a MWI brochure
- New black-and-white and color MWI logo
- Draft MWI slide show and script
- Baseline water quality data in the Chicopee River watershed
- 120 people attended a watershed conference
- Watershed Information Web Site maintained
- Draft section on “habitat and biodiversity protection” for EO418 Supplemental Guidance document

Source of Funding: Smith-Lever 3 b&c, Smith-Lever 3d, State Grant/Contract

FTEs: 0.5

Scope of Impact: State Specific (MA only), Integrated Research and Extension

Title of Program: Wetlands Biomonitoring

Key Contact Person: Scott Jackson

Email: sjackson@umext.umass.edu

Theme: Water Quality, Natural Resources Mgmt, Biodiversity, Land Use

Brief Description of Program or Activity: NREC is part of concerted effort to develop a transferable approach for assessing wetland quality and ecological health. Based on scientific research, training materials and programs are being developed to promote citizen participation in wetland health assessment to assist in wetland conservation and impact mitigation. NREC with

the cooperation of numerous partners has been involved in conducting research and developing biomonitoring protocols for both freshwater wetlands and salt marshes. Workshops and training materials are being developed to provide the necessary training to a wide variety of audiences to ensure that data collected by volunteers is scientifically sound and acceptable to planning authorities.

Short Impact/Accomplishment Statement:

- Estuarine Salt Marsh Invertebrate Biomonitoring Manual ready for publication
- 6 series of workshops on the integrated assessment of salt marshes
- 46 volunteers training in salt marsh bioassessment
- 35 volunteers collecting data on salt marsh conditions
- Bioassessment data on the condition of three salt marshes

Source of Funding: Smith-Lever 3 b&c, Smith-Lever 3d, Grant/Contract

FTEs: 0.8

Scope of Impact: State Specific (MA only)

Title of Program: Mill River Project

Key Contact Person: Scott Jackson

Email: sjackson@umext.umass.edu

Theme: Water Quality, Natural Resources Mgmt, Biodiversity, Land Use, Wildlife Mgmt, Riparian Mgmt

Brief Description of Program or Activity: This project is piloting an approach to community-based watershed protection in the Mill River watershed, a sub-basin of the Connecticut River watershed. The Mill River Watershed Project is an effort to identify and address environmental issues within five communities (Hatfield, Whately, Deerfield, Conway, and Northampton). The project involves working with municipal boards, conducting a variety of watershed assessments,

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targeted outreach, involving teachers from local schools in environmental education, and convening stream teams and a watershed council to facilitate public participation. This project is funded, in part, by the Silvio O. Conte National Fish and Wildlife Refuge and the MA Executive Office of Environmental Affairs.

Short Impact/Accomplishment Statement:

- A database of over 300 residents in the watershed
- A “Stream Team” is involved in on going watershed assessment

- A stream bank erosion project restoring 200 feet of stream bank using bio-engineering techniques
- Four communities worked with UMASS Extension to develop a grant proposal that would have them working together on a regional open space plan and incorporating information from environmental assessments into town master plans
- ●Field walks, a newsletter and numerous articles in local papers have significantly increase awareness of the watershed, environmental issues within the watershed, and the Mill River Watershed Project
- ●A group of individuals from Whately, Hatfield, Conway, and Northampton, including the Broad Brook Coalition, have formed an informal organization to protect large blocks of land that span town boundaries in the watershed and connect existing protected parcels
- A 20-acre block of forest land, which is contiguous to other protected land, is being protected as open space through a bargain sale (sale pending)
- A coalition of organizations and agencies committed to seek funding for needed assessments and the development of a conservation plan for the Mill River

Source of Funding: Smith-Lever 3 b&c, Smith-Lever 3d, State, Grant/Contract

FTEs: 1.2

Scope of Impact: State Specific (MA only), Integrated Research and Extension

Title of Program: Water Resource Protection on Martha's Vineyard

Key Contact Person: Scott Jackson

Email: sjackson@umext.umass.edu

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Theme: Water Quality, Land Use, Nat Resources Mgt

Brief Description of Program or Activity: NREC staff work with towns to initiate zoning changes and other protective measures based on information gained from environmental monitoring and nitrogen loading analyses for water bodies on Martha's Vineyard. NREC also provides training and technical assistance for the Wampanoag tribe on topics of natural resource conservation. Under contract with the Martha's Vineyard Commission (MVC), NREC provides

regulatory review of development proposals and advice and technical assistance on land use planning issues.

Short Impact/Accomplishment Statement:

- Water quality data for 4 salt ponds, 6 freshwater ponds, and 6 streams
- Trained new shellfish biologist for Wampanoag Tribe and jointly sampled 2 coastal ponds
- Tide level data for two coastal ponds as part of water quality assessments
- Data on water table elevations from 12 groundwater monitoring wells
- Nitrogen loading studies for 2 coastal ponds
- Town of Edgartown assisted with implementation of golf course BMPs to protect water quality
- 86 municipal officials, lake associations, and landowners were informed about water quality conditions and concerns, and management options for protecting lakes, ponds and groundwater

Source of Funding: Smith-Lever 3 b&c, Smith-Lever 3d, Grants/Contracts

FTEs: 0.65

Scope of Impact: State Specific (MA only)

Title of Program: Hazardous Material and Water Quality Education

Key Contact Person: Marilyn Lopes

Email: mlopes@umext.umass.edu

Theme: Hazardous Materials, Water Quality

Brief Description of Program or Activity: This program increases consumer knowledge and

understanding of groundwater as a resource and the effects of solid and hazardous material disposal to water quality issues. The Barnstable County Hazardous Materials Program and Hazardous Hot Line offers technical assistance and educational support to town household hazardous waste coordinators for household hazardous waste collections and the implementation of permanent collection programs for recyclable hazardous materials. Staff specialists also provide the public easy access to up-to-date information on the proper disposal of household hazardous materials on Cape Cod. Questions answered include what is hazardous waste, how to package hazardous waste for disposal, where and when these items may be safely disposed and how to reduce the use of hazardous materials in homes and businesses.

Short Impact/Accomplishment Statement:

- Participation in hazardous materials collection by a 4-town collaborative increased by 32% over 1999 collections and the cost of disposal for the collected materials decreased by 41% from 1999 collections
- Data collected at HHW collection events during 1999 and 2000 indicates that more than sixty percent of the participants are first-timers—people who have never brought hazardous materials to any collection
- A seven-fold increase in Very Small Quantity Generators (VSQG) participation at hazardous products collections
- Seven hundred callers to the Barnstable County Hazardous Materials Program and Hazardous Materials
- Hot Line received up-to-date information on the proper disposal of hazardous materials on Cape Cod
- Eight towns increased household hazardous waste recycling options
- Six town employees adopted BMPs for household hazardous waste
- An estimated 3000 consumers adopted BMPs for household hazardous waste
- 30,000 gallons of household hazardous waste were collected and diverted from the waste stream
- Five municipal officials reported increased knowledge and confidence in fulfilling their regulatory and administrative responsibilities
- Ten educators engaged in environmental action projects and community-based learning

Source of Funding: Smith-Lever 3 b&c, County

FTEs: 0.85

Scope of Impact: State Specific (MA only)

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Title of Program: Recycling Education

Key Contact Person: Marilyn Lopes

Email: mlopes@umext.umass.edu

Theme: Recycling, Water Quality

Brief Description of Program or Activity: The Cape Cod Recycling Education Program was initiated to increase recycling education in schools and in the general community. Along with

the teacher guides developed with the MA State Frameworks for Science and Technology interwoven into its makeup, the program has expanded its outreach to nearly every town on Cape Cod. In addition to producing teaching materials, posters, brochures and resource kits for students, the program has developed teacher and volunteer training, in-school/class educational outreach through puppet shows and various recycling education presentations for teachers and their students.

Short Impact/Accomplishment Statement:

- The Town of Harwich will save approximately \$150,000 per year in disposal fees for seaweed
- Six Mid-Cape towns will save approximately \$60,000 per year in fees for shredding yard waste
- Ten towns participated in the third annual America Recycles Day
- 40 teachers, science educators and community volunteers participated in 5 workshops. Over 2,350 students benefited.
- 2,655 students and 122 teachers in 20 schools participated in recycling education activities.
- 700 children and their families participated in recycling education activities at 5 nature/science center, Land Trust, and Earth Day festivals. 150 children and their families participated in recycling education activities through the “Trouble in Away” puppet show at 4 library presentations.
- 12 schools, nature/science centers and municipalities have started recycling programs.
- 7 AmeriCorp Cape Cod volunteers were trained in recycling education puppetry and reached over 2000 people in the course of 7 months time. As a result of their training, they were able to rewrite the “Trouble in Away” puppet show script and produced a more “user-friendly” puppet show stage. It is with great appreciation that we acknowledge their help in this particular project

Source of Funding: Smith-Lever 3 b&c, County

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FTEs: 0.65

Scope of Impact: State Specific (MA only)

Title of Program: Mass Bays Education Alliance

Key Contact Person: Faith Burbank

Email: fburbank@umext.umass.edu

Theme: Water Quality, Natural Resources Mgmt, Biodiversity, Land Use, Wildlife Mgmt, Riparian Mgmt

Brief Description of Program or Activity: The Alliance’s mission is to develop a community of educators and public who can ably teach and promote strategies for responsible stewardship practices/projects that protect and restore the Massachusetts bays, shores, and watersheds in concert with the CCMP. The Alliance’s long term goal is to institutionalize, write into school curriculums, watershed and coastal science, math, technological and social science concepts that lead citizens to environmental literacy, scientific based decision-making and actions to support the achievement of the CCMP action plans and measurable environmental resource improvement

Short Impact/Accomplishment Statement:

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- 256 educators increased their knowledge in watershed issue investigations and demonstrated at an “operational level”* the process of watershed issue inquiry and problem-solving
- 256 teachers changed their teaching methods to prepare students for taking upcoming MCAS tests, applying education standards established by the Massachusetts Department of Education and *Benchmarks for Environmental Literacy*.
- U Mass Extension, NREC awarded 724 Professional Development Points

[PDP's] for teacher re-certification and documentation for salary increases.

- Seven curriculum units and eleven authentic research projects were developed by teachers.
- 71 educators indicated that are or plan to be involved in Watershed Projects initiated by other organizations.
- Twenty-five youth corps plan to initiate urban projects to address urban storm water run-off and restoration of salt marsh wetlands.
- Four macroinvertebrate surveys were conducted in two important watershed ecosystems at a reference site and a threatened site.

Source of Funding: Smith-Lever 3 B&C, Smith-Lever 3d, State, Grant/Contract

FTEs: 0.7

Scope of Impact: State Specific (MA only)

Title of Program: SuAsCo Watershed Project

Key Contact Person: Scott Jackson

Email: sjackson@umext.umass.edu

Theme: Water Quality, Natural Resources Mgmt, Biodiversity, Land Use, Wildlife Mgmt, Riparian Mgmt

Brief Description of Program or Activity: This project is designed to develop and implement a comprehensive education, training, and outreach model for identifying and addressing SuAsCo watershed-scale issues. This watershed is facing several problems that include rapid growth and development, water quality shortages, water quality issues, invasive exotic species, and habitat protection, and for central Massachusetts watersheds. By applying university expertise and resources to the SuAsCo watershed through partnership and volunteerism, this project aims to

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develop capability for citizen-based assessment of water resources, strengthen existing efforts in the watershed, and develop a transferable outreach model.

Short Impact/Accomplishment Statement:

- 40 volunteers participated in a series of 10 biomonitoring training workshops
- Two stream teams are implementing biomonitoring procedures
- Received preliminary approval of a grant from Management Consulting Services to facilitate strategic planning for the SuAsCo Watershed Community

Council

- 160 people participated in a watershed-wide forum

Source of Funding: State, Grant/Contract

FTEs: 0.8

Scope of Impact: State Specific (MA only)

Title of Program: Local Capacity Building Project

Key Contact Person: Gisela Walker

Email: gwalker@umext.umass.edu

Theme: Water Quality, Wetlands, Land Use

Brief Description of Program or Activity: In 1998, the Massachusetts Department of Environmental Protection (DEP) contracted with UMass Extension for The Local Capacity Building Project (LCBP) to analyze training needs and catalog current training offerings to town Conservation Commissions, Boards of Health, Sewer and Water Commissions, Zoning and Planning Boards. By taking a collaborative approach among training providers to formulate recommendations for improving both curriculum and access, the partnership provides a stronger voice for addressing these issues.

Short Impact/Accomplishment Statement:

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- Set of knowledge matrices for each land use board: these are detailed listings of the statutory, civic and scientific information each board has to master to work effectively,
- Set of maps that identify which local boards in MA have access to professional staff and which do not,
- Web-based calendar that lists all training events for all these boards to encourage attendance and cross-board training potential at www.townboard.org,

- Research paper on how to apply adult education principles to training local officials, and A comprehensive final report with detailed recommendations on how to improve the support for these local officials.

Source of Funding: Smith-Lever 3 b&c, State, Grant/Contract

FTEs: 0.75

Scope of Impact: State Specific (MA only)

Title of Program: Citizen Planner Training Collaborative

Key Contact Person: Gisela Walker

Email: gwalker@umext.umass.edu

Theme: Land Use

Brief Description of Program or Activity: The Citizen Planner Training Collaborative (CPTC) provides local planning and zoning officials with the tools to make effective decisions regarding their community's current and future land use. Its member organizations include UMass Extension, the Department of Housing and Community Development, the MA Federation of Planning and Appeals Boards, the MA Chapter of the American Planning Association, the Regional Planning Agencies and the Planning Directors. The level of staff and resource commitment to the Collaborative varies greatly among the partners but each partner's contribution is critical to its success. The Collaborative is housed with UMass Extension/NREC which has one FTE assigned to the program.

Short Impact/Accomplishment Statement:

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- Three new modules: *Zoning Exemptions*, *Variances* and *Site Plan Review* were developed with funding from the Municipal Incentive Grant program and major revisions made to the module on *The Basics of Reading a Subdivision Plan*.
- The CPTC web site (www.umass.edu/masscptc) underwent major upgrades and an expanded bylaw collection thanks to an agreement with the Attorney General's office
- 580 local officials, planning staff, citizens and building inspectors attended

training courses to increase their understanding of planning and zoning statutes and procedures

Source of Funding: Smith-Lever 3 b&c, State

FTEs: 1.25

Scope of Impact: State Specific (MA only)

Title of Program: Wetlands Education

Key Contact Person: Scott Jackson

Email: sjackson@umext.umass.edu

Theme: Wetland Restoration and Protection, Water Quality, Natural Resources Mgmt

Brief Description of Program or Activity: In a process initiated and coordinated by UMASS Extension, six agencies and organizations are working together toward a coordinated approach to wetland education. In addition to Extension, this group includes the U.S. Army Corps of Engineers, U.S. EPA, MA DEP, the MA Association of Conservation Commissions (MACC) and the MA Audubon Society. NREC staff also offers training directly for Conservation Commissioners and Wetlands Consultants -either independently or through MACC and in close cooperation with DEP.

Short Impact/Accomplishment Statement:

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- 20 real estate agents received information about environmental issues and regulations in MA to maintain their license.
- Over 220 consultants, staff and conservation commissioners received training on DEP's Riverfront Area regulations.
- 90 conservation commissioners received training on wetlands functions and values
- 120 conservation commissioners, conservation agents, consultants, and agency personnel received training on wetlands habitat protection
- A broadcast quality, instructional video on how to conduct a percolation test in

different soil types in Massachusetts.

Source of Funding: Smith-Lever 3 b&c, Smith-Lever 3d, State, Grant/Contract

FTEs: 0.3

Scope of Impact: State Specific (MA only)

Title of Program: Housatonic Biodiversity Assessment Project

Key Contact Person: Scott Jackson

Email: sjackson@umext.umass.edu

Theme: Biodiversity, Endangered Species

Brief Description of Program or Activity: The goal of this project is to develop and test a protocol for conducting a biodiversity assessment at the watershed level using Geographic Information System (GIS) coverages and landscape ecological techniques. This project is one phase of a larger effort designed to develop a generic decision-support system (DSS) for prioritizing parcels for biodiversity conservation using a combination coarse- and fine-filtered approach. We will work collaboratively with Housatonic Watershed Team to develop the analytical processes and spatial data layers needed to map biodiversity potential and prioritize lands for biodiversity conservation in the Housatonic River watershed.

Short Impact/Accomplishment Statement:

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- Technical Working Group formed from various agencies, institutions and organization to critically review project design and guide implementation
- Revised modeling scheme based on input from Technical Working Group and Housatonic Watershed Team
- 3 expert teams assembled to create community-based biodiversity models
- Satellite imagery, digital terrain data, and other GIS information compiled and processed
- Preliminary unsupervised classification of landscape units

- 1000 field data points to inform and validate supervised community classification
- Basic model architecture and user interface for computer software

Source of Funding: Smith-Lever 3 b&c, State, Grant/Contract

FTEs: 3.5

Scope of Impact: State Specific (MA only), Integrated Research and Extension

Title of Program: Habitat and Biodiversity Conservation

Key Contact Person: Scott Jackson

Email: sjackson@umext.umass.edu

Theme: Biodiversity, Endangered Species, Natural Resources Mgmt, Riparian Mgmt, Wetlands Restoration & Protection, Wildlife Mgmt

Brief Description of Program or Activity: This initiative provides education, training and technical assistance covering a wide variety of topics, including: wildlife and wildlife habitat requirements, wildlife habitat evaluation, protection strategies for conservation of rare species, the importance of biodiversity, strategies and techniques for conserving biodiversity, landscape assessment, land conservation planning, and involving volunteers in wildlife inventory and monitoring. A particular focus of this program is assessing and mitigating highway impacts on wildlife.

Short Impact/Accomplishment Statement:

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- Revised draft: “Wildlife Habitat Protection Guidelines for Inland Resource Areas”
- A year of weekly “Field Notes” radio spots aired on WFCR and one National Public Radio production
- 10 gifted female high school students from across the United States and Puerto Rico took part in a Rare & Endangered Species course
- 315 natural resource professionals, highway and environmental agency personnel received training on highway impact on wildlife and techniques for mitigating those impacts

- 200 environmental consultants and agency personnel received training on wetlands wildlife habitat evaluation
- 14 professional land managers received training on wetlands delineation
- 190 people received training on wetlands conservation topics including vernal pool identification
- 25 volunteers participated in the Massachusetts Calling Amphibian Survey, covering 21 routes
- 40 members of land trusts and other interested citizens received training on biological conservation and land protection

Source of Funding: Smith-Lever 3 b&C, Smith-Lever 3d, State, Grant/Contract

FTEs: 0.3

Scope of Impact: Multistate, Integrated Research and Extension, (MA, VT, NH, CT, RI, ME)

Title of Program: Forestry Education

Key Contact Person: David Kittredge

Email: dbk@forwild.umass.edu

Theme: Forest Resource Mgt, Forest Crops

Brief Description of Program or Activity: This initiative seeks to identify educational needs and develop programs to address those needs in the areas of BMPs for timber harvesting, continuing education for timber harvesters and foresters, and forest management for a variety of objectives. Urban and community forestry education and technical assistance are provided to arborists, tree wardens and park managers.

Short Impact/Accomplishment Statement:

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- “Forest Vision” was written for the MA Secretary of Environmental Affairs and based on work from a 13-member Forest Vision Team
- 25 Coverts volunteers created forest stewardship outreach plans for their communities.
- 130 Timber harvesters received continuing education credits towards re-licensing by attending workshops on “forestry BMPs” and “logging and regeneration”
- 192 professional foresters, agency personnel, landowners and other natural resource professionals received continuing education on forestry topics
- 1135 arborists, tree wardens, foresters and park superintendents received continuing

education on urban forestry issues and techniques

- Building Materials and Wood Technology “Ask the Experts” web site was visited 20,000 times and responded to over 1100 requests for information
- White paper: “Food Marketing and Lumber Processing in Massachusetts, 1958 to 1997”
- “Interior and edge: the forest” an article for Massachusetts Wildlife
- 4 stumpage price reports were used by assessors in administering MA forest tax laws, as well as by foresters, loggers and forest landowners
- 2 Forester’s CEO newsletter
- 4 Urban and Community Forestry newsletter articles

Source of Funding: Smith-Lever 3 b&c, Smith-Lever 3d, State, Grant/Contract

FTEs: 0.75

Scope of Impact: Multistate, Integrated Research and Extension, (MA, CT)

Title of Program: Marine Resources Protection/Southeastern MA Marine Aquaculture Center (SEMAC)

Key Contact Person: William Burt

Email: wburt@umext.umass.edu

Theme: Natural Resources Mgmt

Brief Description of Program or Activity: The Marine Resources Office and SEMAC continue to support the sustainable development of aquaculture within the five counties of the southeast region of the state. The center coordinates the activities of various agencies and partners to

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provide educational programs, research initiatives, demonstration projects, technical assistance, and financial support for the aquaculture industry. As in previous years, the center continues to expand its library resource network, hold informational and technical workshops, monitor marine water quality at pre-selected sites, and investigate disease and growth issues.

Short Impact/Accomplishment Statement:

- “Feasibility of Developing a Municipal Shellfish Hatchery on Cape Cod”, presented research results to Cape Cod Shellfish Advisory Committee

- 125 individuals attended marine aquaculture workshops.
- 13 towns utilized the County collective clam seed purchase program.
- 52 individuals indicated greater understanding of shellfish diseases in MA.
- 9 shellfish constables remain active in the bay scallop restoration program.
- 38 bay scallop-spawning sanctuaries have been deployed at 13 different locations within Barnstable County.
- 12 individuals received certificates of completion for a shellfish aquaculture course.
- 16 individuals received basic training in HACCP principles.
- 22 projects were funded through the SEMAC aquaculture mini-grant program.
- 48 hard clam growers signed up for the pilot USDA crop insurance program.
- 5 towns were awarded funding under the “Division of Marine Fisheries-Barnstable County Municipal Shellfish Enhancement Grant program.”
- 65 growers, regulators, shellfish constables, and other interested parties have been involved in the ongoing development of inter-tidal shellfish aquaculture BMPs

Source of Funding: Smith-Lever 3 b&c, County, Grant/Contract

FTEs: 2.0

Scope of Impact: State Specific (MA only)

Title of Program: Earth Connection

Key Contact Person: Will Snyder

Email: wsnyder@umext.umass.edu

Theme: Nat Resources Mgt

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Brief Description of Program or Activity: Earth Connection is an annual two-day conference at UMass Amherst for high school age young people and the teachers and advisors who work with them. The goal is to provide inspiration and support to educators and youth that want to tackle environmental issues in their local communities. The conference provides 1) in-depth, hands-on workshops providing information tools and skills for environmental science and citizenship, 2) opportunities for both educators and youth to share ideas and plans, resource connections, information, and strategies for community action, and 3) a chance to become

acquainted with the resources of the land grant university that relate to environmental research, education, and practice.

Short Impact/Accomplishment Statement:

- 50 educators engaged in environmental action projects and community-based learning
- 190 youth gained knowledge and skills for environmental action

Source of Funding: Smith-Lever 3 b&c, Grant/Contract

FTEs: 0.5

Scope of Impact: State Specific (MA only)

Title of Program: MA Environthon

Key Contact Person: Will Snyder

Email: wsnyder@umext.umass.edu

Theme: Nat Resources Mgmt

Brief Description of Program or Activity: The Envirothon is a statewide high school environmental education program sponsored by EOEA agencies and some corporate donations. The program uses an annual competition among high school teams to promote learning about environmental and natural resource issues. Extension's role with the Envirothon has been to provide leadership for the "Current Issue" presentation. In this portion of the competition, teams undertake significant community research on how a particular environmental issue is manifested in their own communities, culminating in preparation of a 15 minute presentation where they explain their findings and propose a potential course of action to a panel of judges.

Short Impact/Accomplishment Statement:

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- 40 educators engaged in environmental action projects and community-based learning
- 200 high school youth gained knowledge and skills for environmental action

Source of Funding: Smith-Lever 3 b&c, Grant/Contract

FTEs: 0.25

Scope of Impact: State Specific (MA only)

Title of Program: Coastal Explorer Program

Key Contact Person: Eileen Sonnenberg

Email: esonnenberg@umext.umass.edu

Theme: Nat Resources Mgmt, Biodiversity

Brief Description of Program or Activity: The "Coastal Explorer" is a 31-foot class "A" motor coach that was custom-built for use as a marine science educational vehicle. The "Coastal Explorer" is equipped with a computer for use with interactive CD-ROMs, a TV/VCR for showing marine life videos, microscope with video-flex attachment for viewing marine life on the TV screen, saltwater/freshwater aquariums, a blue shark model displaying both external and internal anatomy, and other hands-on exhibits. Furthermore, the vehicle is handicapped-accessible. "Coastal Explorer" serves Barnstable County schools, with average visits lasting one week. During the summer, "Coastal Explorer" will make one day visits to Barnstable County beaches, libraries and youth camps.

Short Impact/Accomplishment Statement:

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- 6,985 students in grades K-7 from 22 Barnstable County schools participated in the "Coastal Explorer" program over the course of 25 weeks.
- A total of 8 AmeriCorps members and one marine science volunteer assisted with the program.
- 362 marine science presentations were conducted.
- 348 teachers used the "Coastal Explorer Curriculum Guide" as an additional resource.
- 65 teachers and principals are on the mailing list to receive the "Sandy Shores"

newsletter.

- 1,591 participants of all ages visited the "Coastal Explorer" during summer.
- Spring 2001 school season already reserved, with summer and fall currently being scheduled.
- "Coastal Explorer" flyers distributed to town libraries, beach and natural resource departments, recreation departments, conservation commissions, Cape Cod Children's Museum, and youth camps in all 15 Barnstable County towns.

Source of Funding: Smith-Lever 3 b&c, County

FTEs: 1.0

Scope of Impact: State Specific (MA only)

Title of Program: Community Supported Agriculture (CSS) Development

Key Contact Person: Cathy Roth

Email: croth@umext.umass.edu

Theme: Sustainable Agriculture

Brief Description of Program or Activity: CSA farms now number well over 1000 in the US, with over a quarter of those in the Northeast. There is much anecdotal information about CSA economic viability, but little research about the success of this 15 year old sustainable agriculture alternative. Toward that end, Dr. Dan Lass (UMass Resource Economics), dan.lass@resecon.umass.edu and Dr. Cathy Roth (UMass Extension Agroecology) croth@umext.umass.edu have established two research studies to determine the economic and

non-economic success of CSA: 1) a 3-year survey of the economic status/success of 246 northeast CSA; and 2) a 10-year longitudinal case study of farmer satisfaction/non-economic success of 10 diverse northeast CSA.

Short Impact/Accomplishment Statement: The 3-year survey of 246 CSA indicate that CSA farms have an average net income of \$21,500 on an average of 10 acres with small debt loads.

This is significant in comparison to all northeast farms that have an average net income of \$23,000 on 98 acres with large debt outstanding. This research indicates that CSA farms can be a successful farm alternative relative to conventional northeast agriculture for entering or conversion farmers by offering a reasonable return and capital investment.

The 10-year case studies of 10 CSA farms indicate a relatively high satisfaction among CSA farmers who stay with this alternative 3 years or longer. The study indicates that there are many reasons why many new, young, or older conversion farmers chose this farm structure alternative.

Chief among them is the opportunity to make a reasonable income from direct marketing relationships with the consumer while farming organically. Average CSA farm age is 20 years below that of the average US farmer. Access for new CSA farmers is often through apprenticeships and mentoring from current CSA farmers. Level of farmer satisfaction is rated high through contribution to both maintaining a sustainable environment and contributing to a strong local economy and community.

This research-based information on economic and non-economic benefits of CSA is now available to current and potential farmer/growers.

Source of Funding: State, Smith-Lever 3b&c, grants (SARE)

FTEs: 1

Scope of Impact: Multistate Integrated Research and Extension (MA, VT, NH, ME, CT, RI, NY, PA, NJ, DE, MD, WV, DC)

Title of Program: Integrated management of cranberry pests using fall and spring floods

Key Contact Person: Anne Averill

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Email: aaverill@ent.umass.edu

Theme: Identify and evaluate cultural controls for pests

Brief Description of Program or Activity: The primary objective of this work is to identify non-pesticidal but inexpensive management approaches for key pests in cranberry. The huge oversupply of cranberries has left growers in Massachusetts in a fiscal crisis and this project seeks low-cost but effective management tools via evaluation on grower-cooperator sites.

Short Impact/Accomplishment Statement: The research is ongoing. Paired treatments, fall flood or no flood, showed that cranberry fruitworm (*Acrobasis vaccinii*) was significantly impacted by a one-month fall flood, as were dewberry crowns (*Rubus*). A 3-week flood was sufficient to control cranberry fruitworm but at least 4 weeks were required for effect on dewberry

Source of Funding: Hatch, Grant/Contract

FTEs: 2

Scope of Impact: Integrated Research and Extension

Title of Program: New technologies and management systems utilized in Massachusetts

Key Contact Person: Anne Averill

Email: aaverill@ent.umass.edu

Theme: Innovative Farming Techniques

Brief Description of Program or Activity: Development of evapotranspiration model and irrigation schedule for cranberries. The primary objectives are to achieve proper irrigation to avoid over and under irrigation and to best utilize surface water supplies in cultivation.

Short Impact/Accomplishment Statement: Root zone of vines is 25% deeper with application of newly developed recommendations. Water conservation is achieved in most years and stress injury to vines is avoided. A fact sheet was produced, 2 articles appeared in Cranberries Magazine, and recommendations were included in Annual Cranberry Recommendations provided all MA growers and a new section was added to the Best Management Practices volume that is available to growers.

Source of Funding: Grant/Contract

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FTEs: 1.2

Scope of Impact: State specific

Title of Program: Massachusetts Dairy/Livestock Nutrient Management Program

Key Contact Person: Stephen Herbert

Email: sherbert@pssci.umass.edu

Theme: Nutrient Management, Water Quality

Brief Description of Program or Activity:

Massachusetts is encouraging livestock producers to voluntarily adopt best management practices to minimize the environmental effects from nonpoint source pollution arising from animal feeding operations. An interagency group supports these efforts with planning, technical assistance, education, and the writing and implementation of farm plans. A computer based decision aid has been developed to simplify the planning process. This is currently being evaluated with farmers and educators. The program assists with determining manure spreader capacity, and manure spreader calibration. It calculates an estimate of manure nutrients produced, and performs a nutrient balance and environmental assessment for all farm fields. After intended manure spreading is optimized for all fields, and data based best management practices have been selected for fields with site risk, a report is generated for the participating farmer. The report provides farmers with a summary sheet containing a manure spreading plan and management practices. The decision aid is user friendly and can be customized to a planners need.

Short Impact/Accomplishment Statement:

25 farmers have participated in nutrient management planning.

Approximately 150 dairy/livestock farmers have participated in educational meetings.

Interagency training has involved USDA and State agency personnel.

Interagency teams and cooperators have been established to conduct nutrient management planning with farmers.

Source of Funding: Smith-Lever 3 b&c, Grant/Contract

FTEs: 1.2

Scope of Impact: State Specific

Title of Program: Efficient nutrient management systems for plant production systems development.

Key Contact Person: Douglas Cox

Email: dcox@pssci.umass.edu

Theme: Nutrient Management

Brief Description of Program or Activity: Practical methods of low phosphorus fertilization were developed as an alternative to chemical growth retardants for height control of bedding plants and to reduce phosphorus in greenhouse effluent. Information on how to use the low phosphorus method of growth control in commercial production was disseminated through state newsletter articles and national trade publications as well as extension education meeting.

Short Impact/Accomplishment Statement: About 50 growers received direct education on this technique.

Source of Funding: private industry grants

FTEs: 2

Scope of Impact: State specific

National Goal: 4

Title of Program: Soil Testing for Greenhouses

Key Contact Person: Douglas Cox

Email: dcox@pssci.umass.edu

Theme: Soil Quality

Brief Description of Program or Activity: Growers received hands-on training in soil testing for greenhouses. Training sessions included actual testing using equipment purchased by the participants. An alternative method of testing was discussed using a teleconference presentation featuring a nationally recognized authority of greenhouse soil testing.

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Short Impact/Accomplishment Statement: About 75 growers received training in three different venues.

Source of Funding: Smith-Lever 3 b&c, revenue based trust funds, in-kind donations of equipment

FTEs: 1

Scope of Impact: State specific

Title of Program: Identify and Evaluate Biocontrols

Key Contact Person: Douglas Cox

Email: dcox@pssci.umass.edu

Theme: Biological Control

Brief Description of Program or Activity: Western flower thrips are a major insect pest of greenhouse crops responsible not only for feeding injury to plants but also for transmission of several serious virus diseases. Control of thrips by several different commercial preparations of a predatory mite, *Neoseilus cucumeris*, were compared to conventional chemical control at commercial greenhouses. Application of predatory mites resulted in high quality plants and a high degree of thrips suppression.

Short Impact/Accomplishment Statement: Results were disseminated through state newsletter articles and at several extension education meetings. About 100 growers received direct education on the use of these predatory mites for thrips control.

Source of Funding: State IPM, private industry grants

FTEs: 2

Scope of Impact: State specific

National Goal: 4 [and 1]

Title of Program: Enhancing adoption of new apple cultivars in Massachusetts

Key Contact Person: Duane W. Greene

Email: dgreene@pssci.umass.edu

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Theme: Agricultural profitability, plant germplasm, sustainable agriculture

Brief Description of Program or Activity: A number of apple cultivars have been under trial at the University of Massachusetts Horticultural Research Center for several years. The intent of this research has been to identify cultivars particularly suited to Massachusetts climatic conditions and to roadside-stand sales. Information and recommendations have been transmitted to fruit growers through educational programs, the periodical *Fruit Notes*, the newsletter *Healthy Fruit*, and the website *UMass Fruit Advisor*.

Short Impact/Accomplishment Statement:

- Approximately 60 acres of new apple cultivars were planted by commercial orchardists.
- New apple cultivars resulted in increase sales at roadside stands of 20%.

Source of Funding: Smith-Lever, RRF NE-183, Massachusetts Fruit Growers= Association

FTEs: 0.5

Scope of Impact: Multistate Integrated Research and Extension (MA, RI, CT, NY, VT, NH, ME)

National Goal: 4 [and 1]

Title of Program: Enhancing adoption of new rootstock cultivars for fruit trees in Massachusetts

Key Contact Person: Wesley R. Autio

Email: autio@pssci.umass.edu

Theme: Agricultural profitability, plant germplasm, IPM, sustainable agriculture

Brief Description of Program or Activity: A number of apple and peach rootstocks have been under trial at the University of Massachusetts Horticultural Research Center and at a few commercial orchards for several years. Particular attention has been paid to rootstocks that provide a reduction in tree size, thus reducing labor required to prune and harvest and reducing the amount of pesticide needed per acre. Also, rootstocks have been selected that are well adapted to our weather conditions and are resistant to normal pest pressures. Information and

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recommendations have been transmitted to fruit growers through educational programs, the periodical *Fruit Notes*, the newsletter *Healthy Fruit*, and the website *UMass Fruit Advisor*.

Short Impact/Accomplishment Statement:

- Approximately 150 acres of new dwarfing apple rootstocks were planted by commercial orchardists.

- Current year=s planting, and planting during the previous four years resulted in overall pesticide-use reduction of approximately 10%.
- Current year=s planting and planting during the previous four years resulted in approximately a 10% increase in profitability.

Source of Funding: Smith-Lever, RRF NC-140, Massachusetts Fruit Growers= Association

FTEs: 0.5

Scope of Impact: Multistate Integrated Research and Extension (MA, RI, CT, NY, VT, NH, ME)

National Goal: 4, Greater harmony between agriculture and the environment

Title of Program: Landscape Message

Key Contact Person: Kathleen Carroll

Email: kcarroll@umext.umass.edu

Theme: IPM, Pesticide Application

Brief Description of Program or Activity: The primary objective of this project is to educate ornamental horticulture pest managers in the urban landscape about pest (insects, diseases and weeds) development that will lead to timely applications of pesticides including appropriate monitoring techniques for pests. The Landscape Message is a 7 minute message, weekly from April to October. It is available by phone, fax, email and on the web. The message informs users about what insects are emerging that week, monitoring strategies, growing degree day reports, cultural problems and solutions and management strategies. Users include private and municipal grounds and turf managers, nursery operators, garden center managers, landscape architects and professional horticulturists.

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Short Impact/Accomplishment Statement: 3500 calls were made to the message in FY 00. According to an evaluation of the project: 83% of the users reported improved timing of pesticide applications, 56% reported improved results of the applications and increased awareness of alternative pest management practices. 36% reported the decrease use of pesticides used.

Source of Funding: State, user fees, Smith-Lever 3b&c

FTEs: 3

Scope of Impact: Multistate Extension (MA, ME, VT, NH, CT, RI)

Title of Program: Green School

Key Contact Person: Kathleen Carroll/Mary Owen

Email: kcarroll@umext.umass.edu, mowen@umest.umass.edu

Theme: IPM, Pesticide Education

Brief Description of Program or Activity: The primary objective of this comprehensive 70 hour training program is to instill a sense of environmental stewardship in the participants. Attendees included private and municipal grounds and turf managers, nursery operators, garden center managers, landscape architects and professional horticulturists. Attendees learned about IPM concepts and the optimization of pest control through proper cultural management of turf and wood ornamentals. In depth classes are given on understanding and using pesticides responsibly and groundwater protection. Testing is an integral factor in the program.

Short Impact/Accomplishment Statement:

- 137 ornamental horticulture and turf businesses increased their knowledge and became aware of technical resources that can help them make environmentally appropriate decisions related to pesticide, nutrient and water management.
- 78 attendees reported they will change their pesticide use practices.
- 90% of the attendees received an average score of 70% or higher (13 tests given).
- 50% of the attendees were minorities: 63 women, 6 Hispanic.

Source of Funding: State, user fees, Smith-Lever 3 b&c

FTEs: 5

Scope of Impact: Multistate Extension (MA, ME, VT, NH, CT, RI)

Title of Program: Pesticide Applicator License Training

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Key Contact Person: Patricia J. Vittum

Email: pvittum@ent.umass.edu

Theme: Pesticide Education

Brief Description of Program or Activity: The primary objective of this activity is to provide study materials in preparation for the state pesticide applicator licensing exam. The program maintains and updates as needed over 20 different study manuals. In addition, the project

provides an opportunity for individuals who want additional instruction to participate in a workshop to help them prepare for the state administered pesticide applicator license exams. Participants attend a two-day workshop that covers the following topics: Pest Identification, Integrated Pest Management, Pesticide Types and Formulations, Health Effects of Pesticides, Personal Protective Equipment and Safety, Pesticide Label, Environmental Fate of Pesticides, and Pesticide Laws and Regulations.

Short Impact/Accomplishment Statement:

- 850 individuals received study materials to prepare for the state administered pesticide exam
- Eleven two-day workshops were held throughout the state
- 303 individuals participated in these workshops

Source of Funding: Smith-Lever 3d, Revenue Based

FTEs: .30

Scope of Impact Massachusetts primarily (28 participants came from different New England States)

Title of Program: Pesticide Applicator Recertification Training

Key Contact Person: Patricia J. Vittum

Email: pvittum@ent.umass.edu

Theme: Pesticide Education

Brief Description of Program or Activity: The primary objective of this activity is to provide an opportunity for licensed and certified applicators to maintain their license by satisfying a

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continuing education requirement. Topics covered in the 28 workshops offered throughout the state include: Lyme Disease, Hanta Virus, EEE, and other Diseases of Concern to Applicators; Mechanism of Pesticide Toxicity; EPA Worker Protection Standard Train-the-Trainer; Pesticide Laws and Regulations; Food Quality Protection Act; Pesticide Respirator Fit Testing; Pesticide Storage, Mixing, and Cleanup Recommendations; Integrated Pest Management in Schools; Environmental Fate and Impact of Pesticides; Pesticide Applicator Safety: Laws and Personal Protective Equipment; and Collection of Old or Unwanted Pesticides.

Short Impact/Accomplishment Statement:

- 57 individuals obtained a pesticide respirator fit check
- 53 agricultural operators received training to comply with EPA WPS.
- 340 individuals received training on personal protective equipment
- 470 individuals received updates on state and federal pesticide laws
- 362 participants were given training in recognizing pesticide poisoning symptoms
- 339 participants received recommendations on proper storage, mixing and handling of pesticides
- 130 received information about diseases transmitted by insects and rodents
- 352 individuals received information on fate of pesticides in the environment
- 100 individuals participated state sponsored pesticide cleanup days

Source of Funding: Smith-Lever 3d, Revenue Based

FTEs: .60

Scope of Impact Massachusetts only(166 participants came from different New England States)

Title of Program: Plant nutrition and soil fertility

Key Contact Person: Allen V. Barker

Email: barker@pssci.umass.edu

Theme: Recycling

Brief Description of Program or Activity:

The objectives of this activity are to develop, evaluate, and improve practices for recycling agricultural, municipal, and industrial by-products and residues into agricultural systems. In

cooperation with the Crop, Dairy, Livestock team paper mill sludge was evaluated for its impact on soil fertility. Practices were assessed to maximize the value of recycling this by-product onto farm and to minimize adverse environmental and agricultural effects of this material on farm land. A Regional Research Project was developed to conduct investigations on the impacts of municipal and industrial biosolids and sludges on farmland in the Northeast Agricultural Region. Participants will include Massachusetts, New Jersey, New Hampshire, Pennsylvania, New York, and Ontario. Also, under this theme, methods for remediation of metals-polluted land are being researched. The potential of metal-accumulating plants for remediation of sites is being studied in this capacity. Nutrition of plants that have remediation potential is investigated as a means of

enhancing the capacity of these plants to alleviate pollution. Recycling of materials through composting is a continuous function under this theme, with attention given to compost testing and procedures for composting. Advice is given to clientele on the potential agricultural uses of by-products and residues, such as wood by-products, food-processing wastes, kiln dust, and farm manures.

Short Impact/Accomplishment Statement:

This activity allows for grower and the public to be apprised of the potentials of recycling by-products and residues onto land employed in many uses—but in particular for land used in farming. The Soils and Plant Nutrition Team advises clientele on practices for use of by-products and residues on land and on cautions for employment of these practices.

Source of Funding: Massachusetts Agricultural Experiment Station; University of Massachusetts Extension – Smith-Lever b&c (Agroecology); extramural grants.

FTEs: Two (includes but not in addition to those involved in Nutrient Management Theme).

Scope of Impact: Multistate Integrated Research and Extension (MA, NJ, NH, PA, NY, Ontario)

Title of Program: Plant nutrition and soil fertility

Key Contact Person: Allen V. Barker

Email: barker@pssci.umass.edu

Theme: Nutrient management

Brief Description of Program or Activity:

The objective of this project is to assess and apply methods of evaluation of soil fertility and plant nutrition developed through plant and soil analysis. With container-grown tomatoes, the optimum amounts of fertilization were determined for plant production in peat, coir, or compost

based media. Assessments were made by plant and media analysis in conjunction with plant growth to determine critical concentrations of plant nutrients in media or in plant leaves for optimum yields of crops in container culture in greenhouses. In field work in cooperation with the Crop, Dairy, Livestock Program, cover crops were evaluated for their effects on sweet corn yield. The impacts of green manures of grass, legume, or mixtures of grasses and legumes were assessed through measurements of crops yields and relating these yields to plant and soil analyses. In this study, the Pre-sidedress Soil Nitrate Test and internode analysis of corn plants were used to determine sufficiency of soil fertility and plant nutrition for sweet corn production. In cooperation with the Vegetable Crops program, the Pre-sidedress Soil Nitrate Test was

employed to determine the need for nitrogen fertilization of peppers and winter squash. Technology developed from these studies was made available to growers through extension outreach by members of the Crop, Dairy, Livestock and Vegetable Crops Teams. The University of Massachusetts Soil and Plant Tissue Testing Laboratory works within the Soils and Plant Nutrition Team to perform rapid analytical tests of soils, composts, and other media and fertilizers to support crop producers in Massachusetts. The Soils and Plant Nutrition Team advises growers and other teams on systems for maintaining soil fertility by conventional and organic means and serves as a resource for hydroponic growers of crops. The Team also worked with the Massachusetts Highway Department to assess detection and prevention of salt damage to native and introduced vegetation along highways in the Commonwealth.

Short Impact/Accomplishment Statement:

The activities involved in assessment of soil fertility and plant nutrition provide growers and researchers in Massachusetts with the ability to determine the sufficiency of practices of fertilization for vegetable, ornamental, grain, and forage crops production. Researchers are provided. The Soils and Plant Nutrition Team advises growers and other teams on diagnoses of and solutions to problems evolving from inadequate soil fertility and plant nutrition. The research with different cropping systems in greenhouse and field production of crops enables the Team to remain informed on established practices and to be able to advise clientele on developing technologies for crop production.

Source of Funding: Massachusetts Agricultural Experiment Station; University of Massachusetts Extension Smith-Lever 3b&c; extramural grants; internal trust funds (e.g., soil testing)

FTEs: Two

Scope of Impact: Integrated Research and Extension

Title of Program: Protocols for an IPM System on Golf Courses

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Key Contact Person: Mary Owen

Email: mowen@umext.umass.edu

Theme: IPM, Agricultural Profitability, Ornamentals/Green Agriculture

Brief Description of Program or Activity:

The objectives of this project are:

1. to develop economically and operationally feasible, environmentally sensible professional turf IPM protocols for golf courses
2. to produce a management tool, *Protocols for an IPM System on Golf Courses*, which can be used to document and verify the use of IPM
3. to help turf managers increase pest management efficiency and when possible to reduce reliance on pesticides

This three-year project involved eighteen volunteer golf course superintendents who, along with University faculty and staff developed, refined, field tested and piloted a system of protocols for IPM. These superintendents represented golf courses that covered the wide diversity of geographical locations, ownership types, proximity to environmentally sensitive areas, proximity to neighbors, and acceptable quality level. A project advisory subcommittee that represented a broader range regulatory, industry and community expertise and interests participated in review and discussion.

Protocols for an IPM System on Golf Courses is intended to be used:

1. by golf course management professionals to develop, implement, document and verify IPM on a golf course.
2. by regulatory officials and community decision makers to specify IPM on a golf course
3. by golf course architects, construction companies and others as a model during the design, permitting and construction phases of a new golf course or during renovations of an existing one
4. by anyone to better understand the scope of an IPM system on a golf course

This project also included: a seminar on golf course IPM based on the Protocols and a news release to the general public re:IPM on golf courses.

Short Impact/Accomplishment Statement:

- *Protocols for an IPM System on Golf Courses* developed and produced. This document can be used to develop, document, verify, specify and teach about IPM on a golf course.
- *Protocols for an IPM System on Golf Courses* distributed to 260 members of the Golf Course Superintendents Association of New England as well as to other turf

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- management professionals throughout New England.
- 45 golf course superintendents and other turf industry professionals learned how to use the Protocols during the Golf Course IPM Seminar.
- *Protocols for an IPM System on Golf Courses* used as basis of pilot Golf Course IPM Certification Program.
- *Protocols for an IPM System on Golf Courses* endorsed by the Northeast Golf Course IPM Project as applicable regionally (northeast region of United States).
- *Protocols for an IPM System on Golf Courses* used in specification of at least one new golf course during design and permitting phases in Massachusetts.

- *Protocols for an IPM System on Golf Courses* used as an undergraduate teaching tool at the Pennsylvania State University.
- News release to general media regarding IPM on golf courses as well as the Protocols project written and distributed.
- Collaborated with Northeast Golf Course IPM Project in extending *Protocols* regionally
- Collaborating with Northeast Golf Course IPM Project in outreach to community decision makers and regulators
- Collaborating with Golf Course Superintendents Association of America in possible use of *Protocols* nationally.

Source of Funding: state, smith lever, and grants (funders: New England Regional Turfgrass Foundation; Lonnie Troll/Golf Course Superintendents Association of New England Research Foundation; Joseph Troll Turf Research Foundation; Massachusetts Department of Food and Agriculture)

FTEs: 1.25

Scope of Impact: Multistate Integrated Research and Extension (MA, ME, VT, NH, CT, RI, PA)

Title of Program: IPM in Butternut squash and pumpkin **National Goal: 4 [and 1]**

Key Contact Person: Ruth Hazzard

Email: rhazzard@umext.umass.edu

Theme: IPM, Plant Health, Niche markets, new uses for agricultural products, agricultural profitability

Brief Description of Program or Activity: Squash and pumpkins are grown by approximately 500 farmers on 4,700 acres in Massachusetts and plays an important role on vegetable farms, providing a magnet for customers at roadside stands, a late season crop for fall income, and a

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storage crop that can be sold throughout the winter. Acreage in increasing for these crops and the importance of these crops in direct sales and niche markets has increased their value. A value-added product, peeled butternut, is sold throughout the winter and provides farm income during the off season.

The goal of this multi-year project of the Vegetable Team is to improve crop yield and quality of cucurbit crops, especially butternut squash and pumpkin, using through multiple IPM tactics. Program activities included the following: survey of grower practices and priority needs, evaluation of cultural practices, development of a threshold for pre-sidedress nitrate test,

demonstration trials with cooperating farmers, disease surveys on cooperating farms, evaluation of spray schedules for disease management in stored butternut squash, identification of the cause of new disease symptoms in pumpkin and butternut and development of strategies, publication of fact sheets, newsletters, and web-based information, and educational programs in winter meetings and on farms. Fact sheets on insect, disease, deer, and weed management were published and distributed to 300 growers. Timely alerts on insect and disease conditions and management were published weekly throughout the growing season to 300 growers.

Short Impact/Accomplishment Statement:

In 1999 and 2000, disease surveys and diagnostic testing determined *Erwinia tracheiphila*, the bacterial wilt pathogen to be the primary cause of new wilt disease symptoms in pumpkin and butternut. Thresholds were adjusted to reduce the disease by controlling the vector (striped cucumber beetles). 400 growers received training and 30 growers reported achieving better control and testing new techniques for control.

Field trials determined that there was no increase in butternut squash yield when side-dressed nitrogen was added if the nitrate-N level was above 30 ppm. 40 growers used the PSNT to adjust sidedressed N, resulting in lower nitrogen use with no reduction in yield.

Research trials with butternut squash and calabaza demonstrated an increase in yield of 30% using transplants instead of direct-seeded crops, 15% using black plastic, and 10% using floating row cover. These cultural practices also improved earliness. 300 growers received information about these results and 50 incorporated one of these methods into their production practices resulting in improved yields.

Research trials on spray schedules and thresholds for fungicides for control of powdery mildew showed that transplanted squash is more likely to resist infection with black rot compared to direct-seeded squash, and it required more sprays to protect direct-seeded squash, although treatment differences were mitigated during long-term storage at 55 °F. 120 growers received information on the results of this trial.

Grower surveys identified deer damage as a significant cause of crop loss in butternut and pumpkins. A fact sheet on preventing deer damage, with designs for cost-effective electric

fencing, was published and distributed to 350 growers. Fencing was demonstrated to 120 growers at on-farm meetings. Approximately 30 growers adopted fencing and reduced crop loss as a result.

Cucurbit crops on 30 cooperating farms were scouted over 5 seasons, and farmers received recommendations on management practices and timing. Growers reported better timing of sprays and cultivation, better control of bacterial wilt and other diseases, improved crop growth from sidedressed nitrogen when needed, better understanding of diseases, and better harvest quality as a result of better timing.

Ten major and two minor diseases were identified in statewide surveys, including two diseases new to Massachusetts.

Recipients of newsletter reported better understanding of diseases, use of appropriate disease control measures, timeliness of management tactics, use of new technologies, weed control measures, and alerts to scout for certain pests.

Source of Funding: State IPM , Smith-Lever 3b&c, industry grants

FTEs: 3.5

Scope of Impact: Multi-state Integrated Research and Extension (MA, ME, VT, NH, CT)

Title of Program: IPM

Key Contact Person: William M. Coli

Email: wcoli@umext.umass.edu

Theme: Integrated Pest Management (IPM)

Brief Description of Program or Activity: A major focus of Massachusetts IPM Projects is to develop effective devices for monitoring, and in some cases, controlling important insect pests.

Short Impact/Accomplishment Statement: Over the past 5 years, substantial progress has been made to develop and deploy two traps that have the potential to dramatically affect apple IPM Programs in most of the major fruit-growing regions of North America. One trap, effective against the apple maggot fly (AMF), consists of a croquet-ball sized wooden sphere painted with red enamel latex paint containing insecticide and capped with a sugar block. The principal behind this trap, is that adult AMF are attracted to its shape, and to slowly-released apple odor volatiles used in conjunction with the visual stimulus. Upon landing, flies

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feed upon the sugar which drips onto the sphere from the slowly-dissolving block, and consequently ingest enough pesticide to cause death. This so-called “attract and kill” strategy results in complete elimination of any block-wide sprays of insecticide against this key summer pest.

The second trap, aimed at monitoring the Plum Curculio (PC), consists of a 3 foot tall black triangle (mimics a tree trunk) capped with a small wire cage. Curculios fly or crawl to the trap, climb upward on them, enter the wire cage, and are trapped there. Another variant of this trap is a black plastic tube (mimics a tree branch) also topped with the wire cage. With

this trap, PC already in the tree, crawl upward on the branch mimic, enter the cage and are again trapped. This trap has the potential to both identify when PC , which over-winter as adults in woods outside of orchards, are migrating into orchards and, perhaps even more importantly, when they have stopped migrating inward. Knowing the latter means that growers can stop spraying for the pest sooner than they normally might.

Source of Funding: Smith-Lever 3d, State, Grant/Contract

FTEs: 2.0

Scope of Impact: Multistate Extension (Potential impact wherever Plum Curculio and Apple Maggot occur)

Goal 5 - Enhanced economic opportunity and quality of life for Americans

Key Themes in Massachusetts:

Aging Agricultural Financial Management Character/Ethics Education Child Care/Dependent Care Children, Youth, and Families at Risk Communications Skills Community Development Conflict Management Consumer Management Estate Planning Family Resource Management Farm Safety Fire Safety Home Safety	Home-based Business Education Impact of Change on Rural Communities Jobs/Employment Leadership Training and Development Literacy Parenting Promoting Business Programs Promoting Housing Programs Retirement Planning Supplemental Income Strategies Tourism Workforce Preparation - Youth and Adult Workforce Safety Youth Development/4-H Youth Farm Safety
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NC-223 (Mammen) MAS00797 **Consumer Studies**

This study will provide the opportunity to document welfare reform impacts from the perspectives of rural family members within the community context and across communities with different social support policies and provisions and addresses **Children, Youth and Families at Risk**. Hunger and malnutrition persist among low-income families in Franklin County, MA, despite the county's long tradition of agricultural self-reliance and community cohesion. 35 Franklin county families are participating in a study led by Sheila Mammen and Gretchen May of the University of Massachusetts Center for the family, along with the UMass Extension 4-H Youth and Family Development Program. Emerging trends suggest that: 84-

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percent agreed with the statement, "we worried whether our food would run out before we got money to buy more." 63-percent agreed with the statement, "the food that we bought just didn't last, and we didn't have money to get more." 53-percent agreed with the statement, "we couldn't afford to eat balanced meals." 68-percent agreed with the statement, "I relied on only a few kinds of low-cost food to feed my children because I was running out of money to buy food." 11-percent agreed with the statement, "my child was not eating enough because I just couldn't afford enough food." 53-percent said that they had cut the size of their meals or skipped meals because there wasn't enough money to buy food. 58-percent said that they had eaten less than they felt they should because there wasn't enough money to buy food. Indications also showed

that some parents are eating less in order to feed their children. Researchers suspect that it may have something to do with the nature of welfare in Massachusetts and the fact that it has become far more punitive than in neighboring New Hampshire – which, along with New York and Maryland, is the only other state in the Northeast where the study is being conducted. Perhaps the most important early lesson of the Rural Families Study is the confirmation that the low income families of Franklin County, like families anywhere, are individuals – many of whom have landed in difficult positions through a widely varying combination of bad luck, problematic decision-making, and a lack of the right kind of help at the right time. IN, MI, MN, MO, NE, OH, CA, CO, ID, KY, LA, MA, NH, OR, UT, WY.

Source of Funding: Hatch

Long-Term Critical Issues.

4-H Youth and Family Development Program

Key Contact Person: Shirley Mietlicki

E-Mail: mietlicki@umext.umass.edu

Theme: Youth Development/4-H; Leadership Training and Development

General Objectives:

Eighty percent of staff and camp directors, and 25% of key volunteer leaders will keep up-to-date on our content areas of life skills education, environmental stewardship, science and technology, teen development, and volunteer management through participation in professional development activities.

Program and Accomplishments:

It's imperative that Extension professionals remain current and relevant within their subject matter expertise and in their general knowledge of child and adolescent development issues, adult education theory, and current issues facing today's youth.

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Staff have had the opportunity to attend staff meetings which usually include training sessions, professional development conferences such as National Association of 4-H Agents and CYFAR, seminars sponsored by the Center for the Family, and university based seminars. Our camp staff are encouraged to attend our staff meetings and any educational trainings we sponsor. Staff continually transfer new knowledge and learning experiences to their volunteers through newsletters, monthly meetings or all day forums.

Approximately 90% of the thirty 4-H YFD Educators have participated in quarterly staff meetings which include a business as well as professional development component.

Speakers have addressed volunteer management issues, working with diverse youth, and resource development. Subject matter trainings, described below, are coordinated through the various action teams. Most camp directors (3 of 5) participate in the subject matter trainings. Staff also have had an opportunity to attend seminars sponsored by the Center for the Family of which all 4-H staff are associate members. Topics covered this past program year included: America's Youth: Issues and Challenges which featured William O'Leary, MA Secretary of Education and Judge Martha Grace, Chief Justice of the MA Juvenile Court; A Profile of Teen Employment and Spending presented by Professor M.J. Alhabeeb; and A Tribe Apart: A Journey into the Heart of Adolescence, featuring author, Patricia Hirsch. Approximately 50% of staff attend these professional development seminars.

Source of Funding: State, Smith-Lever 3b & c

Scope: State specific

FTEs: 2.6

Theme: Children, Youth and Families at Risk

Objective:. Each Extension Educator within the 4-H YFD program will spend 10-20% of their time reaching under served populations.

Program and Accomplishments

MA is a highly urban state with a majority of its population, including the youth, living in and/or around cities. A priority area of the MA 4-H YFD program has been to reach underserved youth in these highly urban areas. To achieve this, each 4-H YFD Extension Educator has been challenged to spend a minimum of 10% of their time committed to meeting the needs of this population through out-of-school programs, building collaborations, providing trainings and resources to other youth serving professionals, and offering our classic 4-H programming as appropriate.

MA has been successful in obtaining federal funding to assist us in meeting these

underserved youth. Through the MA Advocating State Strengths Project, three educators have been hired; one to work with the Hispanic community in the urban city of Holyoke and two to work in specific neighborhoods of Boston. For Holyoke, 178 low-income youth were reached with various 4-H programming such as Rocketry, Nutrition, Gardening, Computer technology, and Sewing. Adult and volunteers contributed 288 hours while collaborating agencies totaled 28 hours. Interviews with local collaborators on the impact of 4-H on these youth's lives rendered very positive results. One collaborator stated that the rocketry program stimulated youth's interest in science and technology while the gardening programming had the greatest impact. It helped transform

a space that was previously used as dumping ground for trash into a resource for the community. Another collaborator indicated that the 4-H SPACES training assisted her staff in being more respectful of the youth and in becoming more effective communicators with youth. These collaborators were also asked to indicate how helpful 4-H had been in supporting their organization's work within the community on a scale from 1-5 (1= not at all helpful, 5= extremely helpful). The mean for all respondents was 4.25. The Extension educators also were catalysts in establishing the first Mayor's Youth Commission and in developing the Holyoke Youth Resource Guide. Currently, they also serve on Holyoke's Gang Violence Task Force.

In Boston, 808 high risk youth were reached through 4-H programming such as rocketry, ecology and working with the elderly. Adult and teen volunteers contributed 441 hours and collaborating agencies totaled 35 hours. Interviews with youth workers of various collaborating agencies indicated that the 4-H programs increased the youth's knowledge of science but also helped build their character. Working with the elderly had the greatest impact. Youth who were unfamiliar and frightened of relating to seniors now enjoyed helping and sharing with them with various crafts and gardening projects. Another collaborator indicated that the 4-H leadership training offered his staff significant information on child development and in learning new techniques for working with youth. When these collaborators were asked to indicate how helpful 4-H had been in supporting their organization's work within the community on a scale of 1 to 5 as given earlier, all respondents indicated that 4-H was extremely helpful and gave 4-H the highest possible rating.

In New Bedford, the local Extension Educator has garnished funding (approximately \$50,000) from the MA Service Alliance, the MA 4-H Foundation, the New Bedford Housing Authority and other sources to establish out-of-school programs in targeted schools where 75 to 95% of the students receive free lunch. Approximately 4000 high risk youth between the ages of 5 to 17 have been reached by these out-of-school programs over a five year period across four elementary schools and one junior high school. The programs are coordinated by master teachers funded through the housing authority but trained by our 4-H staff in the People Empowering People curricula. Some of the projects the youth have been involved include: cleaning up and beautifying school grounds and extended neighborhoods; conducting a vandalism awareness campaign;

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growing and distributing food for the hungry; and visiting the sick and elderly. Additionally, the Extension educator has recruited and trained about 12 older teens to work with the younger children in these programs. Our New Bedford youth program is one of our premier programs which exhibits how the classic 4-H program can be implemented with underserved youth from impoverished areas.

Educators for the Boston and Holyoke program spend 100% of their time committed to working with underserved youth while the educator for the New Bedford program spends her time equally between the classic 4-H program and reaching underserved youth

through these out-of-school programs. 75% of our other educators have committed at least 10% of their time towards reaching these underserved youth. Many have become involved with Extension's Family Nutrition Grant program offering nutrition and healthy lifestyle sessions to low-income youth in out-of-school programs. Others are building collaborations with organizations which serve high risk youth to determine program possibilities. Still others provide training and resources to out-of-school programs which reach this targeted audience.

Funding: Smith-Lever 3b & c; State, grant/contract, MA 4-H Foundation; for New Bedford, support from New Bedford Housing Authority, MA Service Alliance, and National 4-H Council.

Scope State specific

FTEs 4.5

Objective: As a result, minority participation of youth and volunteers involved in the program will increase by 5%.

Program and Accomplishments

It's critical that the 4-H YFD program continue to reach out to underserved and minority youth within MA and to recruit adult and teen volunteers that are more representative of the populations in which they work.

This past year, 48,430 youth were reached through our camp, club, school enrichment and out-of-school programs. Eighty-two percent of the youth participants were white, 8% were Black, 7% were Hispanic, and 2% were Asian/Pacific Islander. We have seen a slight increase of Asian participants over the past four years from 1% to 2%. The other numbers have remained the same. Of the 4,549 volunteers working in our program, 92% were white, 4% Hispanic, 3% Black, and 1% Asian or Pacific Islander. These percentages are reflective of the total population in MA. We continue to work with collaborating youth serving agencies to attract diverse youth to our statewide programs and camps. Through our State Strengthening grant, we have been able to hire program

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assistants to assist in the delivery of our 4-H program in Holyoke and Boston. Attracting more diverse youth and adults continues to be a challenge of our program.

Source of Funding: State/Grant and Contracts; Smith-Lever 3b & c

Scope: State specific

FTEs: 4.5

Theme: Youth Development/4-H ; Leadership Training and Development

Program and Accomplishments:

Life Skills Education Ongoing and Intermediate Objectives results:

A vital component of a 4-H Youth and Family Development Extension Educator's professional credibility is his or her comfort level and depth with youth development knowledge, subject matter content, teaching methods and the application of this knowledge to diverse learners. The Life and Work Skills Team has sought to secure a solid base of that knowledge for staff (including camp directors) and key volunteers specifically in the areas of life skills and the experiential learning model, and to give staff the tools, resources and methods necessary to apply those concepts.

The Life and Work Skills team sponsored three in-service training opportunities for 4-H YFD educators, camp staff and key volunteers which focused on life skills, the experiential learning model and brain based learning. The evaluation results are as follows:

Targeting Life Skills (TLS) Training: 70% of staff and 80% of camp staff participated in the training and indicated through a survey that 85% felt comfortable with the TLS model and could explain its relevance to their work; 85% of the staff also indicated that at least some of their volunteers (31% on average) use the TLS model and information in their work with youth; 100% of camp staff use the information and model.

Experiential Learning Model Training: 90% of our staff and 50% of the camp staff participated in this training and understood the model well enough to explain how it relates to their work; 85% have used the information and shared it with their volunteers, camp staff, and other collaborators; 65% indicated that on average, 37% of their volunteers, collaborators and camp staff understood the model well enough to tie it into the activities they do with their members.

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Brain Based Learning Training: 65% of the staff participated in this training; to date, 60% have used the information in their work. Camp staff were not available for this training.

New Curricula Resources: A major aim of the program has been to update the curricula resources for our program. To that end, 100% of the staff have read or reviewed on average 41% of the curricula distributed throughout the state; 95% have used lessons/educational activities from these life skills curricula.

Source of Funding: State and Grant/Contract; Smith-Lever 3b & c

Scope of Impact: State specific

FTEs: 4.55

Theme Workforce Preparation:

Long Term goal: 50% of youth statewide enrolled in the 4-H YFD program will increase their workforce preparedness skills.

Program and Accomplishments:

Under the umbrella of workforce preparedness, 4-H Youth and Family Development Extension Educators are working to assist youth in developing entrepreneurial skills. These skills will enable youth to be productive workers, either in their own businesses or working for others. Funding was secured from the MA 4-H Foundation to offer monetary grants to 4-H members, ages 11 to 19, interested in starting businesses. Additionally, MA is addressing this issue with the New England states. The New England Workforce Preparation Task Force sponsored a Mini-Society training in cooperation with the Kauffman Foundation. This program teaches youth to recognize market opportunities and gives them the opportunity to start and run a business in a safe environment.

Fourteen grants were awarded to individual members and 4-H clubs, totaling \$1960. Entrepreneurial efforts of these youth included babysitting, building sandboxes and selling produce at local Farmers' Markets. MA sent two teams to the Mini-Society training. One of these teams received an implementation grant through the Kauffman Foundation and conducted the Mini-Society program with a group of 16 youth in the city of New Bedford. We hope to train additional teams this year.

Source of Funding: State, MA 4-H Foundation, Kauffman Foundation; Smith-Lever 3b & c

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Scope of impact: State specific
Mini-Society/Multi state Extension: CT, MA, ME, NH, RI, and VT.

FTEs: 4.55

Theme: *Youth Development/4-H*

Science and Technology Intermediate and Long Term Objectives Results:

4-H has always been rooted in the natural sciences of agriculture, nutrition, environment, various life sciences and now, technology. A major goal of the 4-H YFD program is to assist youth in their understanding of science and technology topics in preparation for working competently within their own environment and as a part of a greater global environment. To that end, our Science and Technology team of Extension Educators, has sponsored in-service training opportunities for staff, teachers, our camp staff and older teens who serve as counselors in training for out-of-school programs in urban areas. The overarching goal of the team was that 75% of the teachers and camp staff who receive training on science and technology topics will replicate learning activities experienced during training with youth in their classroom settings, camps and other out-of-school programs.

An extensive evaluation of the 1998 4-H Science and Technology Teacher Conference attended by eighty teachers and conducted by 30% of our staff provided very positive results. A 90% return on the evaluations indicated that the average increase in knowledge for all workshops was 1.6, a mean increase of 32%. Teachers were also asked the extent to which each workshop increased their ability to teach that topic. On a scale from 0 (no increase) to 5 (ability greatly increased), the average reported increase in teaching ability was 3.6. Workshop topics included: Harvesting from the Sea, Using Community Backyards, Cranberries, Where is "away?", Picturing your World, Barnacles and Other Marine Life, and Nutrition Express. Seventy-nine percent of the teachers were able to name at least one specific teaching method, technique or idea they planned to use in their classes as a result of participating in this conference. A three month follow-up with 31% of these teachers indicated that 80% had more confidence in their ability to teach science since attending the conference, while 72% indicated they were able to access science resources more easily. Sixty-seven percent of the teachers said that as a result of the conference, there were more hands-on science activities in their classrooms; 72% indicated they were better science teachers; and 64% felt that the teaching methods and techniques they learned at the conference helped them in other subjects that they teach. Subsequent conferences presented in 1999 and 2000 indicated that at least 70% of teachers who attended listed one specific method/technique/idea that they planned to implement with the youth for which they work. Some learning activities implemented by these teachers included: building mini-cranberry bogs in the classroom; setting up a salt water aquarium; and graphing a beach profile to show affects of erosion.

Trainings in science and technology subject matter areas such as aerospace (rocketry), kitchen chemistry, animal science and general science were offered to over fifty 4-H camp counselors (1999) and almost 75 counselors and counselor's-in-training (2000) who in turn shared the knowledge and skills gained in these science-related topics with their campers. Our recent camping survey for 1999-2000 showed that of the 2,693 youth who participated in 4-H camping programs in Massachusetts, 19% increased their knowledge in the plant science area; 50% increased their knowledge in aerospace, and 81% increased their knowledge in the animal sciences.

Sportfishing was a new program offered first to our camps and then, to our local offices this past year. Originally, three staff and two volunteers were trained at the 2000 National Sportfishing Training as the core team for MA. They, in turn, trained fifteen camp staff and another two volunteers to expand this programming at camps and locally. Based on our 2000 camping statistics, all 2,693 youth participated in the sportfishing program which included fish printing, angling, and aquatic ecology. This core team also trained 16 inner city youth and 12 adults from Boston in this new program. This program will be further expanded at our camps and local programs this year.

Source of funding: State/revenue based/Foundation support; Smith-Lever 3b & c
Other support for camps: Camps, National Sportfishing Program

Scope: State specific

FTEs: 2.85

Intermediate Goal : Facilitated by the Science and Technology Team, 20 youth will participate in a statewide Tech Corps where they will increase their computer knowledge and skills thus improving their employability skills.

Program and Accomplishments

The Tech Corp originated as a partner at the MA level to the National 4-H Technology Leadership Team. The team's purpose was to promote effective and responsible use of technology in MA and serve as a resource for technological assistance to 4-H YFD staff, 4-H clubs, youth groups, and other collaborating programs in areas such as web page design, trouble shooting and the installation of software.

During the first year, six teens, including four high risk youth from Boston, were trained in these technology concepts with two remaining active throughout the year. In it's second year, the team was expanded to include nine active members. The Extension Educator from Holyoke was also able to train of 3 to 5 high risk youth to work at the local computing Community Center in that city. All team members were trained to prepare materials for use on a web page and attended two statewide trainings on this topic. About five of the team members attended the first National 4-H Technology Conference at the University of Maryland which was a major boost for them and which will lead to a higher functioning

team. The team also worked to develop an action plan for subsequent years and improving their communication network. Future goals of the team include participating in the New England State Exposition and other county fairs to promote the work of the team and to network with fellow Tech Team members from across the northeast.

Source of Funding: State and MA 4-H Foundation; Smith-Lever 3b & c

Scope: State specific with potential of more involvement with the northeastern states.

FTEs: 2.85

Theme: Energy Conversation

Intermediate Objective: Environmental Stewardship

Program and Accomplishments:

Another goal of the 4-H YFD program is to increase youth's understanding of the role of the environment in enhancing their quality of life and in protecting their future. To achieve this, the Environmental Stewardship team has sponsored two-day conferences on community service and the environment for teams composed of high school-age youth and their advisors as well as 4-H participants and their leaders. These conferences attempt to support and inspire youth who want to address environmental issues in their own communities. They provide resources and skills for community-based learning and action, and serve as a forum for participants to share excitement and ideas, successes, and lessons learned. They offer in-depth workshops; an EnviroTrek for youth to meet faculty enmeshed in environmental teaching, research and practice; roundtable discussions; and ample time for reflection and future planning.

Approximately 137 youth and 50 advisors attended the 1999 Earth Conference on the UMA Amherst campus. All 137 youth who attended the conference completed an evaluation at its conclusion while 42% of the advisors returned their mailed evaluations. The youth evaluation indicated that 79% learned about possible solutions to

environmental problems they had not known before. A similar percentage (78%) discovered some new things they could do right now to protect and improve the environment, while slightly less (71%) said they learned about education and careers related to the environment they could pursue after high school. Eighty percent of the advisors believed that the conference workshops were very effective in providing a safe place for youth to ask questions while 64% judged the Roundtables as a "very effective" place for youth to voice their own opinions as well as to ask meaningful questions. Similar results were found with the 185 youth and 48 adult advisors who attended the Year 2000 conference. Eighty percent of the youth indicated they encountered new

scientific information about the environment at this conference while 77% agreed that “I became more interested in taking action in my community for the environment.”

Source of Funding: State, revenue based and supported through funding from the International Paper Co

Scope: State specific

FTEs 1.35

Long term objective: All 4-H YFD projects and learning activities will have an environmental stewardship connection.

Program and Accomplishments

The environmental stewardship team is testing ways to encourage 4-H youth and leaders to include a stewardship component in all 4-H projects. The idea is that everything we do affects the environment, so the best place for environmental stewardship to begin is to take a good look at, and make positive changes in what we already do. We are asking youth to set and report on an environmental stewardship goal on their annual project records, and have added a new question to the record asking them to assess the results of their environmental stewardship efforts.

We began with a survey of existing environmental stewardship attitudes and activities among 4-Hers, and reported our findings in 2000. While participation in the survey was uneven across the state, we did learn that 64% of youth completing the survey agreed with the statement “I am interested in finding out more about the environmental connections of my 4-H project”, only 3% disagreed. While 53% agreed with the statement “I already have the skills and knowledge I need to be a good environmental steward in my 4-H project,” a significant 45% were not sure or disagreed. Twenty-nine percent of the respondents said they were not yet taking action to make their projects more environmentally friendly. Seventy-one percent said they were taking action, but the examples many gave indicated that there may be much room for expansion of environmental stewardship as a dimension of their project work. One next step is to work

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with particular project areas to develop guidelines and training that are specific to those projects.

Source of Funding: State; Smith-Lever 3b & c

Scope: State specific

FTEs: 2.85

Long term objective: Staff involved in the environmental stewardship initiative will implement a community greening project involving unemployed teens and resulting in the revitalization of neighborhoods in targeted Boston communities.

Program and Accomplishments:

Addressing the issues of vacant lots and cleaning up neighborhoods became a major initiative for our Extension educator in Holyoke. A vacant lot located behind an apartment building was a haven for drug dealers and a repository for neighborhood trash. This lot was owned by the city. A community resident approached the Mayor about converting this non-usable space into usable garden space. The Mayor saw the potential and leased the land to a community group for 20 years at a cost of \$1.00. This was the beginning of a strong collaboration between the Mayor's office, the Department of Public Works, Marken Properties, UMA Extension's 4-H Youth and Family Development Program, and the MA 4-H Foundation.

In collaboration with Marken Properties, the 4-H YFD program wrote a proposal to the MA 4-H Foundation and received \$1300 to purchase garden tools and offer stipends to youth. Through another grant obtained from the MA 4-H Foundation, the educator is currently collaborating with the local housing authority to establish a similar community greening project at another housing development.

Source of funding: State; State Strengthening grant; 4-H Foundation; Smith-Lever 3b & c

Scope: State specific

Theme: Youth Development/4-H
Leadership Training and Development

Ongoing objective: 75% of teens will improve their self-confidence and increase their leadership capacity through participation in staff coordinated learning opportunities at the

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local, regional, state and national levels.

Program and Accomplishments

A major goal of the statewide Teen Action Team was to establish the 11-13 years, the “tweens” as a target audience for the program. This group was selected because this is the age group, that, at the high end, 4-H loses to other opportunities and secondly, because “tweens” are very impressionable. It is hoped that providing these young people

with learning activities which emphasize leadership, citizenship and community service, will encourage them to remain as active 4-H members in their teen years.

To support the goal, the team organized an East/West conference where eighty tweens and chaperones attended a two day event which focused on Trusteeship. Its aim was to educate youth about their role as a trustee in their community, and with this education, to empower them to serve as trustees through community service projects. A pre-post survey indicated that 35% of the tweens increased their understanding of trusteeship as a result of the conference while 25% became more familiar with their own talents and skills which can be utilized in their communities.

Additionally, the Teen Team offers a three day program for older teens, ages 14 to 19 on the UMA Amherst campus. This program helps teens increase their self-confidence, learn skills for successful interpersonal relationships and develop their leadership potential. About 134 teens attended the 2000 "Leadership in a Diverse World" of which 20% represented minority youth from our urban areas of Boston, Worcester and Holyoke. All the teens participated in various community service projects such building garden boxes for residents of a nearby neighborhood development, delivering beanie babies to the Shriners Hospital for Children, and working on the gardens at the local veterans hospital.

About 50 high school students and their advisors participated in the Citizenship MA Focus program sponsored by the Teen Team. Through this program, participants learn about state government, become aware of societal issues and their potential solutions, apply moral and ethical valuing processes to public policy making and learn about career opportunities in government. Based on a pre-post survey, 20% increased their understanding of the state legislature while 25% learned more about the role of morals and ethics in making decisions.

Source of Funding: State and revenue based; Smith-Lever 3b & c

Scope: State Specific

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FTEs: 3.65

Short term objective: Staff, as members of the statewide Teen Team, will design and conduct a survey of teens both within and outside the 4-H YFD program to determine critical issues facing teens and define the appropriate delivery strategies for meeting these needs.

Program and Accomplishments:

The Teen Team collaborated with our program's evaluator to establish a study comparing the interests and concerns of current 4-H members with two other samples of youth: a group of youth with background characteristics similar to 4-H members and a sample of youth from an urban area who are involved in community based peer leadership activities. To obtain a sample of youth currently involved with 4-H, 1,063 questionnaires were mailed to enrolled 4-H youth across the state. Seventy-seven youth, who attended a county fair in MA and not members in 4-H were asked to complete the questionnaire while thirty-one peer educators from an urban area completed the questionnaire at a youth leadership conference.

In the questionnaire, the youth were presented with a list of issues, ways for youth to connect with each other, and objectives they might like to achieve. Youth were asked how concerned they were with each issue, how interested they were in the ways to connect with each other, and how interested they were in learning skills that would help them to achieve each objective. The results indicated that getting good grades in school and maintaining personal health and physical fitness were the top issues for both groups of youth while concern over violence and personal safety ranked third for the Peer Leaders and fourth for the 4-H members. At the same time, 4-H members were most interested in clubs and newsletters as ways to connect with other youth while Peer Leaders were most interested in community centers and after-school programs as ways to connect with other youth. The youth in both groups were most interested in those skills that would help them prepare for college, careers, and make sound financial decisions. Learning skills that would help them make better life decisions was also ranked highly by both groups. These results reveal similarities and differences between 4-H members in comparison to other groups of youth and may point to new opportunities for 4-H programs to successfully reach populations with little history of prior involvement with 4-H.

Source of Funding: State; Smith-Lever 3b & c

Scope: State specific

FTEs: 3.65

Theme: Leadership Training and Development

Short-term goal: The statewide Volunteer Management team, comprised of staff and key volunteers, will design and institutionalize a comprehensive volunteer management system for the 4-H YFD program.

Intermediate goal: One hundred percent of staff will be trained in the utilization of this comprehensive volunteer management system.

Program and Accomplishments:

Source of Funding: State; Smith-Lever 3b & c

Scope: State specific

FTEs: 6.95

Stakeholder Input Process

Overview:

Nearly 1000 individuals were identified by program faculty and staff as stakeholders involved in providing input and advice on Extension and research programs and projects in Massachusetts. While some individuals provide input on a one-by-one basis, such as through surveys, interviews and unsolicited material, the majority of stakeholder input is through groups of individuals.

These take three major forms:

- a. groups organized by Extension, either on an on-going basis, or convened for a one-time interaction.
- b. existing groups, such as neighborhood councils, commodity associations, professional societies and foundations
- c. groups formed by legislative mandate

Since the majority of UMass faculty and staff are involved in both research and extension, input from stakeholders is considered for both research and extension work. By program area, Agroecology reported 163 individuals, with 13 groups, including those appointed by the University President, and several established via legislation. Several comprehensive grower associations, such as the Massachusetts Flower Growers Association, through their elected board of directors, serve as stakeholder groups. In other commodity areas, individuals are invited to participate in focus groups to provide input.

The 4-H Youth and Family Development Program Area reported more than 600 individuals involved in county-wide, program or event specific or other topical advisory group. Agency staff input through several Extension organized coalitions, provided a link to underserved populations. Youth and teens were increasingly represented on all 4-H related advisory groups.

The Natural Resources and Environmental Conservation Program Area reported 44 individuals provided stakeholder input, primarily through two groups organized by Extension.

The Nutrition Education Program Area reported 79 individuals, and three groups, including one governmental body as providing input.

The UMass Extension Board of Public Overseers, created by the legislature and comprised of representatives of agriculture commodity groups, state agencies, natural resources groups, the state nutrition board and several state-wide 4-H advisory groups, meets regularly with Program Coordinators, the Director and Assistant Director. The legislation mandates the composition of the Board. Over the past three years, this groups has addresses funding in general, as well as specifically how resources are allocated by program to meet the needs of the Commonwealth.

Actions taken to seek stakeholder input that encourages their participation

As described in the overview, stakeholder input is encouraged through regular meetings, existing organizations and one-time focus groups and other strategies. Surveys, feedback forms, e-mail and the Web are also used to elicit input, as is personal contact.

A brief statement of the process used by the institution to identify individuals and groups who are stakeholders and to collect input from them

Each program area identifies stakeholders appropriate to their area. The process includes asking for volunteers; using criteria such as geographic representation, diversity and length of participation (long term participants as well as stakeholders less involved). Environmental scanning as part of strategic planning is also used to identify potential stakeholders.

A statement of how input was considered.

Input is considered by the stakeholder group in conjunction with the faculty and staff who are responsible for the program. Results of surveys, focus groups, discussion about reports and proposals are part of the information mix, along with the goals of the University, the mission of Extension and research, and the five USDA goals.

Program Review Process

No significant changes have been made to the review process since the 5-Year Plan of Work was written.

Evaluation of the Success of Multi and Joint Activities

Each program develops its own evaluation strategy; however, in Massachusetts, faculty and staff are encouraged to work collaboratively within New England and the Northeast (geographic focus) or as appropriate in terms of issue or problem, for example grape growing, which might find a collaboration with a state or institution in another region of the country.

Through the New England Extension Consortium, grants are available to faculty and staff to conduct multi-state planning projects, as well as larger implementation projects. Participation in this grant program has steadily grown over the last 4 years. Most projects have a research component.

All funded proposals and each final report is posted on the Consortium Web page. This allows for review of the success of the projects, both for specific accomplishments and for progress in developing multi-state efforts.

During the summer and fall of 2001, all previously funded projects will be reviewed to see what additional outcomes and impacts have resulted since their initial final report. Since the final reports occur at the project end point, either 6 months or a year, an assessment of outcomes that occurred after that point may show continued impact.

Joint activities are assessed during the annual performance reviews of faculty and staff by department heads, program coordinators, and the Associate Director of the Experiment Station and the Director of Extension.

Appendix C

U.S. Department of Agriculture
Cooperative State Research, Education and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activities and Integrated Activities
(For brief summaries see Planned Programs section)

Institution: University of Massachusetts
State: Massachusetts

Check one: **Multistate Extension Activities**
 Integrated Activities (Hatch Act Funds)
 Integrated Activities (Smith-Lever Act Funds)

Actual Expenditures

Title of Planned Program/Activity	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Goal 1 – 11 Projects – 10.4 FTEs	\$196,357				
Goal 2 – 4 Projects – 3.0 FTEs	\$120,885				
Goal 3 – 2 Projects – .6 FTEs	\$ 42,286				
Goal 4 – 11 Projects – 9.3 FTEs	\$307,888				
Goal 5 – 3 Projects – 1.1 FTEs	\$ 30,778				
Total	\$698,194				

Associate Director Date

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State: Massachusetts

Check one: **Multistate Extension Activities**
 Integrated Activities (Hatch Act Funds)
 Integrated Activities (Smith-Lever Act Funds)

Actual Expenditures

Title of Planned Program/Activity	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Vegetable Production	\$ 2500				
Rural Low Income Families/Welfare	\$ 100				
Greenhouse Production	\$ 250				
Youth Development	\$ 300				
	\$				
Total	\$ 3150				

 Director Date

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State: Massachusetts

Check one: **Multistate Extension Activities**
 Integrated Activities (Hatch Act Funds)
 Integrated Activities (Smith-Lever Act Funds)

Actual Expenditures

Title of Planned Program/Activity	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Apple Pest Management	\$ 500				
Green School	\$ 1000				
Composting	\$ 500				
Youth Development/Workforce Preparation	\$ 1000				
Butternut Squash	\$ 1000				
Total	\$ 4000				

 Director Date