



## NATURAL CAPITAL INITIATIVE AT MANOMET R E P O R T



### THE 2010 MASSACHUSETTS DAIRY PROMOTION BOARD DAIRY FARM IMPACT SURVEY:

### SYNTHESIS OF RESULTS

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## EXECUTIVE SUMMARY

This report describes the results from a 2010 survey of Massachusetts (MA) dairy farmers and other information to highlight the contributions and impacts of MA dairy farming on the Commonwealth and key assistance programs. MA dairy farmers significantly contribute to the economy of the Commonwealth and local communities through jobs, revenue, taxes, and local purchases. They are much more likely to apply measures to conserve natural resources than other U.S. farmers. They also provide support to their local communities by conserving farmland and agriculture heritage, producing local food, volunteering, and providing recreation access at levels greater than those of other U.S. farmers, landowners, and/or citizens. Thus, almost three-quarters of MA dairy farmers reported that their local communities were supportive or very supportive of dairy farming. Many MA dairy farmers have increased the viability of their farms by participating in state and federal programs that improve their farm business, conserve farmland, and minimize negative impacts. The MA Dairy Farmer Tax Credit Program, MA Agriculture Preservation Restriction (MAPR) Program, and MA Agricultural Environmental Enhancement Program (MAEEP) are three such programs that have played an essential role in maintaining economic viability of dairy agriculture and the flow of benefits that they provide to the Commonwealth and its communities. The implementation of these relatively new programs has been followed by the stabilization of dairy farm numbers in MA after decades of decline.

### Economic Impacts

- MA dairy farms generated \$43.9 million in sales in 2010 and accounted for 10.3% of MA agricultural products' value.
- MA dairy farms added \$150 million into the state's economy by supporting companies that provide supplies and services to farms. Almost two-thirds of their farm supply and service expenditures were spent in MA.
- The payroll of MA dairy farms was an estimated \$13.5 million in 2010.
- Each MA dairy farm reported paying on average \$10,350 in property and excise taxes. Their tax contributions have helped financially support town services in over 25% of MA municipalities.

### Benefits to Communities

- MA dairy farms have been important to local food production. MA dairy farms produced over 18% of the milk consumed in the state in 2007. Over 25% of MA dairy farmers directly sold food products (meat, dairy products, eggs, maple syrup, vegetables, baked goods, honey, apples, and berries) directly to consumers.
- Statewide, MA dairy farms provided recreational access to an estimated 37,000 acres. Almost 90% of MA dairy farms reported allowing public recreational access. Dairy farms

reported an average of 5.3 recreational visitors/acre/year, about half the visitation rate of national parks.

- About 80% of MA dairy farmers indicated that they had land with conservation restrictions (easements) that prevent conversion to other land uses.
- MA dairy farmers cared about farm appearance, with 90% of farmers reporting the application of practices that enhance the scenic value of agriculture.
- About 80% of MA dairy farmers reported volunteering in their communities, a frequency that exceeded that of MA residents. Dairy farmers reported volunteering an average of 90 hours/year, three times the level of MA residents.
- Nearly all MA dairy farmers reported applying at least one practice to minimize farming nuisances for neighbors.

### Environmental Conservation

- Over 90% of dairy farmers reported applying practices to minimize nutrient runoff and protect clean water.
- About 80% of dairy farmers reported applying practices to minimize soil erosion and use of nutrients (fertilizers and manure) that can pollute water.
- About 50% of MA dairy farmers reported managing some of their lands for wildlife for an estimated total 23,000 acres of wildlife habitat.
- Over 95% of MA dairy farmers reported recently applying at least one energy conservation measure on their farms and two-thirds use renewable energy.

### Importance of State and Federal Farm Programs

- Nearly all farmers (95%) indicated that the MA Dairy Farmer Tax Credit Program in 2008 and 2009 was important for maintaining the economic viability of their farm. MA dairy farmers primarily used their income tax credit to pay for operating costs. This program helps dairy farmers pull through tough economic times when wholesale markets do not pay dairy farmers what it costs them to produce milk.
- About 90% of MA dairy farmers reported enrollment in one or more of twelve state or federal conservation assistance programs to improve farming practices or reduce environmental impacts.
- Both the MA Agriculture Preservation Restriction (MAPR) Program and MA Agricultural Environmental Enhancement Program (MAEEP) had >20% enrollment of dairy farms and were also identified by many MA dairy farmers as being important to the economic viability of their farms. In the MAPR Program, the Commonwealth buys a conservation restriction (an easement) from the landowner, which reduces property taxes and development pressure on farmland. The MAEEP provides support for practices that reduce emissions, energy use and costs, and meet clean water standards.



## INTRODUCTION

To assess the contributions and impacts of dairy farms and the importance of state and federal farm programs to dairy agriculture, Manomet worked with the Massachusetts Dairy Promotion Board (MDPB) to randomly survey 100 MA dairy farmers (Whitman 2011)<sup>1</sup>. This report uses survey results and information from other sources to describe how MA dairy farms affect local economy and communities, their conservation practices, and the importance of existing state and federal programs.

Like other small business owners, MA dairy farmers have worked hard to make their businesses succeed despite these challenging economic times. Their greatest challenges have been low and unstable wholesale milk prices coupled with ever-increasing milk production costs. After the historic low wholesale milk prices in 2002 and 2003, prices paid to farmers significantly rose in 2004 and 2005, only to plummet in 2006, 2008, and 2009. When milk prices were low, most farmers were not paid what it costs to produce the milk and so have struggled to cover their expenses. In 2010, 38% of MA dairy farmers were paid milk prices that did not even cover their short-term operating costs (Whitman 2011). Unstable milk prices have made it difficult for dairy farmers to invest in the future.

Dairy farmers have also been squeezed by skyrocketing energy and health care costs (American Farmland Trust 2008). Moreover, they uniquely face the pressures of increasing land prices and property taxes, which can induce them to sell their land to developers in tough economic times. Most MA dairy farmers have used over a dozen state and federal farm programs to overcome these challenging pressures. One goal of this survey was to determine whether MA dairy farmers have found these programs helpful in addressing economic and conservation challenges. If so, these programs could be stepping stones to increasing the sustainability of dairy agriculture in MA.

<sup>1</sup> The 100 farmers were selected from the total population of MA dairy farmers (n=158). The MDPB provided advice about survey wording to ensure that the questions could be easily understood by farmers. The survey was conducted in early spring when it would be easier for farmers to complete the survey. Non-respondents were reminded up to three times by mail and once by phone. Results were consistent with results from other recent surveys of dairy farmers in New England (A. Whitman, unpub. data; J. Davis pers comm.). Because farmers in another regional dairy farmers survey never under reported negative impacts and tended to under report positive impacts (G. Clark, pers. comm.), it is likely that negative impacts were not under reported by participating dairy farmers. Although all surveys are subject to errors, every effort was made to ensure accurate and reliable results. Forty-three dairy farmers (43%) responded. Their herd sizes, gross sales, and geographic distribution statistically mirrored those of all MA dairy farms. Hence, these survey results are likely to accurately represent impacts and practices on MA dairy farms. Some important social issues (e.g., animal care) were not addressed by this survey because this type of survey can not satisfactorily address such complex topics.

## ECONOMIC IMPACTS

MA dairy farms generated \$43.9 million in sales in 2010 (USDA National Agricultural Statistics Service 2011) and accounted for 10.3% of the value of agricultural products sold in MA (USDA National Agriculture Statistics Service 2007).



MA Dept. Agricultural Resources

### Jobs and Payroll

MA dairy farms employed an average of 3.6 full-time equivalent (FTE) employees, which amounts to an estimated 588 employees across the state. The average wage was \$29,100 in 2010 (Whitman 2011), which was significantly above the living wage for MA (\$26,000; Glasmeier 2011). The average dairy farm payroll was \$80,500 (including the value of fringe benefits) and the statewide estimated total payroll was \$13.5 million (Whitman 2011). If one includes jobs in the dairy processing industry, the impact may be even greater. In nearby Connecticut, each dairy farm job supported about three additional jobs in the dairy processing industry (CT DECD 2009) which suggests dairy in MA might support almost 2,400 jobs.

### Local Taxes

In 2010, MA dairy farms paid an average of \$10,350 in local taxes (property plus excise taxes) (Whitman 2011), generating an estimated \$1.5 million in local tax revenue. Their local taxes averaged twice that of MA farmers overall (\$4,808) and three times that of the national average (\$3,118; 2007 Census of Agriculture). Even when assessed at its farmland value under the MA Taxation Law Chapter 61b Program, farmland financially supports town services (American Farmland Trust 2008). Over 25% of the municipalities in MA have dairy farms.

### Direct Sales and Marketing

MA dairy farmers averaged gross sales of milk of \$292,000 per farm in 2010 with values ranging from \$17,800 to \$1,200,000 (Whitman 2011). Their gross sales for all agricultural products averaged \$370,000 per farm, with values ranging from \$21,000 to \$1,598,700 in 2010 (Whitman 2011). Their average gross sales were <50% of the U.S. average for dairy farms (\$786,000, 2009 Census of Agriculture). Half of MA dairy farms reported total gross sales <\$252,600 in 2010. Because it takes about \$300,000 in gross sales to generate \$50,000 of family income (Shoemaker et al. 2008), the income of many MA dairy farmers may be <\$50,000.

## Local Sourcing

An average of 59% of MA dairy farm supply and service expenditures were spent in MA (Whitman 2011). This includes fuel, fertilizer, repairs, veterinary care and supplies, hardware, milking equipment, chemicals, and seed. As some farmers anecdotally reported in the survey, sourcing from other states may be necessary to use the nearest or cheapest supplier.

## Indirect Impacts

Dairy agriculture also is indirectly responsible for jobs in support services, such as feed suppliers, veterinary services, equipment suppliers, and financial services, which also multiply its economic impact. Dairy farms may generate up to \$150 million in economic activity for MA economy through the purchase of goods and services (Massachusetts Dairy Farm Revitalization Task Force 2007). In nearby Connecticut, each dollar of dairy farm milk sales generated about twelve more dollars in economic activity in the dairy processing industry (CT DECD 2009). Using this multiplier effect, MA dairy agriculture might generate as much as \$500 million in economic activity through the dairy processing industry.

## BENEFITS TO LOCAL COMMUNITIES

MA dairy farms contribute to a local food supply, manage and conserve the natural resources that they use, provide recreational access, preserve local agricultural heritage, are active in their local communities, and apply practices to minimize impacts to neighbors.

### Local Food

The greatest contribution of MA dairy farms is food production, including the food production for their local community. MA dairy farms produced about 28,377,000 gallons (244 million pounds) of milk in 2010 (USDA National Agricultural Statistics Service 2011). They produced over 18% of the milk consumed in the state in 2007, which might be a small increase from 1997 when they produced about 14% of the milk consumed in MA (see Holm et al. 2000). This makes MA more self-reliant for dairy products than for any other major food commodity.

Moreover, a greater percentage of MA dairy farmers sold food products directly to consumers than did U.S. farmers, selling meat, dairy products, eggs, maple syrup, vegetables, baked goods, honey, apples, and berries (Table 1). Dairy farms are key sources of local food in MA.

Local food is often associated with small farms (Martinez et al. 2010). Although the U.S. trend has seen an increasing number of large dairy operations (> 500 milk cows; USDA National Agriculture Statistics Service 2010), milk produced in MA continues to come from smaller dairy farms (<100 milking head). MA has 157 dairy farms (MDAR Division of Animal Health, unpublished data) with a mean milking herd size of 88 cows/farm, which is 27% less than the U.S. mean milking herd size of 120 cows/farm (USDA National Agriculture Statistics Service 2007).



MA Dept. Agricultural Resources

## Recreational Access

Public access to private property enhances the quality of life in New England, but is a disappearing tradition. Almost 90% of MA dairy farmers reported providing some public recreational access to their land, a level that greatly exceeds access provided by U.S. forest landowners (Table 1). Nearly a third (28%) of MA dairy farmers reported providing open access to anyone, compared to only 11% of northern U.S. landowners (Table 1). They reported providing access for hunting, winter trail use, summer trail use, painting, fishing, bird watching, photography, picnicking, boating, camping, biking, dog walking, snowshoeing, and motorcycling. Over 75% of dairy farmers indicated that they provided hunting access.

MA dairy farmers reported making available to recreational users an average of 218 acres per farm in 2010. Statewide they provided an estimated 37,000 acres of private lands available for outdoor recreation. Farmers reported an average of 184 recreational visitors per farm in 2010 or 5.3 recreational visitors/acre/year (Whitman 2011). This compares favorably with U.S. national parks, which average 9.8 visitors/acre/year (Walls 2009). MA dairy farmers provided many opportunities and a large acreage from their private lands for public recreation.

## Agricultural and Heritage Conservation

Eighty percent of MA dairy farms reported having conservation restrictions (easements) that prevent conversion to other non-agricultural land uses. These restrictions/easements protected an estimated 35,000 acres of farm land from development to non-agricultural uses. This helped maintain the Commonwealth's farmland and agricultural heritage and provided communities with local food production. This included an average of 31% of lands owned by the farmer.

MA dairy farms typically stayed in a family for three generations, but sometimes up to 13 generations (Whitman 2011). Although about two-thirds of MA dairy farmers reported planning to transfer their farm to the next generation, only about half reported having a transfer plan.

By using leased lands, MA dairy farmers keep farmland in production. Nearly all (95%) MA dairy farms reported leasing

Table 1. The percent of MA dairy farmers and others that provided natural resource and social benefits to local communities in 2010.

Benefits to Local Communities	MA Dairy Farmers (%) <sup>1</sup>	Reference Values
<b>Local Food</b>		
- directly sold food products to consumers	27%	6% U.S. farms <sup>2</sup>
<b>Recreational Access</b>		
- provided some public recreational access	87%	13% U.S. forest landowners <sup>3</sup>
- provided access for hunting	75%	-
- provided open access to anyone	28%	11% northern U.S. landowners <sup>4</sup>
<b>Agricultural Conservation</b>		
- owned farmland with conservation restrictions that prevent conversion	80%	-
- used >1 practice to add to their farm's scenic appeal	90%	-
- maintained farm buildings >60 years old that are reminders of agricultural heritage	67%	30% U.S. farmers <sup>2</sup>
- planned to transfer to next generation	67%	-
<b>Good Neighbor Activities</b>		
- employed at least one farm practice to be a good neighbor	98%	-
- employed practices to minimize the effect of fly populations and odor	77%	-
- volunteered in community	80%	26% MA residents <sup>5</sup>
- volunteered with local agriculture organizations	50%	-
- volunteered in local government	33%	-

<sup>1</sup>Whitman (2011), <sup>2</sup>Maryland Department of Planning (2007) and National Park Service (2011), <sup>3</sup>Butler (2008), <sup>4</sup>Cordell et al. (1993), <sup>5</sup>Corporation for National and Community Service (2010a).

land, although only 12% depended entirely on leased land. About 26% of acres leased by dairy farmers were protected by a conservation restriction (Whitman 2011), leaving the remaining leased land vulnerable to liquidation to meet the financial goals of landowners.

MA dairy farmers look after farm appearance, with 90% of farmers reported using two or more practices that add to their farm's scenic value (Table 1). These practices included: mowing along roadsides, placing conspicuous farm signs, pasturing cows along roadsides, removing trash along roads, cropping in areas visible from the road, painting or re-siding visible buildings in the last 10 years, and landscaping their farm entrance. About 67% of dairy farmers reported maintaining farm buildings >60 years old that are visual reminders to local communities of their agricultural heritage, twice the national farm average of 30.1% (Table 1).

MA dairy farmers reported educating the public by hosting farm visits for public groups, averaging 100 visitors/farm/year or 2.4 visitors/acre/year (Whitman 2011), which is 25% of the visitation rates for some national parks (Walls 2009). Overall, MA dairy farmers helped maintain the Commonwealth's agricultural heritage by conserving farmland, preparing the transfer of their farm to the next generation, making their farm visually appealing, maintaining old farm buildings, and educating the public about agriculture.

### Volunteering and Neighbor Relations

Dairy farmers reported contributing to their local community by volunteering their time and employing practices to minimize impacts to neighbors. About 80% of MA dairy farmers reported volunteering in their communities, which is far greater than the volunteer rate of 26.3% for MA residents in 2009. They reported volunteering an average of 90 hours/year, which were three times as many hours as the average volunteer time of 27 hours/year for MA residents in 2009.

Nearly all MA dairy farmers reported applying at least one practice to support good neighbor relations (Table 1). Almost 80% of MA dairy farmers reported applying practices to minimize odor and the effect of fly populations on their neighbors. Two-thirds of farmers reported either providing their contact information or routinely talking to neighbors. Almost three-quarters of MA dairy farmers indicated that local communities were supportive or very supportive of local dairy farming (Whitman 2011).

### ENVIRONMENTAL CONSERVATION

MA dairy farmers frequently applied stewardship practices to protect and conserve natural resources in MA, including water, soils, wildlife habitats, and energy sources (Table 2). This helped maintain the natural resources necessary for drinking water, food production, and quality of life while minimizing the negative environmental impacts of dairy agriculture. Their conservation efforts provided an estimated \$120 million of non-market values,



such as open space, clean water, scenic views, wildlife habitat, food production, wood products, and real estate values for local communities (Breunig 2003).

### Water Quality Protection

Clean water is essential to supply drinking water and habitat for aquatic wildlife. Over 90% of MA dairy farmers reported applying practices to minimize nutrient runoff and protect water quality (Table 2). About 80% of MA dairy farmers also reported that they applied practices to minimize the use of farm chemicals.

About 30% of farmers reported using buffers strips along waterways that protect water quality, which was nearly four times the level found among U.S. family farmers. Although buffering all water bodies ensures the protection of water quality, some farmers may have not used buffer strips because they lacked agricultural lands that bordered water bodies. A review of MA waterways surveys between 2000 and 2009 revealed that very few impaired segments (7 of 225) had impairments that were attributed to nearby dairy farms (A. Whitman, unpubl. data, based on Water Quality Reports found in Massachusetts Department of Environmental Protection 2011). Poor storm water management and failing septic systems were much more frequently cited sources of impairments.

### Soil Conservation

Healthy soils are the basis of agriculture stewardship and essential for productive farms. About 80% of MA dairy farmers indicated that they applied soil conservation practices to minimize soil erosion and avoid the over use of nutrients (fertilizers and manure) that can pollute water (Table 2). About 50% of MA dairy farmers indicated that they had a state- or NRCS-approved nutrient



management plan in 2010, which was nine times more frequent than U.S. corn farmers. Farmers employ these nutrient management plans to efficiently use manure and fertilizers so that they produce reliable quantities of feed, improve farm soils, minimize the cost of wasted nutrients, and avoid nutrient runoff into lakes and rivers (Bruulsema and Ketterings 2008).

### Wildlife Conservation

Wildlife is a key part of every ecosystem and provides viewing enjoyment and opportunities for hunting, and fishing. About

Table 2. The percent of MA dairy farmers and other U.S. farmers applying environmental conservation practices in 2010.

Environmental Conservation Practices	MA Dairy Farmers (%) <sup>1</sup>	Reference Values
<b>Water Quality Protection</b>		
- applied farming practices to minimize nutrient runoff and protect water quality	91%	-
- used farming practices to minimize use of pesticides, herbicides, and fungicides	78%	>30% NE corn farmers <sup>2</sup>
- used buffers along waterways which protect water quality	30%	8% U.S. family farmers <sup>3</sup>
<b>Soil Conservation</b>		
- used farming practices to minimize soil erosion	80%	-
- tested soils frequently enough to ensure best management of nutrients and manure	80%	-
- had a state- or NRCS-approved nutrient management plan	50%	8.8% U.S. corn farmers <sup>4</sup>
<b>Wildlife Conservation</b>		
- managed a portion of their farm for wildlife	46%	4% U.S. family farmers <sup>2, 3</sup>
<b>Energy Conservation</b>		
- used one or more farm energy conservation practices in last 5 years	95%	-
- had an energy audit	25%	<2% NE farms, <1% U.S. farms <sup>5</sup>
- used renewable energy sources	65%	-
- used renewable energy from wind, solar, and/or methane digesters	12%	<1% U.S. farmers <sup>5</sup>

<sup>1</sup>Whitman (2011), <sup>2</sup> USDA National Agricultural Statistics Service (2001), <sup>3</sup>Lambert et al. (2007), <sup>4</sup>Lambert et al 2007, <sup>5</sup>USDA Census of Agriculture (2009).

46% of MA dairy farmers indicated that they managed some portion of their farm for wildlife, which was much greater than a statistic of 4% of U.S. family farmers who enhanced their land for wildlife (Lambert et al. 2007). On average, MA dairy farmers reported managing >20% of their lands primarily for wildlife (Whitman 2011). This amounted to an estimated 23,800 acres of private lands managed for wildlife.

### Energy Conservation

Conserving energy can reduce air pollution and greenhouse gas emissions while saving farmers money. Over 95% of MA dairy farmers reported applying at least one energy conservation measure to their farms in the last five years (Table 2). Over 25% of MA dairy farmers reported having energy audits conducted, which was much more frequent than New England farms or U.S. farms. They also reported the application of other measures to reduce energy use, including pre-heaters, efficient lighting, variable speed pumps, and efficient fans. Over 65% of MA dairy farmers indicated the use of one or more types of renewable energy on their farm (Table 2). About 35% indicated the use of an outdoor wood boiler while about 25% indicated the use of other types of wood heat. They also reported the use of energy from wind, solar, and/or methane digesters more frequently than farmers in New England or the U.S. MA dairy farms reported the use of energy conservation measures and renewable energy much more frequently than farms in New England and the U.S.



### IMPORTANCE OF STATE AND FEDERAL FARM PROGRAMS

Most MA dairy farmers participate in state and federal programs that help them improve their farm business, conserve farmland, and reduce impacts.

#### The Massachusetts Dairy Farmer Tax Credit

The MA Dairy Farmer Tax Credit Program was the assistance program most frequently selected by MA dairy farmers as being important to the economic viability of their farm, as well as vital to the sustainability of dairy agriculture in MA. This program

provides farmers with a tax credit in years when farm milk prices are less than operating costs, which protects farmers from cyclical downturns (Holstead 2009). Its enabling legislation, the 2008 Dairy Preservation Act, requires that the MA agriculture commissioner sets the milk price at which the tax credit becomes available and the amount of the tax credit (in relation to the volume of farm milk production). This program can allocate up to \$4 million in tax credits each year but tax credits are only made available in some years.

Nearly all responding farmers (95%) indicated that their MA Dairy Farmer Tax Credit payment for tax years 2008 and 2009 was important for maintaining the economic viability of their farm (Table 3). Over 95% of MA dairy farmers used their tax credit to pay for operating costs. Of these farmers, the majority also used a portion of the payments to pay debts (79%) and to pay for capital improvements (62%). The 5% of respondents who did not use the credit to pay for operating costs all used the payment to pay debts. All MA dairy farmers used the program to pay operating expenses and reduce debt when milk prices were at nearly record lows. Feedback from dairy farmers shows that the program has financially helped dairy farmers when wholesale markets did not pay the costs of milk production.

### Other Programs

About 90% of MA dairy farmers were enrolled in one or more of twelve state or federal conservation assistance programs for conserving their farmland. Among the twelve programs, enrollment levels and their economic importance to MA dairy farmers varied from high to low.

Two assistance programs had >20% enrollment and were also selected by many MA dairy farmers as being important to the economic viability of their farms: MA Agriculture Preservation Restriction Program (APR) and MA Agricultural Environmental Enhancement Program (AEEP) (Table 3). In the MA APR Program, the Commonwealth buys a deed restriction from the landowner to preclude activities that reduce agricultural viability. This program reduces property taxes and the pressure from development and spiraling land prices on farmland (American Farmland Trust 2008). The MA AEEP pays for materials for farming practices that keep surface water clean, promote energy efficiency, conserve water, and reduce greenhouse gas emissions. It helps dairy farmers comply with clean water laws and avoid costly litigation (American Farmland Trust 2008).

The MA Taxation Law Chapter 61, 61a, 61b, or 61c Program had higher enrollment (>30%) than these three programs, but was identified by few MA dairy farmers (<10%) as being important to the economic viability of their farms. This program reduces farmland property taxes to rates corresponding to current use (as opposed to highest real estate value). This program was likely rated important by relatively few dairy farmers because most dairy farmers take for granted this older but very popular program. Even though this program reduces taxes, the property taxes of dairy farmers may still exceed the cost of their use of local government services (American Farmland Trust 2008).



Table 3. The percent of MA dairy farmers who indicated that different state and federal farm programs were important to the economic viability of their farm or used different assistance programs.

State and federal farm programs	MA Dairy Farmer Enrollment (%) <sup>1</sup>	Enrolled MA dairy farmers who rated the program as important to the economic viability of their farms (%) <sup>1</sup>
Use of conservation assistance programs by MA dairy farmers		
MA Taxation Law Chapter 61, 61a, 61b, or 61c Program	63%	-
USDA NRCS Environmental Quality Incentives Program (EQIP)	33%	-
MA Agriculture Preservation Restriction Program (APR)	28%	-
MA Agriculture Environmental Enhancement Program (AEEP)	23%	-
Rating a program as important to the economic viability of their farms		
MA Dairy Farmer Tax Credit payment for tax years 2008 and 2009	95%	95%
An energy conservation program (MFEP, REAP, and/or AEGP)	58%	-
MA Farm Energy Program (MFEP)	56%	-
MA Agriculture Preservation Restriction Program (APR)	44%	58%
MA Farm Viability Enhancement Program (FVEP)	30%	-
MA Agricultural Environmental Enhancement Program (AEEP)	28%	100%
USDA/Rural Energy for America Program (REAP)	16%	-
MA Agricultural Energy Grant Program (AEGP)	12%	-
MA Renewable Energy Trust (MRET)	9%	-
MA Taxation Law Chapter 61, 61a, 61b, or 61c Program	5%	5%
USDA NRCS Environmental Quality Incentive Program (EQIP)	5%	7%

<sup>1</sup>Whitman (2011).

More than 50% of MA dairy farms identified one or more energy conservation programs (MFEP, REAP, AEGP, and/or MRET) as being important to the economic viability of their farms, with MFEP being cited most frequently as important (Table 3). These programs provide technical and financial assistance to help farmers implement renewable energy systems and/or energy conservation measures.

Almost one-third of MA dairy farmer identified the MA Farm Viability Enhancement Program as being important to the economic viability of their farms (Table 3). This program helps participating farmers develop and implement a farm viability plan in exchange for a term easement that protects farmland from conversion. It leverages bank and farmer financing.

Two other programs were infrequently identified by MA dairy farmers as being important to the economic viability of their farms: the Matching Enterprise Grants for Agriculture and Agriculture Business Training Program. The Matching Enterprise Grants for Agriculture offers technical and business assistance to beginning farmers and may have been rarely identified because most dairy farmers gain their business experience by working on a family member's farm. The Agriculture Business Training Program provides relevant business training to farmers at locations around the state. It may have been infrequently highlighted because it may improve business management over the long-term but may lack the short-term impact needed to lift dairy farms over short-term crunches like the current economy.

## SUMMARY

MA dairy farmers significantly contributed to the economy of the Commonwealth and local communities through jobs, revenue, taxes, and local purchases. They are much more likely to apply measures to conserve natural resources than other U.S. farmers. They also provide support to their local communities by conserving farmland and agriculture heritage, producing local food, volunteering, and providing recreation access at levels greater than comparison groups.

MA dairy farmers participate in a variety of state and federal programs to improve their farms. It is noteworthy that just as MA Dairy Farm Tax Credit was created in 2008, and the use of MA Agriculture Preservation Restriction Program (APR) and MA Agricultural Environmental Enhancement Program (AEEP) by farmers significantly increased in the late 2000s (per. comm. MA Department of Agriculture Resources), the numbers of dairy farms in the state stabilized after decades of decline. Although circumstantial, these trends may be the best evidence for continuing these programs as a means of enhancing the sustainability of MA dairy farmers. These three programs have played an important role in maintaining economic viability of dairy farms and the flow of benefits that they provide to the Commonwealth and its communities.

## REFERENCES

- American Farmland Trust. 2010. 2007 NRI: Changes In Land Cover/Use—Agricultural Land. Farmland Information Center, American Farmland Trust, Washington, D.C.
- American Farmland Trust. 2008. Farms for the Future: Massachusetts' Investments in Farmland Conservation. American Farmland Trust, Farmland Information Center, Northampton, MA.
- Breunig, K. 2003 *Losing Ground: At What Cost?* Massachusetts Audubon Society, Lincoln, MA.
- Bruulsema, T. and Q. Ketterings. 2008. Fertilizer BMPs—Best Management for Fertilizers on Northeastern Dairy Farms. International Plant Nutrition Institute, Norcross, GA. Reference # 08052.
- Butler, B. 2008. Family Forest Owners of the United States, 2006. Gen. Tech. Rep. NRS-27. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 72 p.
- Connecticut Department of Economic and Community Development (CT DECD). 2009. The economic and fiscal impacts of Connecticut's dairy industry. Department of Economic and Community Development and the Department of Agriculture in cooperation with the University of Connecticut, Department of Agricultural and Resource Economics, Storrs, CT.
- Cordell, H., D. English, and S. Randall. 1993. Effects of subdivision and access restrictions on private land recreation opportunities. General Technical Report RM231. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 21p.
- Corporation for National and Community Service. 2010. Volunteering in Massachusetts. Corporation for National and Community Service, Washington, DC (Accessed 6/24/11).
- Glasmeyer, A. 2011. Poverty in America: Living Wage Calculator. Pennsylvania State University, University Park, PA (online: <http://www.livingwage.geog.psu.edu/states/25/locations>, accessed 15 July 2011).
- Holm, D., D. Lass, R. Rogers, and D. Damery. 2000. Agriculture's Hold on the Commonwealth. Department of Resource Economics, University of Massachusetts, Amherst, MA for the MA Dept. of Food and Agriculture.
- Holstead, J. 2009. Dairy farming. OLR Research report, 2009-R-0032 (<http://www.cga.ct.gov/2009/rpt/2009-R-0032.htm>, accessed 6/15/11).
- Lambert, D., P. Sullivan, R. Claassen, and L. Foreman. 2007. Profiles of US farm households adopting conservation-compatible practices. *Land Use Policy* 24: 72-88.
- Martinez, S., M. Hand, M. Da Pra, S. Pollack, K. Ralston, T. Smith, S. Vogel, and S. Clark, L. Lohr, S. Low, and C. Newman. 2010. Local Food Systems: Concepts, Impacts, and Issues, ERR 97, U.S. Department of Agriculture, Economic Research Service.
- Maryland Department of Planning. 2007. The 2007 Census of Agriculture: Sustainability Practices on Maryland's Farms. Maryland Department of Planning, Baltimore, MD.
- Massachusetts Dairy Farm Revitalization Task Force. 2007. Report to the Legislature, Executive Summary. Boston, MA.
- Massachusetts Department of Environmental Protection. 2011. Water Quality Assessments: Water Quality Assessment Reports. Massachusetts Department of Environmental Protection, Division of Watershed Management, Boston, MA (last accessed on October 15 2011 on-line: <http://www.mass.gov/dep/water/resources/wqassess.htm>).
- Massachusetts Department of Revenue. 2011. Tax Rates by Class. Massachusetts Department of Revenue, Division of Local Services, Municipal Databank/Local Aid Section.
- Mishra, A., H. El-Osta, and J. Johnson. 2005. Succession decisions and retirement income of farm households, No 32810, Agricultural Outlook Forum 2005, United States Department of Agriculture, Agricultural Outlook Forum, <http://econpapers.repec.org/RePEc:ags:usaofi:32810>.
- National Park Service. 2011. National Registry of Historic Places. Washington DC <http://nrhp.focus.nps.gov/natreg/docs/Download.html> (accessed 7/1/11).
- Shoemaker, D., M. Eastridge, D. Breece, J. Woodruff, D. Rader, and D. Marrison. 2008. 15 Measures of Dairy Farm Competitiveness. Ohio State University Extension, Ohio State University, Columbus, OH.
- USDA Census of Agriculture. 2009. 2009 On-Farm Energy Production Survey, [www.agcensus.usda.gov/Publications/2007/Online\\_Highlights/On-Farm\\_Energy\\_Production/index.asp](http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/On-Farm_Energy_Production/index.asp). (accessed June 23, 2011).
- USDA National Agricultural Statistics Service. 2011. New England Cash Receipts 2010. New England Agricultural Statistics, USDA National Agricultural Statistics Service, Concord, NH.
- USDA National Agricultural Statistics Service. 2011. Agricultural Review, volume 31, number 3. New England Agricultural Statistics, USDA National Agricultural Statistics Service, Concord, NH.
- USDA National Agriculture Statistics Service. 2010. Overview of the United States Dairy Industry. USDA National Agriculture Statistics Service, Washington, DC.
- USDA National Agriculture Statistics Service. 2007. 2007 Census of Agriculture: State Profile – Massachusetts. USDA, Washington, DC.
- USDA National Agricultural Statistics Service. 2001. Pest Management Practices 2000 Summary. Sp Cr 1 (01). USDA National Agricultural Statistics Service, Washington, DC.
- Walls, M. 2009. Backgrounder: Parks and Recreation in the United States. Resources for the Future. Washington, DC.
- Whitman, A. 2011. The 2010 Massachusetts Dairy Promotion Board Dairy Farm Impact Survey: Survey results. Manomet Center for Conservation Sciences, Natural Capital Initiative, Manomet, MA. Report NCI-2011-1.

### **RECOMMENDED CITATION**

Whitman, A. 2011. The 2010 Massachusetts Dairy Promotion Board Dairy Farm Impact Survey: A synthesis of results. Manomet Center for Conservation Sciences, Natural Capital Initiative, Manomet, MA. Report NCI-2011-2.





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