THE MASSACHUSETTS FARM-AND-FOOD SYSTEM

A Five-Year Policy Framework 1989-1993

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FOOD AND AGRICULTURE

Michael S. Dukakis, *Governor*

James S. Hoyte, *Secretary of Environmental Affairs*

August Schumacher Jr., *Commissioner of Food and Agriculture*

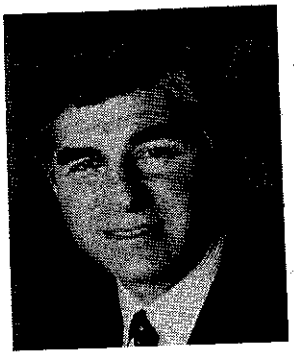
October 1988

Table of Contents

On the cover: DeAngelis Farm in Millis, an 81-acre dairy farm, is protected under the state Agricultural Preservation Restriction (APR) program.

Publication # 15695-81-300-10-88-C.R. Second Printing 150-3-89
Approved by: Ric Murphy, State Purchasing Agent

Foreword



Any serious effort to brighten the prospects for Massachusetts agriculture will require some clear, candid thinking about basic values. We must ask ourselves not only how we value agriculture as an enterprise, but how we value the very essence of rural Massachusetts society and especially its hard-working farmers.

We must decide how we can sustain a modern, full-time family farming system which doesn't overlook such ideals as stewardship of the land and the passing of farms through the generations. No new agricultural policies can be developed and no existing policies can be recast until that underpinning value system is articulated. It is a continuing step in the long process of revitalizing Massachusetts agriculture and the rural environment which supports it.

Twelve years ago, then-Food and Agriculture Commissioner Fred Winthrop, then-Secretary of Environmental Affairs Evelyn Murphy, and I unveiled an ambitious program rooted in these values to revitalize and restructure the state's farm-and-food economy. Based on a multi-volume study compiled by the bipartisan Goldberg Commission two years earlier, the *1976 Policy for Food and Agriculture* provided the blueprints for what would be a difficult, though largely successful drive to rebuild the state's farm and food processing sector.

That comprehensive policy framework - which is still very much in effect today - is anchored by four central strategies:

- Make sure there's enough farmland left to farm by protecting our prime soils.
- Muster all of our resources and marketing wits to open up every possible avenue for selling Massachusetts farm-and-food products at home in our neighborhoods, in our stores and supermarkets, in other states and overseas.
- Come up with the appropriate financing - development loans, grants, venture capital and other credit sources - to stabilize and help expand the businesses of our farmers and food processors.
- Carefully manage pesticides and manures (through composting) to ease the environmental concerns which can shadow agriculture, particularly in a heavily urban state.

The foresight, determination and common sense embodied in those policies have been responsible for the modest resurgence we've seen in Massachusetts agriculture and food processing in the 1980s.

Supportive policies, however, are only good intentions without solid funding. I am delighted that during these years we have, with terrific support from the Legislature, been able to invest more than $277 million in the Massachusetts farm-and-food system:

- $50 million invested to date in farmland protection (Agricultural Preservation Restriction - APR) and conservation practices (Massachusetts Emergency Assistance Program). In addition, $30 million more is available to protect more farmland.
- $400,000 per year in promotion in support of our "Massachusetts Grown...and Fresher" campaign.
- $1.4 million in Integrated Pest Management and biological control grants.
- $220 million in development loans for farmers, fishermen, food processors, and food distributors.
- $5 million in annualized additional funding for our state Extension Services.
- nearly $400,000 in market development grants to 81 farmers.

Agriculture is where it is today partly as a result of these policies and investments, but mostly as a result of some very hard work by our farmers and food processors.

In 1986, for the first time in memory, Massachusetts was ranked first in New England in dollars earned at farmgate - more than $425 million. The number of farms in the state has stabilized at about 6,000. USDA figures for 1988 actually show an increase of 100 farms. Food processing in Massachusetts has grown from a $1.5 billion to a $3.5 billion industry, deriving an increasing amount of its raw product from food grown on Massachusetts farms.

But as we look ahead, some legitimate questions arise. What next? Now that we've come this far, what other steps must we take to ensure the continued viability of Massachusetts agriculture and food processing as we move toward the 21st century? Clearly, as we contemplate the growth of the Massachusetts economy overall, we must consider how the farm-and-food sector will keep apace of that growth. We must consider, too, the important role farmers and food processors can play in the revitalization of rural Massachusetts. The time has come to review the existing policy framework and make proper adjustments for the future.

It is in that spirit that we submit this report on the *Massachusetts Farm-and-Food System: A Five-Year Policy Framework*. The plan outlined here has been reviewed and synthesized by the 1988 **Massachusetts Task Force on Farm-and-Food Policy**. Those individuals contributed input which was invaluable to the completion of this policy. I wish to sincerely thank the members of the task force for their work and leadership.

Governor Michael S. Dukakis

Preface

The farm-and-food policy formulated more than a decade ago has served the Commonwealth well. It set out to revive the sagging farm-and-food economy in Massachusetts. And the programs it developed can indeed claim a share of credit for the healthier condition agriculture now enjoys here. Of course, putting policies in motion requires people. The state is fortunate to have a pool of talented, dedicated individuals who grow, process, and serve our food. Working together, we have been able to stabilize the number of farms in the state in the past decade. Over the same span, the food processing sector has doubled in size, now representing a $3.5 billion enterprise.

While our farm-and-food sector has made strides over the past decade, the fact remains that we still import 85 percent of our food. That makes us vulnerable. The drought of 1988 has made us all aware of that. And that is why it is incumbent upon us to support the Massachusetts family farmer and to encourage improvements in food processing, distribution, and marketing.

In addition to the question of food supply, farming helps maintain open space, a rapidly shrinking commodity in Massachusetts. A profitable family farm system will protect in excess of 600,000 acres. And a profitable, competitive distribution system will ensure a fairly-priced food supply for our consumers.

While the Farm-and-Food Policy of 1976 has worked and continues to work, it is important to note the old adage: There is nothing so constant as change. And that has held true for

Massachusetts agriculture and food processing. New issues loom as the 1980s come to a close.

Those new issues served as the impetus for this re-examination of our farm-and-food system. We were eager to see what else needs to be done and what needs to be done better.

To answer that question, we enlisted a task force of farmers, food processors, economists, bankers and legislators. What follows is the result of a joint effort between the Department of Food and Agriculture and task force members, a policy to carry us to the threshold of the 21st century.

Commissioner August Schumacher Jr.

The Massachusetts Farm-and-Food System:

A Five-Year Policy Framework, 1988-1993

Summary

The Farm Sector

In Massachusetts, farming is a family business. It provides commodities and jobs and generates money. The fate of farming depends largely on the continued willingness of state policymakers to appreciate this fundamental fact. Despite having limited land resources and a short growing season, Massachusetts farmers have conducted viable operations and made a sizable contribution not only in economic terms, but to the quality of life we all enjoy.

For all their innovation, many farmers are finding it increasingly difficult to succeed. They need support to maintain the agriculture we already have and help new enterprises gain a foothold.

Farmers are not looking for a handout. They don't want to rely on government subsidies and economic regulations to survive. All they want is an economic and regulatory environment in which farms can make a go of it. By combining the talents and tools of various state agencies and private investors, we can provide such a climate.

Here is what we hope to do and how we hope to do it:

Objective: Increase the number of farms from 6,000 to 6,500 and farmgate revenues from $425 million to $600 million by 1993.

The Massachusetts Farm-and-Food System:

A Five-Year Policy Framework, 1988-1993

Summary

The Farm Sector

In Massachusetts, farming is a family business. It provides commodities and jobs and generates money. The fate of farming depends largely on the continued willingness of state policymakers to appreciate this fundamental fact. Despite having limited land resources and a short growing season, Massachusetts farmers have conducted viable operations and made a sizable contribution not only in economic terms, but to the quality of life we all enjoy.

For all their innovation, many farmers are finding it increasingly difficult to succeed. They need support to maintain the agriculture we already have and help new enterprises gain a foothold.

Farmers are not looking for a handout. They don't want to rely on government subsidies and economic regulations to survive. All they want is an economic and regulatory environment in which farms can make a go of it. By combining the talents and tools of various state agencies and private investors, we can provide such a climate.

Here is what we hope to do and how we hope to do it:

Objective: Increase the number of farms from 6,000 to 6,500 and farmgate revenues from $425 million to $600 million by 1993.

- **Biotechnology.** Expand state-private cooperation in agri-biotechnology development, targeting development in areas such as tissue culture, bio-pesticides, disease-resistant crops (as opposed to pesticide-resistant crops), and extended-season, cold-tolerant crops.
- **Exports.** Expand from the current $75 million to $100 million by 1993, emphasizing the sale of apples, cranberries, dairy products, eggs, fruit beverages and concentrates, plant tissue cultures, and cattle embryos.
- **Green industry.** Support the continued expansion and continued viability of this burgeoning business, which already is the biggest segment of agriculture with $120 million in annual production. This industry comprises growers and distributors of plants, flowers, nursery materials, and turf produced both indoors and outdoors, as well as firms involved in the care and maintenance of these products. It is one of the fastest-growing sectors of Massachusetts agriculture. Its growth is impacted by labor shortages, water and pesticide regulation, taxation of temporary greenhouses as fixed structures and a lack of sufficient state extension staff.
  Over the next five years, additional state support will need to be carefully targeted to foster the continued growth of this expanding industry.
- **Public awareness and education.** Supplement the existing "Massachusetts Agriculture in the Classroom" program with a campaign designed to increase the public's understanding of farms and farmers. The current "animal rights" referendum illustrates the need for education of the public.

The Food-Processing and Distribution Sector

Farms, supermarkets, restaurants, food-processing plants and related enterprises represent some $16 billion (about one-eighth) of the state's $123 billion economy. Growing, preparing, serving or adding value to food already is big business in the state. And there is plenty of room for growth.

In food processing alone, some 2,500 companies are generating $3.5 billion in annual sales and employing 26,000 workers. State policy can further encourage growth in this area, with a spe-

cial effort made to link food processors with farmers. In that way, food processors can help revive economies in rural areas.

Objective: Increase sales from $3.5 billion to $4 billion by 1993.

Methods:

- **Supply.** Work to ensure that supermarkets have an adequate supply of Massachusetts products in high demand.
- **State financing.** Support through MIFA, Thrift Fund, and Land Bank and explore new programs to assist smaller, farm-based processing operations that may not qualify for commercial fund sources during their start-up period.
- **Agribusiness Development Parks.** Promote development on statewide basis using the system used by the Western Massachusetts Food Industry Association in the Pioneer Valley as a guide.
- **By-product disposal.** Support on-farm composting to enable food processors to dispose of waste in an economically and environmentally beneficial manner.
- **Food Technology.** Continue to work with the Extension Service staff and University of Massachusetts faculty to develop new ideas in food production, packaging, and distribution.
- **Nutrition.** Using the vast research potential in the Massachusetts educational and business sector, pioneer advances in the nutritional quality of food.

Agriculture and the Environment

Farmland Preservation

Essential to farming is preserving the land base on which the industry operates. Massachusetts has lost nearly 1.4 million of the two million agricultural acres it had in 1945. Our state's booming economy is exerting intense development pressures on much of our farmland. Through its Agricultural Preservation Restriction (APR) program, under which the state buys the development rights of farms, the Commonwealth has invested some $50 million to see that about 21,000 acres on 230 farms will always be used for agriculture.

APR, however, is not a panacea. It is only one segment of a much larger strategy we must devise to protect farmland.

Objective: Reach a cumulative total of 50,000 acres of preserved prime farmland on 500 farms by 1993, including 10,000 acres (on 100 farms) of protected state farmland leased to farmers.

Methods:

- **APR.** Use the new APR funding ($35 million) provided by the 1987 Open Space Bill to increase protected farm acreage from 21,000 (on 230 farms) to 32,000 (on 350 farms). Support legislation to expand funding for APR and related open-space programs to bring protected land to 40,000 acres on some 400 farms by 1993.
- **Land Bank.** Work for passage of a revived version of the Land Bank bill to generate funding for farmland preservation.
- **Creative zoning.** Provide economic incentives for local communities to develop progressive zoning by-laws which allow farmland to co-exist with various types of development.
- **Agricultural Incentive Areas.** Help communities plan such districts as outlined in the "Right-to-Farm" bill.
- **Transfer of Development Rights.** Coordinate with state and local agencies a program to redirect developers interested in building on prime farmland to other non-agricultural parcels.

- **Limited development agreements.** Work with real estate developers, planning experts and community leaders on methods to preserve farmland without discouraging land development, especially for affordable housing.
- **Affordable housing.** Because the need to preserve farmland occasionally competes with the need for low- and moderate-cost housing, relevant state agencies must work together for ways to address both problems.
- **Non-Profit Land Trusts.** Encourage the continued involvement of private, non-profit groups such as the Massachusetts Audubon Society, the Trustees of Reservations, American Farmland Trust, and county land trusts in preservation acquisitions.
- **Acquisitions by municipalities.** Work closely with the ever-increasing number of towns who are willing to spend their own money to preserve farmland and open space.
- **Leasing of state-owned farmland.** Lease an additional 1,500 acres of land to farmers over the next five years.
- **Farmland Stewardship Program.** Continue to expand this offshoot of the state-owned farmland leasing project to attract young people to agriculture.
- **Inventory of farmland.** Using data and maps currently being compiled by the Department of Agriculture's Land Use Bureau, keep an inventory on how all types of farmland is being utilized or not utilized. Incorporate the Geographic Information System of computer mapping.

Pesticide Management

The state's growth and prosperity in recent years has brought with it a series of environmental concerns. The loss of open space and the disposal of solid and hazardous wastes head the list.

Eager to become part of the solution to our environmental problems, many Massachusetts farmers and food processors have embraced a series of state initiatives aimed at sparing the environment from continued abuse. By substantially reducing its use of pesticides and finding better ways to manage by-products, the agribusiness community has made much progress in recent years. But more needs to be done.

Objective: Reduce use of the more toxic chemicals by 50 percent by 1993.

Methods:

- **Reform bill.** To address certain problems in the current pesticide registration and scientific review process, reach a consensus with other agencies, lawmakers, farmers, applicators and environmentalists on comprehensive reforms such as outlined in House bill 6048, currently pending.
- **Integrated Pest Management.** With pesticide reduction programs firmly in place for all major agricultural commodities in Massachusetts, continue to use the IPM concept to reduce use of the most toxic chemicals by 25 percent by 1990 and by 50 percent by 1993. Expand funding for IPM research both by the Extension Servicee and private agencies. Increase state share of IPM from $400,000 to $800,000 in 1993.
- **Biotechnology Research.** Recognizing the scientific and investment potential of biological alternatives to pesticides, establish a close-knit network of public agencies, research groups and capital investors willing to expand their interest in agri-biotechnology.
- **Pesticide Disposal.** Develop and implement a comprehensive system to remove existing stockpiles of pesticide waste and prevent future accumulation.
- **Groundwater monitoring.** As concerns persist over the effects of agriculture and other industries on groundwater and public water supplies, continue use of groundwater protection strategy currently in place. Formalize the existing interagency agreement to better regulate and enforce groundwater protection statutes.
- **Rights-of-Way Management.** Proceed aggressively with the regulations set in 1987 limiting pesticide use on utility, railroad and highway rights-of-way.
- **Lawn-Care Regulations.** With new regulations already in effect for commercial lawn-care companies, fund studies on the risks and benefits of restricted-use and over-the-counter lawn chemicals, especially as used by homeowners.

- **Indoor Pest-Control Advisory.** Clarify the precautionary guidelines that should be followed by indoor pest-control applicators to reduce human exposure.
- **Homeowner education program.** Launch an aggressive public education campaign to curb the suspected widespread misuse of pesticides by the general public.

The Massachusetts Farm-and-Food System:

A Five-Year Policy Framework

Overview

Agriculture is an essential part of the character and economic vitality of Massachusetts. The Commonwealth's 6,000 farmers generate about $425 million annually in farmgate cash receipts. They keep some 600,000 acres of land in agriculture and provide 15,000 on-farm jobs. Our farmers also help fuel the state's food-processing industry, which produces $3.5 billion in goods annually and provides 26,000 jobs.

In the past two years, Massachusetts has been at or near the top of New England in farmgate value of agricultural products. The $425 million produced in 1986 made Massachusetts No. 1 in the region for that year, a major accomplishment for a highly industrial, densely-populated state. It showed agriculture here can be a strong entity.

The modest resurgence in Massachusetts agriculture over the past decade has been no accident. It has been the result of a very deliberate effort by farmers, with support from the state, to pull the industry out of a fast-deepening hole.

In the mid-70s, when agriculture was flourishing elsewhere in the nation, agriculture in Massachusetts and throughout the Northeast was skidding downward at an alarming rate. The two million acres of farmland we had at the end of World War II had dwindled to less than 600,000. During the same period, the number of farms had dropped from 35,000 to fewer than 6,000.

1976 marked the beginning of a program to revitalize the Massachusetts farm-and-food economy. That program established a vigorous agricultural development and marketing program, an

aggressive farmland preservation program, a tough regulatory stance on pesticide reduction and other environmental initiatives, and a major investment in food processing.

It has been within that basic policy framework - agricultural development and marketing, farmland preservation, environmental protection, and food processing - that the Massachusetts farm-and-food economy has grown over the past decade.

But we can not rest on our laurels. Problems remain, some of them new and some enduring. We need to revisit and revise the food and agriculture policy we adopted 12 years ago. With adjustments and the infusion of some fresh ideas, we can build the momentum that will carry Massachusetts agriculture into the future.

Agricultural Development and Marketing

A. The Farm Sector

Massachusetts has learned from experience that creativity and perseverance are what separate success from mediocrity or failure. No one understands that better than Massachusetts farmers. Determined to make a living from the land, but mindful of the often great odds against them, they have been throwing out some of the old assumptions about how they should do business. From a production-oriented system -"grow all you can, then worry about marketing it"- the focus has shifted to a demand-driven approach: Decide what the marketplace wants and tailor production accordingly.

That is precisely what the Massachusetts Department of Food and Agriculture and its active commodity promotion groups have been stressing over the past decade and will continue to emphasize as we head into the next decade and next century.

Number of farms

While per-unit output and overall profits clearly are more relevant to gauging the industry's viability than the mere number of farms, the state should not overlook the importance of preserving individual family farms and, when possible, adding to their ranks. Massachusetts counted fewer than 6,000 farms in the mid-1970s, a fraction of the 35,000 we had 30 years earlier.

Over the past 10 years, thanks to a healthy economy and some aggressive farm policies, the number of farms in Massachusetts has climbed back above the 6,000 mark and stabilized. By extending the same strategies, we should aim for a goal of adding some 500 farms by 1993.

Farmgate earnings

Despite being the most populous state in New England, Massachusetts accounts for about one-quarter of the agricultural products of the six-state region. In 1986, Massachusetts led the

region in farmgate value of agricultural products and last year fared nearly as well. Room for growth remains, however, if the state adopts the proper policies and programs. We set a target of $600 million in farmgate receipts by 1993.

Traditional agriculture

One of the dangers, perhaps, in fostering the diversity and specialty side of Massachusetts agriculture is that we give a back seat to the more traditional growers who form the backbone of our industry. Without our dairy producers, cranberry growers, livestock and poultry farmers, fruit growers, greenhouse and nursery producers, and other mainstream farmers, none of the specialty enterprises which have emerged in recent years would have survived. As we enter the next decade, we should put as much energy into expanding mainstream agriculture as we do into fostering diversification both for existing farms and for new types of farming units.

Dairy stabilization

Although other areas of Massachusetts agriculture have gained momentum in the past decade, dairying - once the mainstay of farming in the state - has continued a steady decline. As of January 1, 1988, Massachusetts counted 512 dairy farms - almost 100 fewer than there were the previous year, and almost half the number there were 10 years ago. In the interest of economic stability, food security, and environmental protection, the state must take immediate steps to bolster the dairy industry.

The Department of Food and Agriculture and the Extension Service are working to stabilize the dairy industry in Massachusetts with the following approach:

1. Do all possible to stabilize and even increase the producer price of milk through efforts at both state and federal levels.

2. Give dairies first-priority status in state farmland preservation programs.

3. Establish a joint program between the DFA and the Extension Service to provide farmers with the latest in management techniques.

4. Ensure full funding and staffing for state mastitis control program and initiate funding to support the Dairy Herd Improvement Association (DHIA).

5. Encourage dairy farmers to supplement on-farm income by diversifying into production of hay, vegetables, farmstead cheese and other commodities.

6. Through composting grants and technical support, assist farmers in improving manure handling facilities.

7. Provide backing for a modernization loan program.

Cost-cutting measures

Whatever strategies we devise to bolster the state's dairy industry over the next five years can be used in other sectors of the farm economy, as well. For its part, the state can help reduce the cost of capital through the APR program, grant programs, technical assistance, and other resourceful means. For their part, farmers can consider compost production as a way to save on fertilizer and perhaps earn extra money by selling the finished product to landscapers and backyard gardeners. Fruit-and-vegetable growers should be encouraged to adopt Integrated Pest Management techniques to reduce their need for costly chemicals. The Extension Service is continuing its work with the Department of Food and Agriculture in developing such cost-saving strategies and sharing them with the farming community.

Public awareness

In an increasingly urban and suburban state like Massachusetts, fewer and fewer residents are familiar with farms and farming. A lack of understanding about agriculture by the general public can only have a negative effect on farming. It is critical that the general public have some understanding of the operation of farms. With burgeoning development, farmers and non-farmers are often sharing space previously devoted solely to agriculture. If these two groups are to co-exist peacefully - and if farming is to survive - education of the non-farming public is essential.

The existing "Massachusetts Agriculture in the Classroom" program provides such a service for schoolchildren and should be expanded.

In addition, new programs are needed, especially ones targeted for specific audiences, such as town officials and new homeowners. If these groups are told in detail why farmers must often operate equipment very early in the day, for example, they may have fewer complaints about their farming neighbors. Public awareness programs also could stress that farms require far less in the way of town services than housing developments, for example, and that our farms provide a much-needed, secure, local food supply.

Diversification

As a small state with limited farm acreage and a short growing season, Massachusetts never was - and probably never will be - a large-scale producer of staple commodities. One of the main strengths of Massachusetts agriculture has been its diversity, its ability to produce many varieties of farm products through land-intensive means. The economic boom which has taken hold in Massachusetts over the past decade has made agricultural diversity even more appealing and profitable. With more sophisticated tastes and more money to spend, Massachusetts consumers are demanding an unprecedented diversity of fresh, local food. It is the farmers who recognize those demands - and tailor their production accordingly - who will succeed in the end. The state should continue to work with farmers, food technologists, investors, and consumers on supplying the marketplace with a steady flow of innovative products.

Regulatory Climate

The Commonwealth must not regulate agriculture out of existence. Lawmakers and the general public must appreciate that agriculture is environmentally beneficial.

Those same constituencies must recognize that because agriculture is inherently good for the state, regulations which undermine it run counter to the good of all.

Farmers know full well that certain regulations are necessary. At the same time, they often become frustrated with the spate of regulations that seem to ignore the realities of agriculture.

Especially vexing is the lack of appreciation for the principle of prior existence. Farmers often find themselves called on to adapt to the wants and needs of new neighbors. This area needs to be

addressed, perhaps with agricultural buffer zones such as Maine law mandates.

Credit & finance

The Massachusetts Industrial Finance Agency (MIFA) already has provided some $200 million in loans - primarily in the form of industrial development bonds - for agribusiness ventures in the state. The Massachusetts Government Land Bank and the Thrift Fund have been very active in recent years in financing innovative agricultural ventures.

Still, more work needs to be done to develop and sustain dependable lines of credit for farm-related enterprises. In particular, commercial banks need stronger assurances and incentives for extending credit. The top financial minds of state government and the private sector must work together to assemble some creative agri-finance packages.

Farm labor

As it has for many businesses in Massachusetts - from McDonald's to the corner grocery store - the current labor shortage has caused major problems for farmers. At best, it has slowed plans for expansion. At worst, it has put some of the more marginal farm operations out of business. Farms seem harder hit by the shortage than most businesses. A student looking for part-time work is more likely to take a job flipping hamburgers after school than one milking cows at 5 o'clock in the morning - especially if the farm job pays less.

Clearly, if the labor problem is not addressed soon, some otherwise promising farm operations may be lost. To deal with the shortage, we may have to take our cue from Massachusetts fruit growers, who have filled their labor needs by recruiting off-shore workers for tasks local residents have been reluctant to undertake.

As an immediate action, we recommend the establishment of an ad hoc Farm Labor Task Force. Working with the Department of Food and Agriculture and the Department of Employment Security, the panel would develop a recruitment and training program for both seasonal and year-round farm managers and laborers.

On-farm composting

Some one million of the six million tons of solid waste generated in Massachusetts each year are organic materials - leaves, yard waste, fish gurry, paper sludge, apple pomace, and other by-products - which can be mixed relatively easily and cheaply with animal wastes to produce compost fertilizer.

Seeing the economic and environmental merits of on-farm composting, the Administration included $3 million for that purpose in the $260 million Solid Waste Bill signed by Governor Dukakis in late 1987. Those funds are available to help the more than half-dozen existing on-farm composting operations, as well as several dozen others which have been proposed.

On-farm composting has many advantages. It's a way to better manage on-farm waste and save money on costly fertilizers. It reduces the strain on municipal landfills and provides other waste-management options for communities. And in some cases, it's a way for farmers to earn extra income by selling the high-grade fertilizer to commercial landscapers and backyard gardeners. Composting is widely used in the green industry and the state should encourage even greater use.

Once the composting projects funded by the Solid Waste Bill are successfully underway, the state should continue its aggressive promotion of composting and provide incentives for its use to reach a target of producing 350,000 to 400,000 tons of compost fertilizer annually by 1993.

Biotechnology

The new techniques of biotechnology are beginning to have an impact in agriculture through the development of improved crop varieties and seed treatments. Many of these innovations, however, are addressed to the major cash crops of the Midwest and the South, even though several Massachusetts companies are in the forefront of this research.

The state should encourage the development of biotechnology products for crops important to Massachusetts agriculture but with limited markets outside the state. The state also should encourage improvements to existing crops that could extend their usefulness in Massachusetts.

To achieve this requires the expansion of state-private cooperation in agri-biotechnology development, targeting areas such as tissue culture, bio-pesticides, disease-resistant crops, and extended-season, cold-tolerant crops, with special emphasis on crops that are or can be grown in Massachusetts.

B. Market Development

Farmers in Massachusetts have learned that their greatest resource is the pool of six million nearby consumers they have right in their backyard. And over the last decade, growers have made great strides in the area of direct marketing to tap this near-by audience. Roadside stands and Farmers' Markets are thriving in all parts of the state and are enabling growers to sell directly to consumers. Successful direct marketing , in turn, helps preserve agriculture in Massachusetts, for the good of all.

Supermarkets, too, have embraced buying local produce, with the major chains offering extensive Massachusetts-grown selections in season.

While most of the fruits and vegetables grown in Massachusetts find a market in the state, some of our agricultural products are being exported to other states and nations. This is an area with enormous potential, especially for scientific knowledge with agricultural applications.

The fruit-and-vegetable segment offers the greatest opportunity for major market development. To fuel this expansion, it is essential to identify market demand for all fruits and vegetables not merely in major outlets but in all segments of the marketing infrastructure. At the same time, this requires the development of a comprehensive system to identify every grower in the state, the planting intentions of the growers and projected crop yields.

Promotional assistance

The Massachusetts Department of Food and Agriculture, through its "Massachusetts Grown...and Fresher!" campaign and other promotional programs, supports food producers and processors of all types and sizes. Introduced in the mid-70s, this campaign has spawned similar programs in several other states. The agency regularly puts growers and processors in touch with chain stores and other potential buyers. It provides merchandising assistance in the form of posters and point-of-purchase

materials featuring Massachusetts-grown products. It uses its press and public information programs to provide timely seasonal support for crops and products.

In addition, the Department supports a network of more than 600 roadside stands and 73 Farmers' Markets, which provide low-overhead outlets for selling and test-marketing value-added products.

Each year, too, the state distributes some $40,000 to $50,000 in seed-money grants made possible through the Federal-State Marketing Improvement Program (FSMIP). Those incentive grants are used for marketing research and promotional programs. The Pioneer Valley Growers' Association, a 70-member cooperative which sells produce to supermarkets statewide, is one of the more notable success stories to emerge from the FSMIP program in Massachusetts.

On the export side, the state makes use of the USDA's Targeted Export Assistance (TEA) and Value-Added Products Promotion (VAPP) programs to develop export markets for Massachusetts products.

Over the next five years and beyond, the state should continue to concentrate its promotional activities on opening up as many new avenues as possible for selling Massachusetts-grown products. Close attention should be given to replacing - product by product - subsidized foreign imports which can be produced here just as easily. Promotional support needs to be greatly expanded from $371,000 in the 1989 fiscal year to $900,000 by FY 1993 if we are to remain competitive with neighboring states.

Supermarket promotions

Many of the state's major supermarket chains are running full-page newspaper ads and television spots featuring real-life farmers touting the merits of locally-grown food.

Born out of consumer demand for fresh, local food, the "Massachusetts Grown...and Fresher!" campaign has generated even more demand - more, in fact, than Massachusetts farmers can always supply. To maintain consumer loyalty to Massachusetts farm products, a genuine effort must be made to improve our production and distribution systems. It is basic economics: If we're going to promote a product, then we'd better make sure we can meet the demand for it.

Roadside stands

One of the most visible signs of the direct-marketing boom of the 1980s has been the hundreds of roadside stands that have been cropping up along Massachusetts highways and back roads. In 1987, there were at least 600 farmstands operating in the state, many of them on a year-round basis. From all indications, there will be even more this year.

The state should give high priority to supporting the roadside stand industry. Such stands provide farmers, specialty food producers, and artisans with convenient outlets for selling their wares. They also have proven a major attraction for both residents and tourists, and many now feature not only fresh produce, but a variety of value-added goods and crafts. With at least 600 roadside stands already in operation, it appears there is room for growth. We should aim for 800 roadside stands by 1993.

Farmers' Markets

The buy-local boom is proof of the success of the state's "Massachusetts Grown...and Fresher!" campaign, as are the many Farmers' Markets that have cropped up throughout Massachusetts -particularly in urban areas - in the past decade. The mere six Farmers' Markets we had just 10 years ago has multiplied ten-fold. Some 400 Massachusetts farmers sell regularly at the 73 markets now in operation. With the help of the Massachusetts Federation of Farmers' Markets, we should expand that network to 100 markets by 1993, concentrating on inner-city neighborhoods.

Nearly 150 farmers and some 20,000 low-income households throughout the Commonwealth benefited from the expansion of the Farmers' Market Coupon Program in 1987 to more than 15 markets statewide. The program was launched by the Department of Food & Agriculture two years ago in an effort to bolster sales at Farmers' Markets, while bringing fresh, nutritious fruits and vegetables to inner-city residents of the state.

The success of the Massachusetts program, funded jointly by private foundations and public funds, has spawned similar projects in at least 13 other states. In a more recent development, Senator John Kerry and Representative Chester Atkins of Massachusetts have successfully passed legislation to create a nationwide demonstration project based on the Massachusetts effort.

With the help of these federal matching funds - and with continued backing from private foundations - we can establish a goal of expanding the coupon project to most Farmers' Markets in the state by 1993.

Grower cooperatives

Grower cooperatives certainly are nothing new to Massachusetts, home of the largest and one of the most successful cooperatives in the nation - Ocean Spray - which last year topped $700 million in gross sales. Other cooperatives in the state include the United Cooperative Farmers, the Hardwick Cooperative Exchange, Deep Root Vegetable Trucking Association, Welch's, the Yankee Milk Producers' Association, and H.P. Hood, a subsidiary of the Agri-Mark cooperative.

One of the most glowing success stories in Massachusetts agriculture in the 1980s has been the Pioneer Valley Growers Association of Whately. The cooperative had only a handful of members and barely turned a profit when it started eight years ago. Last year, the marketing collective's 70-plus members shared more than $2 million in sales. With a full-time marketing coordinator, the PVGA is selling to major supermarkets statewide. An effort is under way to establish a PVGA satellite in Southeastern Massachusetts. Another cooperative in Central Massachusetts, the Worcester Farmers' Market Association, will operate a covered market slated for groundbreaking in 1989.

The state will continue to strongly support cooperatives and farm groups who wish to market via cooperatives.

Exports

In the international marketplace, where some of the greatest opportunities for selling American farm-and-food products too often are overlooked, Massachusetts is trying to establish a more aggressive presence. The state earned close to $75 million in 1986 through the export of farm products, value-added products, agricultural technologies, and agri-consulting services. One of the major growth areas has been the agri-technology sector, with 22 nations now importing frozen embryos, tissue-plant cultures, extended-season plastics, and food-processing equipment from Massachusetts. On the consulting side, Massachusetts firms are earning $15 million annually overseas. Brainpower indeed has become one of our most valuable commodities.

One of the upcoming highlights on the foreign trade front will be the international food show which Massachusetts will be hosting in the spring of 1989 in conjunction with the National Association of State Departments of Agriculture (NASDA). More than 1,000 buyers from countries all over the world are expected to attend. We also will continue working jointly with other states and regional export agencies over the next five years to increase our collective clout in the global marketplace. We must band together, too, to compete with the heavily-subsidized products which foreign nations are exporting to the U.S. We must attempt to replace foreign imports - item for item - with our own products.

Overall, we should establish a target of $100 million in agricultural and related exports by 1993.

One of the upcoming highlights on the foreign trade front will be the international food show which Massachusetts will be hosting in the spring of 1989 in conjunction with the National Association of State Departments of Agriculture (NASDA). More than 1,000 buyers from countries all over the world are expected to attend. We also will continue working jointly with other states and regional export agencies over the next five years to increase our collective clout in the global marketplace. We must band together, too, to compete with the heavily-subsidized products which foreign nations are exporting to the U.S. We must attempt to replace foreign imports - item for item - with our own products.

Overall, we should establish a target of $100 million in agricultural and related exports by 1993.

State farm-and-food development financing

The food industry in Massachusetts has been boosted in recent years by a series of state financing programs. The Massachusetts Industrial Finance Agency (MIFA), for example, provided more than $200 million in financing to 109 food-related enterprises in Massachusetts from 1981 to 1987. Most of that assistance was in the form of tax-free industrial development bonds.

Since tax-free IDBs are restricted to plant and equipment projects under the new federal tax code, commercial projects such as distribution warehouses no longer can be financed that way. Taxable IDBs, however, still are available for commercial projects, and the state should assist food processors in securing such financing.

Once a business gets started and establishes a respectable track record, there are several finance programs operating in Massachusetts which can be used to expand company assets. Low-interest loans from the Small Business Administration, the MIFA Thrift Fund, and the Government Land Bank are among the options available.

The type of assistance needed by food processors - and the resources the state has available to help them - varies considerably, depending on the size of the company. Larger companies, for example, generally already have the planning, technical, and marketing skills to compete. What they want the state to do, essentially, is to create a favorable business climate which is competitive with that of other states. Programs such as those offered by MIFA and the Land Bank have been helpful in creating that environment.

But smaller companies and start-up operations - especially farm-based enterprises - have different needs. Responding to those needs should be a major priority of the state over the next five years and beyond.

Among the more obvious sources of financing for smaller food processing enterprises are the revolving loans and grants distributed by local Community Development Corporations (CDCs). Still, the ability of CDCs to finance such ventures is limited. They can finance no more than 40 percent of a project - and then, only on fixed assets.

Clearly, other sources of financial assistance are needed. The Legislature currently is considering the creation of a Rural Enterprise Fund, which would match up to 50 percent of the cost of a project and would also finance working capital.

Another approach would be to include in the annual budget of the Department of Food and Agriculture funds that can be devoted to launching and expanding food-production ventures. Much of the agency's existing agricultural development funds are confined to marketing. A new infusion of funds could be earmarked for production and infrastructure projects, perhaps in the form of low-interest loans with deferred payments.

Programs to foster food processing in Massachusetts - particularly smaller and farm-based operations - can be a key component of the state's rural economic revitalization plans. Overall, grants and especially development loans of some $40 million should be available annually from state lending agencies to assist the Massachusetts food processing industry.

Agribusiness development parks

The formation last year of the Western Massachusetts Food Industry Association, in conjunction with the Northern Tier Project, was the first step in what could become a statewide network of agribusiness development parks.

The basic purpose of the Western Massachusetts Food Industry Association is to do for food processors in that area what the Pioneer Valley Growers' Association has done for farmers. And that is: give them the collective clout and shared knowledge they need to compete more effectively in the marketplace. It also links processors more closely to food technologists and agricultural economists at the University of Massachusetts.

But that's not quite enough. Processors need to strengthen their ties, too, with Massachusetts farmers who can supply their needs with fresh, high-quality products. That's where the concept of agribusiness development parks can be useful. The idea would be to formally identify specific regions of the state (such as the Northern Tier) where such linkages can be developed or strengthened. Essentially, it would be a broadening of the Agricultural Incentive Area approach outlined in the 1985 Right-to-Farm Bill. As with the farm incentive areas, agribusiness

development parks perhaps could provide tax relief and other financial advantages to participants.

As we work to revitalize our rural economies in Massachusetts over the next several years, we should recognize that agriculture and food processing - as a single entity called agribusiness - can be a powerful force in that effort.

By-product disposal

The problem of solid waste management has been no more critical anywhere as it has in food processing. For years, processors have had to deal with the costly, time-consuming and labor-intensive job of properly disposing their byproducts.

One waste management technique which has been gaining popularity is composting. The solid waste bill signed by Governor Dukakis last December included $3 million for a series of pilot projects in which animal wastes would be mixed with various organic materials to create a valuable and useful compost fertilizer. An estimated one million tons of the six million tons of waste produced in Massachusetts each year are compostable organic wastes. Much of that material is the byproduct of food processing - fish gurry, apple pomace, potato sludge, etc.

Food technology

Innovations in technology are critical to the growth of the state's food processing industry. To respond to consumer demands and carve out niches for themselves in the marketplace, processors must keep abreast of new and changing technologies.

For larger operations with sophisticated product-testing and market-research capabilities, meeting that task often is a matter of hiring outside consultants - professional food technologists with state-of-the art laboratories.

Smaller, start-up operations, on the other hand, simply cannot afford to go that route. But fortunately for them, the University of Massachusetts at Amherst has a staff of highly qualified food engineers and economists who can help with product development, quality control, shelf-life studies, effective packaging, labeling, liability issues, health regulations, distribution, and marketing.

The Department of Food and Agriculture will continue to work with the University of Massachusetts food technology staff and its Cooperative Extension Service over the next five years in developing technologies which can sustain food processing enterprises, particularly in rural areas of the Commonwealth.

Agriculture and the Environment

Farmland Preservation

We could have all the venture capital, marketing ingenuity, and technological know-how we'd ever need, but it would all be for naught unless we also had the commitment to preserving the land on which the farm industry operates. While that's merely common sense, the steady decline in farm acreage in Massachusetts over the past several decades suggests that we haven't done enough to protect this precious resource.

One only has to drive around the Massachusetts countryside to see condominiums and industrial parks replacing what were once cornfields, cow pastures, and orchards. Ironically, it was the presence of farms - in all their beauty, serenity, and openness - which attracted people to rural areas in the first place. Now, the very quality-of-life that lured them there is disappearing.

Before the inception of the state Agricultural Preservation Restriction (APR) program in 1977, Massachusetts had lost more than 1.4 million acres of farmland since the end of World War II. During the two decades between 1951 and 1971, urban conversion was responsible for the loss of an alarming 11,000 to 12,000 acres of farmland per year. Through the APR program, we have been able to slow the decline somewhat during the 1980s. The APR program to date has invested some $50 million in preserving about 21,000 acres on about 230 Massachusetts farms. A new infusion of $35 million for APR, included in the open space bill signed by Governor Dukakis last December, will allow us to protect thousands of additional farm acres from development.

But we aren't fooling ourselves. The APR program alone is not enough to do the job that needs to be done. The state certainly can't afford to buy up the development rights to each of the more than 6,000 farms remaining in the Commonwealth. Local governments, developers, investors, planners, environmentalists,

private citizens, and others must join the state in developing plans for land use which are compatible to the needs of both development and agriculture.

Here is a look at some of the programs already in place, along with some new strategies we should seriously consider over the next five years:

APR program

As the flagship of the Commonwealth's farmland protection efforts over the past decade, the Agricultural Preservation Restriction (APR) program has tried to reconcile the gaping disparity between the agricultural and development values of Massachusetts farmland.

Indeed, the main roadblock to farming in Massachusetts continues to be the high price of land here. Even with the tax break on farmland provided under M.G.L. Chapter 61-A (1973), many farmers simply can't afford to keep their land. And even if they wanted to sell the land to one of their children or a neighboring farmer - in hopes of seeing it remain in farming - chances are strong that the land will be too expensive for those would-be buyers to afford.

Against such odds, it is not surprising that many Massachusetts farmers are unable or unwilling to resist lucrative offers from developers and land speculators. Faced with the choice of struggling to make ends meet in a high-risk business or having enough money to retire comfortably and send the kids to college, it doesn't take much to convince a farmer to opt for the latter.

That's where the APR program can be effective. By offering farmers the fair-market difference between what a farm is worth as a farm and what it's worth as a commercially-, residentially-, or industrially-developed property, the APR program compensates farmers for that disparity in values. Farmers can use the proceeds for retirement, to reduce or pay off debts, or to make on-farm improvements.

Established as part of a long-term food and agriculture policy developed in Massachusetts a decade ago, the APR program has served as a model for farmland preservation programs in many states. APR acreage represents a solid cross-section of the diverse agricultural enterprises in the state, ranging from small market gardens to large-scale dairy operations and including apple and

peach orchards, small-fruit operations, specialized vegetable farms, potato fields, nurseries, and general forage and livestock farms. More specifically, about 60 percent of the farms under APR are in dairy production. About 35 percent produce fruits and vegetables. The remaining five percent fall under miscellaneous categories such as livestock, poultry, and flower production.

One of the APR program's major objectives has been - and should continue to be - to piece together blocks of neighboring APR farms, as has been done in communities such as Hadley, Amherst, Westport, and Dudley. In that way, we have been able to establish clearly defined agricultural areas, rather than scattered, isolated farms.

While the development pressures persist in Massachusetts, the APR program has been a major success - one of the highlights of the farm-and-food policy established more than 10 years ago. After running out of funds last year, the APR was put back in business with $35 million in funding under the open space bill. Using those new funds and requesting additional funding over the next five years, the state should set a target of protecting a total of 50,000 acres by 1993, including 40,000 acres under the APR program.

The subject of smaller farm units taken from a whole could also be explored. In areas where the structure of agriculture may change, making smaller farms more viable, provision could be made for the sub-division of larger protected farms among legitimate agricultural operators in order to keep that land in farming. This flexibility would allow protected farms to accommodate future changes and ensure that the land remains in active agricultural use.

Land banking

The term "land banking" is used in several different contexts in Massachusetts, but generally refers to the public or private financing of transactions in real property, especially agricultural land.

The Massachusetts Government Land Bank, for example, is a quasi-public agency, similar to the Massachusetts Industrial Finance Agency (MIFA), which makes low-interest land-development loans available for various projects, including (but not limited to) agricultural and related enterprises.

Land banking also is a concept used in the negotiation of APR agreements. An owner of a farm property may choose to exempt from restriction certain acreage not essential to the farm operation. By doing so, the owner is "banking" that land for future use.

Both of those approaches to land banking have been very effective tools in preserving farmland in Massachusetts in the 1980s.

But another variation on the land bank idea has surfaced which deserves the most serious consideration. As detailed in the so-called Land Bank Bill which, for various reasons failed to pass in the Legislature last year, the new proposal would generate local revenue for farmland preservation by increasing property-transfer taxes. Specifically, a percentage of all real estate transactions would go into a fund which local communities would use to purchase development rights to farms, similar to the way the state does under the APR program.

Recognizing that local communities need to become more involved in farmland preservation - but acknowledging, too, that they need the resources to get involved - the state should work for passage in 1988 of a revived version of the so-called Land Bank Bill.

Chapter 61-A, under which owners of agricultural lands can realize substantial tax savings, also provides towns with an opportunity to preserve farmland. The municipality has the right of first refusal on any 61-A land that comes up for sale or a change in use. However, limited funds have prevented all but a few towns from exercising their option. For this reason, Chapter 61-A continues to be an under-utilized method of local land preservation. If communities had a way to raise the funding, that could change dramatically and municipalities could join the state as partners in farmland preservation for the benefit of all.

Transfer of development rights

Another farmland preservation concept receiving serious attention at the local level throughout the state is commonly referred to as "transfer of development rights." Developers proposing to build on prime parcels of farmland are redirected through a transfer-of-development-rights process - to optional sites with competitive advantages.

A typical scenario for the transfer of development rights might be as follows: A local farm family wishes to keep its land in

agriculture, but is presented with a tempting offer from a developer who needs a sizable parcel of land for some high-density housing. The community, eager to protect its agricultural base, but also acknowledging the need for housing - strikes an agreement. The developer purchases from the farm owner the farm's development rights and the community allows the developer to use those rights to build at another location (not farmland) a higher-density project than would normally be allowed.

In order for transfer of development rights to work, towns must set up the process, designating so-called "sending areas" and "receiving areas." Sending areas are the places, such as farms, whose development rights could be used to increase the allowable density in the receiving areas, where services in place can support development and where the construction would take place.

Limited development agreements

A community does not always have the bargaining capability or the optional land reserves necessary to get involved in the transfer of development rights. But that still doesn't mean a community has to sit back helplessly as its farms go out of production.

Planning boards, conservation commissions, and other local government activists statewide have been successful in reaching limited development agreements with property owners and real estate developers. It is a concept which the state should encourage other communities to embrace.

The way it works is that during the course of reviewing various permit applications, local officials convince a developer to build the proposed project not on prime farm soils, but on lower-grade soils and in wooded areas along the perimeter of the farm.

During the 1960s and 70s, it was not unusual for a developer to bulldoze a cul-de-sac right through the middle of an old cornfield or dairy pasture, and then build as many homes (typically side-by-side) as zoning would permit.

Nowadays, the smarter developers are scattering the homes within and among the stands of trees lining the neighboring farm or orchard. In that way, the farm stays in operation, and the new homes - blessed with dramatic views of a working farm - are far more valuable than they would have been otherwise.

In order for this program to realize its considerable potential, additional staff would be needed.

Creative zoning

Any effort to preserve farmland in Massachusetts should begin with the understanding that doing so doesn't mean a community must discourage development altogether. Through careful planning and creative zoning, agriculture can co-exist peacefully with most other types of land use.

Unfortunately, current zoning laws in Massachusetts cities and towns don't always provide enough guidance in how to deal with the competing needs of agriculture, affordable housing, industrial and commercial development, and other uses.. In fact, about two-thirds of the small towns in rural Massachusetts prohibit open-space zoning.

Such zoning matters often become muddled in confusion and controversy, with no real winners in the end.

Over the next five years, relevant state agencies should work more closely with regional planning agencies and local communities in revamping their zoning codes. The concepts of land banking, transfer of development rights, limited development agreements, and Agricultural Incentive Areas can become elements of a community's overall planning and zoning strategy.

About 97 percent of the state's farmland remains unprotected and zoned for inappropriate, land-consumptive development. This is a critical area and two suggestions are advanced: additional Department of Food and Agriculture personnel to encourage more limited development agreements or funding for individual towns to hire planners to revamp land-use policies.

Agricultural incentive areas

The state's so-called "Right-to-Farm Bill," passed in 1985, basically was enabling legislation for local communities to establish what are known as Agricultural Incentive Areas. By identifying key agricultural zones in their community, local officials can formally acknowledge the economic, environmental, and quality-of-life values which agriculture holds in that community.

Under the new laws, farms located within such areas are eligible for certain incentives, including possible tax breaks and

priority status for APR and other state programs benefiting agriculture. The concept of Agricultural Incentive Areas is modeled after that of local Historic Districts, whereby participating properties enjoy certain advantages and protections.

A few Massachusetts communities, including Hadley, have begun the process of establishing Agricultural Incentive Areas. Work has begun at the state and local level to more clearly define the regulations for guiding such districts and strengthen the incentives for participation.

Affordable housing

A particular emphasis should be made over the next five years in meeting simultaneously the needs to preserve agriculture and provide affordable housing for low- and middle-income residents of Massachusetts.

Such concepts as limited development agreements and the transfer of development rights can be as useful in the planning of affordable housing as they are in other types of development. Appropriate state agencies, including the Department of Food and Agriculture and the Executive Office of Communities and Development, can work together and with local communities on creative ways to address both needs. Such projects also could be tied to community gardening, fruition, and charitable outreach programs.

Leasing of state-owned farmland

This year marks the 12th in which publicly-owned land is being made available to Massachusetts farmers under the Department of Food and Agriculture's State-Owned Farmland Project.Some 660 acres of state surplus property - much of it once farmed by state hospitals and other institutions - currently are being leased to commercial farmers and agricultural/vocational schools.

The farmland leasing project is intended primarily to give new farmers a place to get started, because it is unlikely that they could afford to buy their own land or even rent from someone. The project also has allowed more experienced farmers to expand their production acreage without buying new land. Leases are valid for five years (the maximum allowed under state real property laws) and usually are renewable for one additional five-year period.

In hopes of attracting even more young farmers to the field, the state should aim to have 1,500 acres available for leasing by 1993.

Farmland stewardship program

An offshoot of the farmland leasing project, the Farmland Stewardship Program was created to develop a more comprehensive, goal-oriented plan for leasing and utilizing state-owned farmland. An advisory committee formed last fall, comprising members of the farming community and representatives of state human service and economic development agencies, is focusing initially on land once farmed on the large campuses of state-run hospitals and schools. Many of those institutions stopped farming during the 1960s and 70s.

Plans are being developed for each property. It is hoped that new-entry farmers can get a start on some of the properties with 30-to-50-year leases - much longer than allowed under existing arrangements.

A model stewardship program already is being run by the New England Small Farms Institute on the old Belchertown State School farmstead.

Inventory of farmland

The Department of Food and Agriculture's Bureau of Land Use, meanwhile, is developing a comprehensive inventory of all public lands used for agriculture in Massachusetts. In addition to listing what state-owned land is available, the Bureau is surveying individual cities and towns to determine how much municipally-owned land is farmed and under what arrangements, i.e., leases, permits, etc.

All the information is being charted and mapped to give communities and farmers a clear inventory of potential crop production, thereby assisting them in planning decisions. The farmland mapping project will be an effective and necessary open-space management tool in Massachusetts as we move into the 1990s.

Non-profit land trusts

Without the involvement of the American Farmland Trust, the Berkshire Natural Resources Council, (the Massachusetts Farm and Conservation Land Trust) and other non-profit groups in our farmland preservation efforts in recent years, many farms that

have been saved simply would not have been. The importance of such organizations was underscored last year when the state's APR coffers were depleted. Many of the groups provided interim funding for preservation-restriction agreements, in effect purchasing development rights on behalf of the state until the APR funding could be secured.

The role of such groups in the procurement of farmland development rights - both at the state and municipal levels - will be crucial over the next five years.

Pesticide Management

Farmers and environmentalists often are depicted wrongly as very different - even opposite - types of people. But in reality, farmers are some of the most genuine, hands-on environmentalists we have. They know the land. They love the land. They depend on the land for their day-to-day livelihoods. As we consider how we're going to protect our environment for ourselves and future generations, we should realize that one of our greatest strengths is the bond between farmer and earth.

We emphasized in the preceding section that the preservation of agriculture in Massachusetts is not only an economic necessity, but an environmental imperative. But it must be pointed out, too, that just as farming can enhance our environment and our quality of life, it can also pose certain problems and risks. As a growth industry in Massachusetts over the past decade, agriculture must share the responsibility for addressing some of the environmental concerns which can accompany progress.

The Massachusetts Department of Food & Agriculture, together with the Executive Office of Environmental Affairs, the University of Massachusetts, the Cooperative Extension, and various other private and public groups, has launched a series of initiatives designed to keep farming viable, while softening its impact on the environment. Rather than constantly being cast as one of the major causes of our environmental problems, the Massachusetts farming community is eager to show that it wants to be a part of the solution instead.

Reform bill

Massachusetts has emerged as a leader nationally in the development and implementation of low-input pest control techniques which have substantially reduced the need for artificial pesticides. Despite those strides, however, the farming community and environmental groups have reached a consensus on a bill which they agree would further strengthen the state's pesticide registration and review process.

Specifically, House Bill 6048, as supported by the Administration, would establish a new hazard review committee made up of qualified scientists who will review regulatory decisions based on scientific research. The bill also would provide a mechanism for the establishment of sensitive areas in which stricter standards

would be required for pesticide application. In addition, the bill would require that pesticides of significant use be reviewed under the Massachusetts Environmental Protection Act, the environmental review arm of the Executive Office of Environmental Affairs.

Integrated Pest Management

At the heart of the state's pesticide control strategy is Integrated Pest Management (IPM), a system which combines all types of controls - both biological and chemical - to keep pest populations below an economically damaging threshold. By targeting controls to specific pests and spraying only when absolutely necessary - that is, by reading the leaves as well as the labels - farmers can cut down on chemicals without sacrificing yield or quality. IPM operates on the principle that a balanced combination of natural predators, other biological controls and prudent amounts of chemicals - when used in a program of crop rotation and other sound farming techniques - can keep crops healthy and plentiful.

The Massachusetts Department of Food & Agriculture, in cooperation with the University of Massachusetts and the Massachusetts Extension Service, have established IPM programs for virtually every major major commodity produced in Massachusetts. That includes cranberries, sweet corn, apples, peaches, small fruits, potatoes, tomatoes and several other crops. IPM methods also are being used in turf management (golf courses and other lawns) and in greenhouse production. Participants in the various IPM programs report reductions in chemical use of between 25 and 50 percent.

Interestingly, some of the most enthusiastic supporters of IPM in Massachusetts have been the large-scale, mainstream producers; it was thought earlier on that it would be more popular among smaller farmers, perhaps those with organic leanings. But many of the state's most prominent and successful gowers, apparently seeing the cost-cutting and environment-saving potential, gladly embraced IPM. Its popularity has spawned a handful of consulting companies specializing in IPM procedures. Some farmers are even citing IPM in their point-of-purchase advertising.

IPM is more difficult to use for the green industry because of the varied crops raised. But nurserymen believe IPM could be ef-

fective for them if more research is devoted to IPM applications for greenhouse crops.

Through further development and extension work, including extending IPM principles into herbicides and fungicides and a natural predator release program, IPM can be the driving force in our goal of reducing the use of the most toxic agricultural chemicals in Massachusetts by 25 percent by 1990, and by 50 percent by 1995. Funding should expand from the current range of $360,000 - $400,000 to $800,000 by 1993.

Biotechnology research

Consumer demand for low-chemical food - and the farming community's desire to response to that demand - has prompted a new flurry of public and private reasearch in agricultural biotechnology. Backed by a growing pool of investors who see definite profit potential, scientists are searching for natural compounds which can match the power of chemical pesticides without polluting the environment and endangering humans and wildlife.

Massachusetts is on the cutting edge of biotechnology, with several companies involved in research on a variety of beneficial products with agricultural applications. Our state's future in agriculture lies in the development of improved varieties of crop plants and novel, biologically-based pesticides.

Through a competitive bidding process, the Department of Food & Agriculture has awarded $85,000 in grants for research into biological controls. Studies currently under way are intended to develop bio-control programs for apple orchards, greenhouses, cranberry bogs and potato production, among other areas.

To keep ourselves in step with changing technologies, Massachusetts should consider increasing the level of investment over the next five years.

In order to foster the development of biotechnology we must:

- Take steps to ensure that funds, once granted, are made available in a timely fashion.
- Facilitate collaboration between industry and academia.
- Provide financial incentives for biotech firms to develop products targeted at Massachusetts' needs.

Groundwater monitoring

In 1985, an Interagency Task Force on Pesticide Monitoring was established in Massachusetts to carry out a groundwater sampling program for several agricultural chemicals. The task force was assembled after pesticides were detected in drinking-water wells in the Pioneer Valley.

In view of those earlier findings, the state should continue to closely monitor groundwater and public water supplies and, when necessary, take aggressive precautionary and regulatory measures to prevent further contamination.

To strengthen that effort, the interagency panel which has worked together on the issue for the past four years should be upgraded from a voluntary task force to a more formalized body with true regulatory and enforcment powers.

Rights-of-way management

New regulations were promulgated in 1987 setting tougher limits on pesticide applications along utility, railroad, and highway rights-of-way. Concerns over the close proximity of such rights-of-way to homes, wildlife areas, and water supplies prompted the state to take a more aggressive regulatory posture.

Under the new regulations, any application of pesticides along a right-of-way must follow a detailed, state-approved Vegetation Management Plan, as well as a Yearly Operational Plan. The regulations also established an herbicide review process to assess the suitability of using specific herbicides in areas adjacent to wetlands.

For the rights-of-way management program to succeed, however, the Department will need additional staff and funding. Under the phase-in timetable established, the Department must assemble advisory committees, draft specific regulations, and perform impact studies for each of the various types of rights-of-way. The objective for the next five years will be to complete that process.

Lawn care regulations

The year 1987 also saw the establishment of strict new regulations governing commercial lawn-care companies. Professional applicators now are required to provide consumers with fact sheets detailing the types of chemicals being used and for what

purpose. They must offer customers the option of prior notification (before each application during the course of the lawn-care season). And they are required to post signs alerting passersby that a pesticide application has been made.

To further progress in this area, the state should commission a series of studies to assess the risks and benefits of various lawn chemicals, ranging from restricted-use pesticides to over-the-counter products.

Indoor pest-control advisory

Under current statute, indoor pest exterminators are told only that they must operate in an "acceptable and careful manner." But there has been no clear definition of what constitutes "safe" or "acceptable." To strengthen its control over such applications and to reduce human exposure to indoor pesticides, the Department of Food & Agriculture this year plans to issue a written advisory clarifying those terms.

Homeowner education program

It is estimated that more than 90 percent of Massachusetts households use indoor and outdoor pesticides of some type. It is estimated, too, that some 50 to 60 percent of the homeowners who use those products do so improperly or without reading the label.

Concerned that homeowner misuse of pesticides may be more widespread and harmful than we now realize, the Department of Food & Agriculture over the next five years should launch a multi-media public education program about the proper use and the potential dangers of pesticides.

Conclusion

The aim of this report was to illustrate the scope and importance of the farm-and-food economy in Massachusetts and to provide strategies that will best serve the industry and the needs of the Commonwealth.

Clearly, there is a place for agriculture in Massachusetts, with its positive impact on food quality and availability, open-space preservation, jobs, and the quality of life we enjoy.

The business of adding value to food also is good for the Commonwealth, although its impact is felt most in economic terms. There can be no disputing the critical and essential role played by our food outlets - supermarkets, restaurants, and the like.

It behooves the state to formulate and enact policies and programs that not only bolster the weaker segments but also help the more robust enterprises.

This task force believes that any farm-and-food policy must first address the most essential segment of the farm-and-food economy - agriculture. We must ensure that there is land to farm. A variety of farmland-preservation scenarios have been listed in this document. Some techniques, like the Agricultural Preservation Restriction program, are proven winners. Others hold exciting potential and should be explored further.

Development is a fact of life in our currently booming state. The task force believes that development certainly has its place, but so, too, does agriculture. And with creative zoning and development ideas, the two can co-exist to the benefit of all.

Allied with our concern for preserving the working landscape is a commitment to see that chemicals do not befoul that landscape. Our state has been a national leader in pesticide-reduction programs and we must continue in this vein for the benefit of both the agricultural community and the general public.

On the other hand, our laws and regulations must be sensitive not only to environmentalists and homeowners but to farmers, as well. Because of the constraints nature has placed on them, Massachusetts farmers probably never will be able to feed our six million residents, but they can make a considerable contribution to

our food supply. The state should help our growers reach their potential.

One the chief ways we can ensure the continued viability of agriculture in Massachusetts is to tap the greatest resource our farmers have: the nearby six million hungry residents literally at their doorstep. Many growers have realized great success through direct-marketing efforts in the last several years. The market is there, and state programs should see that the link between growers and consumers is strengthened. In addition, farmers can further increase their incomes by diversifying to meet consumer demand. The state can help with financing for the start-up phases of these new operations, just as it does for other enterprises. A particularly good use of state funds is in support of agribusiness development parks, which link our growers and food processors and can provide an enormous economic boost in rural areas.

Another area the state should aggressively pursue is one where our history is second to none: the "idea" business. Massachusetts is known for its high-tech leadership and the quality of its scientific research, both in academia and business. This brain power can be used for our food growers and processors. Indeed, it already has and with encouraging results. Massachusetts is widely known for its innovations such as Integrated Pest Management and the application of biotechnology to agriculture and must continue to be on the cutting edge in those and other areas.

Massachusetts agriculture is not without its problems. But with the vision to take new approaches and with the sweat and toil of our farmers, it can maintain its undeniable niche in the Commonwealth. And together with food processors and purveyors, farmers can provide our state with a well-integrated, efficient system that yields jobs, sustenance and a healthy environment for all.

1988 Massachusetts Task Force on Farm-and-Food Policy

1. **Carol Amick,** *State Senator, Co-Chair, Natural Resources Committee, Bedford*

2. **Steven Angelo,** *State Representative, Co-Chair, Natural Resources Committee, Saugus*

3. **Joseph Arena,** *Chairman, Mass. Board of Agriculture, East Boston*

4. **Timothy Bassett,** *Executive Director, Land Bank, Boston*

5. **Marjorie Cooper,** *Dairy Farmer, Rochdale*

6. **Fred Dabney,** *Massachusetts Nurserymen's Association and Quansett Nurseries, South Dartmouth*

7. **David J. Glass,** *BioTechnica Agriculture Inc. and Massachusetts Biotechnology Council, Cambridge*

8. **Paula Gold,** *Secretary of Consumer Affairs, Boston*

9. **Ray A. Goldberg,** *Professor, Harvard Business School, Boston*

10. **Elizabeth Harris,** *Agenda 90 Commission, Boston*

11. **Jeff Kapell,** *Cranberry Grower, Plymouth*

12. **Dr. E. Bruce MacDougall,** *Dean, College of Food and Natural Resources, University of Massachusetts, Amherst*

13. **Paul Mahoney,** *President, Mahoney's Rocky Ledge, Winchester*

15. **Richard Neal,** *Mayor, Springfield*

16. **John W. Olver,** *State Senator, Amherst*

17. **Marvin Peck,** *Apple Grower, Shelburne*

18. **James Pierson,** *Farm Credit System, Agawam*

19. **A. Gordon Price,** *President, Massachusetts Farm Bureau, Boxford*

20. **Max Russell,** *Cider Maker, Ipswich*

21. **Angelo Scaccia,** *State Representative, Roslindale*

22. **August Schumacher Jr.,** *DFA Commissioner, Lexington*

23. **Daniel Tawczynski,** *Potato Farmer, Great Barrington*

24. **Donald Upton,** *Director, United Cooperative Farmers, Fitchburg*

25. **Robert Wagner,** *American Farmland Trust, Northampton*

26. **James Williams,** *Dairy Farmer, Sunderland*

27. **Alan Wilson,** *Vegetable Grower and member Board of Agriculture, Lexington*

28. **Frederic Winthrop,** *Executive Director, The Trustees of Reservations and former DFA Commissioner, Ipswich.*

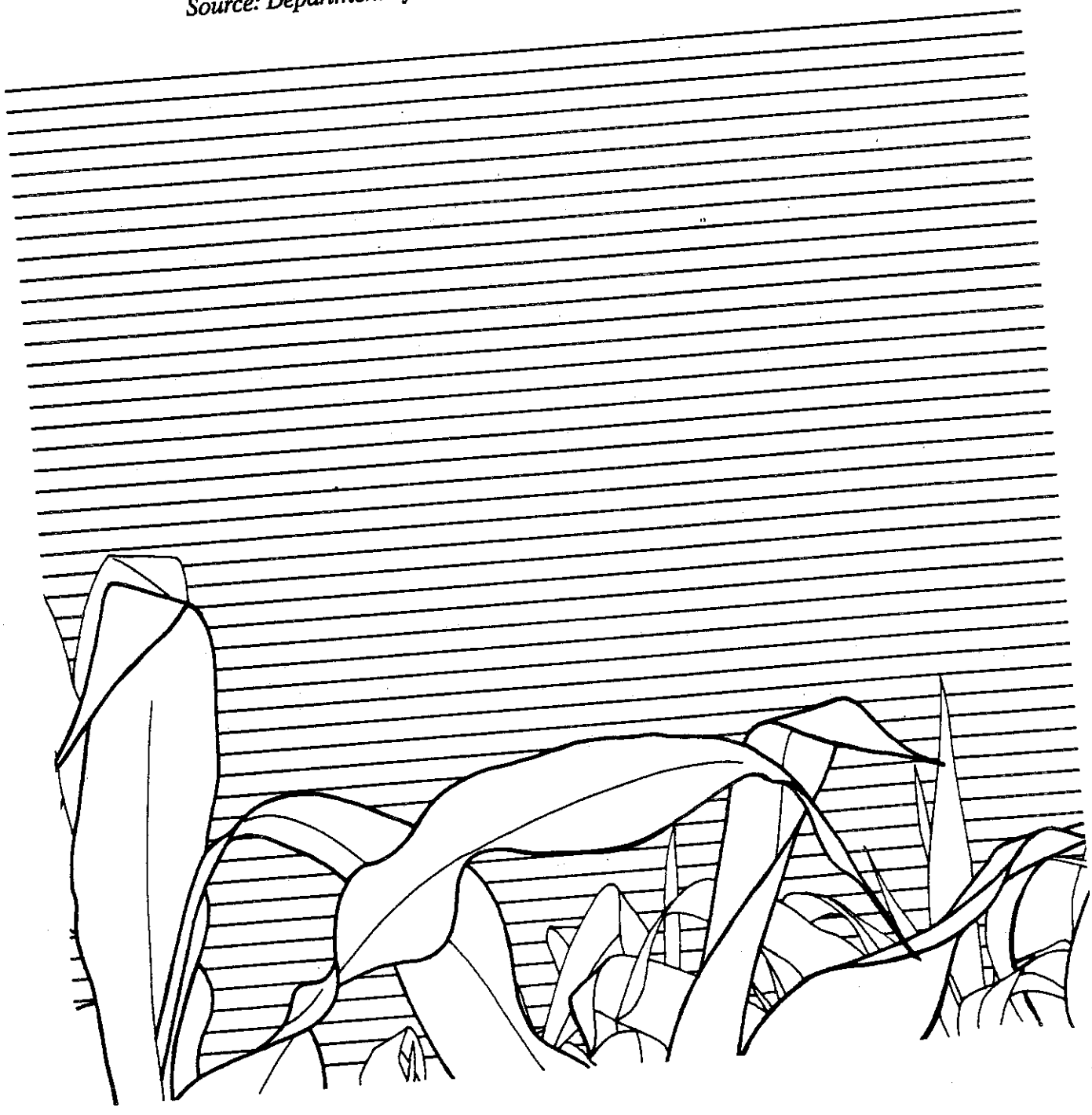
29. **George Wislocki,** *Executive Director, Berkshire Natural Resources Council, Pittsfield*

30. **Robert Yaro,** *Professor, University of Massachusetts, Amherst*

Massachusetts Agricultural Statistical Highlights

Compiled by
Thomas Gallagher, State Agricultural Statistician
Massachusetts Department of Food and Agriculture

Source: Department of Food and Agriculture 1987 annual report

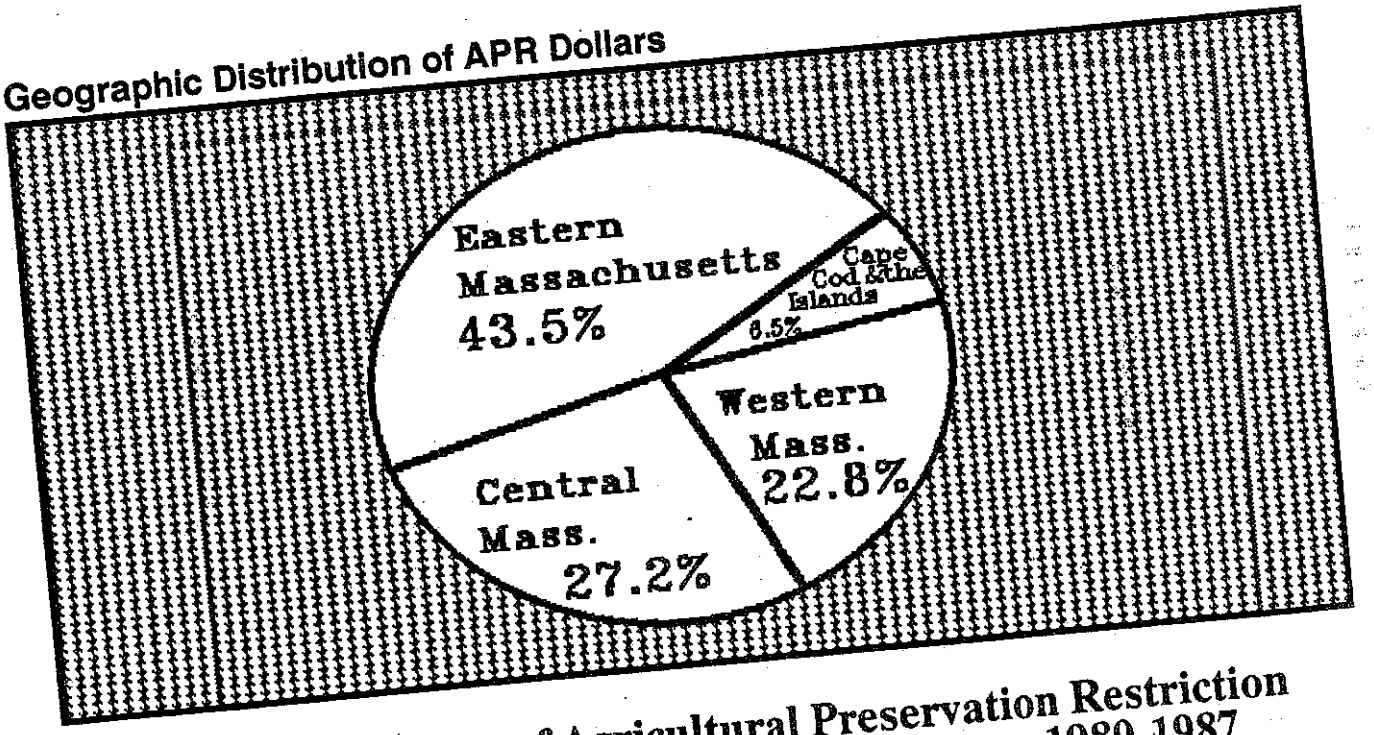


Agricultural Preservation Restriction Program (APR)

TOTAL (1980-1987)

- **farmland protected:** 219 parcels, 19,891 acres
- **funds appropriated:** 1980-1987 $45,000,000

Geographic Distribution of APR Dollars



Regional Distribution of Agricultural Preservation Restriction (APR) Dollars Invested in Massachusetts Farms, 1980-1987

Region	Distribution of $42,814,860 invested in APR Farms by Region (percent)	Distribution of 219 farms and (19,891 acres)	Average acre cost for each region
Western Mass. (1)	$9,763,525 (22.8%)	89 (7910)	$1234
Central Mass. (2)	$11,677,100 (27.2%)	54 (6433)	$1815
Eastern Mass. (3)	$18,596,735 (43.5%)	71 (5098)	$3648
Cape Cod and the Islands (4)	$2,777,500 (6.5%)	5 (450)	$6172

Percent Distribution of APR Dollars for Each Commodity Group in Each Region

REGION	LIVESTOCK dairy/equine/other	Percent Livestock	CROPS forage/vegetables/tree fruit/small fruit	Percent Crops
Western Mass. (1)	41%/0/2%	43%	36%/16%/4%/1%	57%
Centeral Mass. (2)	42%/0/0	42%	18%/5%/32%/3%	58%
Eastern Mass. (3)	29%/7%/7%	43%	20%/25%/6%/6%	57%
Cape Cod and the Islands (4)	17%/0/29%	46%	0/54%/0/0	54%

(1) **Western Massachusetts:** Berkshire, Franklin, Hampshire, and Hampden counties
(2) **Central Massachusetts:** Worcester County
(3) **Eastern Massachusetts:** Essex, Middlesex, Suffolk, Norfolk, Bristol and Plymouth counties
(4) **Cape Cod and the Islands:** Barnstable, Dukes and Nantucket counties

Source: Department of Food and Agriculture, February, 1988

Chronological Summary of the Agricultural Preservation Restriction Program, 1980-1987

year	parcels enrolled	acres	funds invested	avg. acre cost
1980	12	1144	$2,376,325	$2077
1981	20	1675	$3,466,900	$2069
1982	29	2499	$3,107,775	$1243
1983	30	3231	$5,033,060	$1557
1984	28	2334	$4,430,200	$1898
1985	31	3338	$5,070,900	$1519
1986	54	4271	$17,078,700	$3998
1987	15	1399	$2,251,000	$1609
TOTAL	**219**	**19,891**	**$42,814,860** (1)	**$2152**

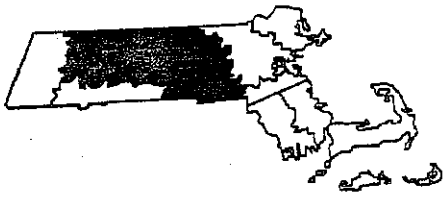
(1) Includes state and municipal funds

Source: Department of Food and Agriculture, February, 1988

Massachusetts' Most Prominent Dairy Region (1)

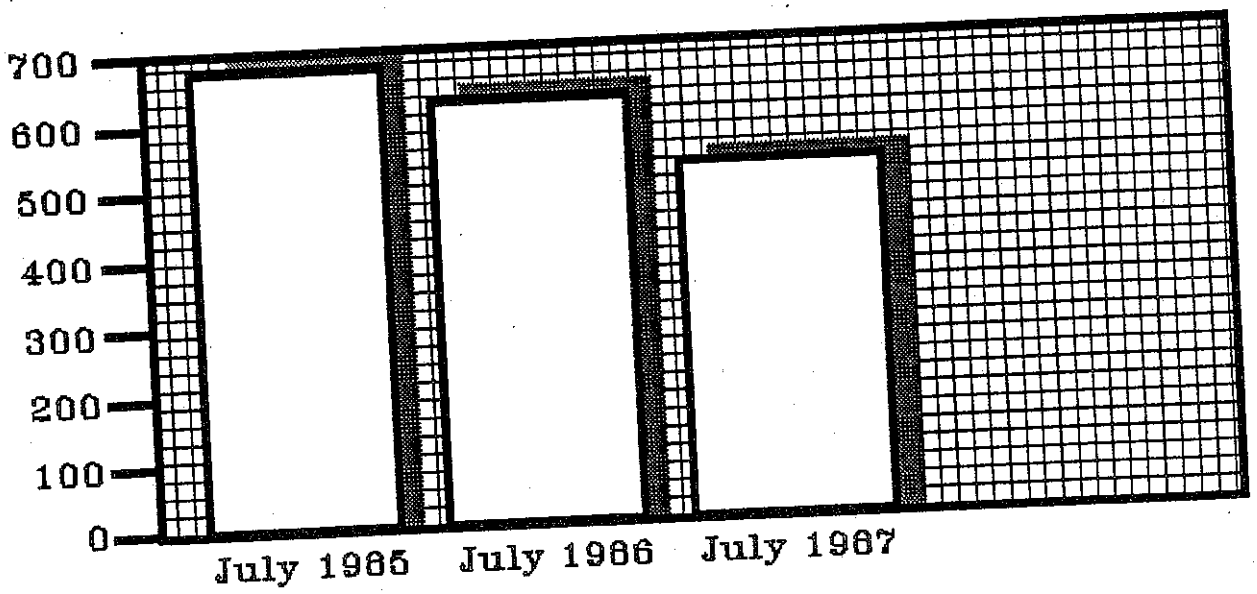
Communities	Farms	Cows	% of Total Milk Production
Worcester County 44	140	10,468	25%
Franklin County 19	99	7,577	17%
Hampshire County 18	69	5,441	12%
81	**308**	**23,486**	**54%**

- 56% of all dairy farms.
- 55% of all milking cows.
- 55% of all milk production



(1) as of July 1987

Shrinkage of Dairy Farms



The Current Status of Dairy Farming and a Decade of Change:

A Summary by Region and County (1)

COUNTY	FARMS			HERD SIZE			PRODUCTION (pounds sold daily)		
	1977	1987	PERCENT CHANGE	1977	1987	PERCENT CHANGE	1977	1987	PERCENT CHANGE
WESTERN MASSACHUSETTS									
Berkshire	106	58	-45	8,334	5,479	-34	256,912	207,351	-19
Franklin	139	98	-29	8,744	7,577	-13	251,068	266,954	+6
Hampshire	112	69	-38	7,509	5,441	-28	185,712	189,407	+2
Hampden	73	50	-32	3,975	4,097	+3	103,666	131,527	+27
REGION TOTAL	430	275	-36	28,562	22,594	-21	797,358	795,239	-0.3
CENTRAL MASSACHUSETTS									
Worcester	236	140	-41	13,905	10,468	-25	391,725	386,838	-1
REGION TOTAL	236	140	-41	13,905	10,468	-25	391,725	386,838	-1
EASTERN MASSACHUSETTS									
Essex	45	22	-51	2,665	1,647	-38	78,286	55,706	-29
Middlesex	48	17	-65	2,520	1,488	-41	79,677	59,404	-25
Norfolk	24	11	-54	883	406	-54	26,316	13,437	-49
Plymouth	45	21	-53	4,602	1,434	-69	153,639	49,772	-68
Bristol	97	54	-44	6,409	4,332	-32	194,233	174,827	-10
REGION TOTAL	259	125	-52	17,079	9,307	-46	532,151	353,146	-34
CAPE COD AND THE ISLANDS									
Barnstable	1	1	0	23	30	+30	537	1183	+120
Dukes	1	1	0	27	16	-41	1209	215	-82
Nantucket	--	--	--	--	--	--	--	--	--
REGION TOTAL	2	2	0	50	46	-8	1746	1398	-20
STATE TOTAL	927	542	-41	59,600	42,400	-29	1.722 million	1.537 million	-11

(1) The comparison interval is from July 1977 to July 1987.

Source: Massachusetts Department of Food and Agriculture

DAIRY FARMING in MASSACHUSETTS:

A Decade of Change, 1977-1987 (1)

	1977	1987	Percent Change
dairy farms	927	542	-42
herd size	59,600	42,400	-29
production (pounds milk sold daily)	1,722,000	1,537,000	-11

(1) The comparison interval is from July 1977 to July 1987.

Cranberries

TOTAL

- **acreage:** 11,709 acres harvested (1)
- **production:** 1,800,000 barrels (2)
- **value:** $98,640,000 (2)
- **market:** The fruit is marketed to seven handlers in Massachusetts

Massachusetts produces approximately 48 percent of the U.S. crop. Cranberry production occurs in 45 communities in seven counties in eastern Massachusetts. Productive acreage under market order exceeds 11,700 acres. Eighty percent of the total acreage is highly concentrated in a cluster of Plymouth county communities. Sixty-one percent of the Commonwealth's 458 growers manage 11 acres of bog or less.

Counties with Harvested Acres in Cranberry Fruit

COUNTY	COMMUNITIES	ACRES	PERCENTAGE OF ALL ACRES	
Middlesex	1	25.0	<1%	
Worcester	1	7.0	<1%	
Norfolk	3	54.7	<1%	
Bristol	8	563.7	4.8%	
Nantucket	1	252.0	2.2%	
Barnstable	11	1,190.0	10.2%	
Plymouth	20	9,617.1	82.0%	
	45	**11,709.5** (1)	**100%**	**458 growers**

Plymouth County:
The Nucleus of Cranberry Fruit Production

COMMUNITY	ACRES	PERCENTAGE of ALL ACRES
Carver	2,870.3	24%
Wareham	1517.0	13%
Plymouth	1045.9	9%
Rochester	955.9	8%
Middleborough	954.4	8%
5	**7343.5**	**62%**

Five Year Data

YEAR	ACRES
1983	11,200
1984	11,200
1985	11,455
1986	11,644
1987	11,700

(1) Additional acreage exists which is not bearing fruit or under market order.

(2) New England Agricultural Statistics, 1986 crop year.

Source: Agricultural Stablization and Conservation Service, New England Agricultural Statistics, Department of Food and Agriculture and Cranberry Marketing Committee.

Christmas Trees

TOTAL:

- **acreage:** 5950 acres, estimated
- **predominant species:** spruces and firs
- **production:** 50,000 trees harvested in 1987 with production expected to more than double by 1992.
- **value:** $1,300,000 estimated in 1987
- **market outlet:** 95% of the trees are direct marketed at roadside.

Distribution of Christmas Tree Farms

COUNTY	COMMUNITIES	GROWERS	ACRES
Western Massachusetts			
Berkshire	11	32	389
Franklin	15	44	524
Hampshire	12	54	642
Hampden	18	72	862
	56	**202**	**2417**
Central Massachusetts			
Worcester	47	124	1489
	47	**124**	**1489**
Eastern Massachusetts			
Essex	17	54	642
Middlesex	22	56	676
Norfolk	7	11	135
Plymouth	14	27	321
Bristol	11	20	236
	71	**168**	**2010**
Cape Cod and the Islands			
Barnstable	4 (estimated)	6	34
Dukes	n/a	n/a	n/a
Nantucket	n/a	n/a	n/a
	4	**6**	**34**
TOTAL	178	500	5950

Sources: Massachusetts Christmas Tree Association, Cooperative Extension, Department of Environmental Management and Department of Food and Agriculture.

Christmas Trees

TOTAL:

- **acreage:** 5950 acres, estimated
- **predominant species:** spruces and firs
- **production:** 50,000 trees harvested in 1987 with production expected to more than double by 1992.
- **value:** $1,300,000 estimated in 1987
- **market outlet:** 95% of the trees are direct marketed at roadside.

Distribution of Christmas Tree Farms

COUNTY	COMMUNITIES	GROWERS	ACRES
Western Massachusetts			
Berkshire	11	32	389
Franklin	15	44	524
Hampshire	12	54	642
Hampden	18	72	862
	56	**202**	**2417**
Central Massachusetts			
Worcester	47	124	1489
	47	**124**	**1489**
Eastern Massachusetts			
Essex	17	54	642
Middlesex	22	56	676
Norfolk	7	11	135
Plymouth	14	27	321
Bristol	11	20	236
	71	**168**	**2010**
Cape Cod and the Islands			
Barnstable	4 (estimated)	6	34
Dukes	n/a	n/a	n/a
Nantucket	n/a	n/a	n/a
	4	**6**	**34**
TOTAL	**178**	**500**	**5950**

Sources: Massachusetts Christmas Tree Association, Cooperative Extension, Department of Environmental Management and Department of Food and Agriculture.

Hay (1)

TOTAL:

- **acres:** 127,000
- **producers:** 2400 (estimated)
- **production:** 325,000 tons
- **value of production:** $5,512,000

COUNTY	ACRES
WESTERN MASSACHUSETTS	
Berkshire	19,812
Franklin	16,002
Hampshire	15,621
Hampden	6,858
	58,293
CENTRAL MASSACHUSETTS	
Worcester	32,500
	32,500
EASTERN MASSACHUSETTS	
Essex	8,636
Middlesex	9,906
Suffolk	---
Norfolk	2,607
Plymouth	5,334
Bristol	8,001
	34,544
Cape Cod and the Islands	
Barnstable	445
Dukes	711
Nantucket	230
	1,386
TOTAL	**126,735**

(1) all types

Source: Department of Food and Agriculture and New England Agricultural Statistics, 1986.

Maple

TOTAL

- **production:** 28,000 gallons (1)
- **value:** $890,000 (1)
- **producers and processors:** 200
- **market outlet:** primarily retail sales

Distribution of the Maple Industry

COUNTY	PERCENT of PRODUCERS and PROCESSORS
Berkshire	9.5
Franklin	43.5
Hampshire	27.5
Hampden	7.5
Worcester	8.0
Middlesex	3.5
Bristol	0.5

FACTS:

- Maple production is highly concentrated in areas within Franklin and Hampshire counties. Located within are 71% of the state's 200 producers and processors.
- The maple grove where trees are tapped and sap collected is measured not by the number of trees but the number of taps. The number of taps is approximately 7,000 in an average year.
- Syrup production potential is 70,000 gallons. Due to poor weather conditions, syrup produced in 1987 was estimated to be 28,000 gallons.
- Maple producers received a higher average retail price of $31.80 per gallon in 1987, a 36 percent increase over the previous year when the price was $25.00 per gallon.
- Fifty percent of production is sold during sugaring season. The balance of the crop is sold between Thanksgiving and Christmas.

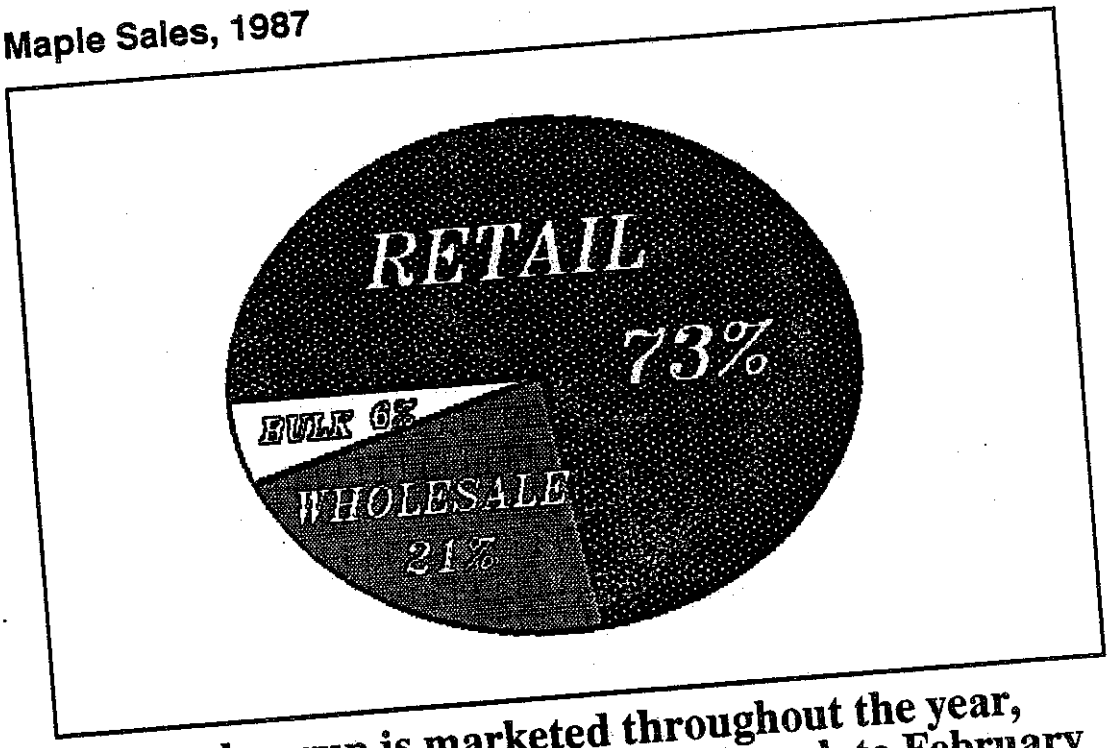
TRENDS:

- Because of higher syrup prices, producers are installing more taps. Syrup production potential has increased from 50,000 to 70,000 gallons in the past five years.
- In addition to higher gallon prices for syrup, more sales are shifting into the retail category. Many producers are increasing sales through mail order.

(1) Estimated by New England Agricultural Statistics, 1987 crop year.

Sources: Massachusetts Maple Producers Association, New England Agricultural Statistics and Massachusetts Department of Food and Agriculture.

Maple Sales, 1987



Although syrup is marketed throughout the year, sales peak during boiling season from late February to Early April and during the Christmas season from late November through December.

Nursery Stock

TOTAL

- **value:** $19,600,000
- **farms:** 266
- **acreage:** 2664

Distribution of Massachusetts Nursery Stock Production (1)

COUNTY	PRODUCERS	ACRES (in nursery stock)
Western Massachusetts		
Berkshire	17	86
Franklin	9	169
Hampshire	20	97
Hampden	25	343.5
total	**71**	**695.5**
Central Massachusetts		
Worcester	32	345
total	**32**	**345**
Eastern Massachusetts		
Essex	13	274
Middlesex	32	741.5
Norfolk	35	157
Suffolk	1	6
Bristol	36	224
Plymouth	25	116.5
total	**142**	**1519**
Cape Cod and the Islands		
Barnstable	17	101.5
Dukes	3	2
Nantucket	1	1
total	**21**	**104.5**
TOTAL	**266**	**2664**

(1) Does not include small fruit nursery stock.

Data source: Massachusetts Department of Food and Agriculture, Bureau of Plant Pest Control

Small Fruit

TOTAL

- **acreage:** 1514
- **growers:** 180
- **value of production:** $2,750,000 (1)
- **market:** an estimated 70 percent of the small fruit crop is marketed through retail outlets such as pick-your-own establishments, roadside stands and farmers' markets. The remaining 30 percent passes through wholesale outlets and grower cooperatives.
- **major crop categories:** blueberries, strawberries, and raspberries

Distribution of Small Fruit Production

COUNTY	COMMUNITIES	GROWERS	BLUE/STRAW/RASP	TOTAL ACRES
			acres	
Western Massachusetts				
Berkshire	6	6	26/7/11	44
Franklin	12	18	319/108/53	480
Hampshire	12	18	44/61/31	136
Hampden	9	17	235/55/12	302
Total	**39**	**59**	**624/231/107**	**962**
Central Massachusetts				
Worcester	20	32	86.5/69.5/19.5	175.5
Total	**20**	**32**	**86.5/69.5/19.5**	**175.5**
Eastern Massachusetts				
Essex	12	16	9/59.5/31	99.5
Middlesex	13	19	8.5/27.5/12	48
Norfolk	4	7	16/8/1	25
Plymouth	14	26	91/19.5/2	112.5
Bristol	5	10	21.5/35/0.5	57
Total	**48**	**78**	**146/149.5/46.5**	**342**
Cape Cod and the Islands				
Barnstable	4	8	1/20/0	21
Dukes	3	3	2.5/6/5	13.5
Nantucket	n/a	n/a		n/a
Total	**7**	**11**	**26/26/5**	**34.5**
TOTAL	**114**	**180**	**882.5/476/178**	**1514**

(1) New England Agricultural Statistics has identified $2,750,000 of production; however, in view of the acreage identified with the assistance of Cooperative Extension Service, the value may be greater than indicated here.

Source: Cooperative Extension Service and Department of Food and Agriculture, 1987

Sprouts

TOTAL:

- **value:** **$2,559,000**
- **marketing outlet:** **virtually all is wholesaled to supermarkets and restaurants.**

Massachusetts Sprout Production (estimated)

Producers	Production (lbs.per year)	Wholesale Cost (per lb.)	Value
8 bean	6,700,000	$ .27	$1,809,000
8 alfalfa	750,000	$1.00	$750,000

Sources: Department of Food and Agriculture and Massachusetts Cooperative Extension Service

Tobacco

TOTAL

- **acreage:** 735 (1)
- **value:** $7,062,000 (1)
- **farms:** 21
- **production:** 622,000 pounds
  shade tobacco - 372,000 lbs. Havana Seed - 250,000lbs.

Distribution of Connecticut Valley Tobacco Production

COUNTY	COMMUNITY	ACRES	GROWERS
Franklin	2	93	4
Hampshire	3	152	12
Hampden	3	490	5
Total	**8**	**735**	**21**

(1) In consideration of the acreage identified from various sources, the value of production may be greater than is indicated for the 1986 crop year.

Sources: Department of Food and Agriculture, New England Agricultural Statistics

Tree Fruit

TOTAL:

- **value:** **$20,013,000** (1)
- **producers:** **209 (approximately)**
- **acreage:** **8844**
- **marketing outlets:** virtually all of the fruit is produced for fresh market. An estimated 70 % of the crop is wholesale marketed. The residual is sold through roadside stands, pick-your-own operations and farmers' markets.

Key Growing Areas:

Nashoba Valley - largely in Worcester County but straddling the county boundary shared by Middlesex and Worcester. Over 50 percent of the state's tree fruit acreage is found in this area.
Franklin County - especially in the vicinity of Shelburne.
Hampshire County - east and west of the Connecticut River valley and especially Belchertown.
Hampden County - east and west of the Connecticut River valley and especially Granville.

Distribution of Massachusetts Tree Fruit Production

COUNTY	COMMUNITIES	GROWERS	ACRES
Western Massachusetts			
Berkshire	*6*	*7*	*254*
Franklin	*10*	*16*	*810*
Hampshire	*10*	*14*	*956*
Hampden	*12*	*23*	*962*
	38	**60**	**2982**
Central Massachusetts			
Worcester	*30*	*71*	*3547*
	30	**71**	**3547**
Eastern Massachusetts			
Essex	*10*	*11*	*439*
Middlesex	*18*	*37*	*1321*
Norfolk	*5*	*10*	*197*
Plymouth	*5*	*7*	*73*
Bristol	*7*	*12*	*280*
	45	**77**	**2310**
Cape Cod and the Islands			
Barnstable	*1*	*1*	*5*
Dukes			
Nantucket			
	1	**1**	**5**
TOTAL	**114**	**209**	**8844**

(1) New England Agricultural Statistics, 1986 (includes apples and peaches)

Vegetables

TOTAL:

- **acreage:** **21,000 acres under cultivation**
- **producers:** **over 850 growers in nearly 200 communities**
- **value:** **$35,683,000** (1)
- **marketing outlets:** Although a portion of vegetable production, mainly potatoes and cucumbers, reaches the process market, the largest portion is sold to the fresh market. Fresh market outlets include roadside stands, farmers' markets, grower cooperatives, restaurants, supermarkets and wholesale brokers.

Vegetable farms in Massachusetts are characteristically small and produce a wide variety of vegetables. Forty-six percent of the growers till less than ten acres, and only 22 percent farm over 35 acres. Due to ideal soil, terrain and marketing conditions, vegetable cultivation is quite prevalent in four areas.

Key Vegetable Growing Areas

Connecticut Valley - (Franklin and Hampshire counties) over 5000 acres are cultivated in bottom land of the valley. The communities of Hadley, Hatfield, Whately and Deerfield delineate the core of this producing area. Major crops are potatoes, sweet corn, cucumbers, squashes, cabbage and onions. A portion of the potato and cucumber crop is produced for the process market.

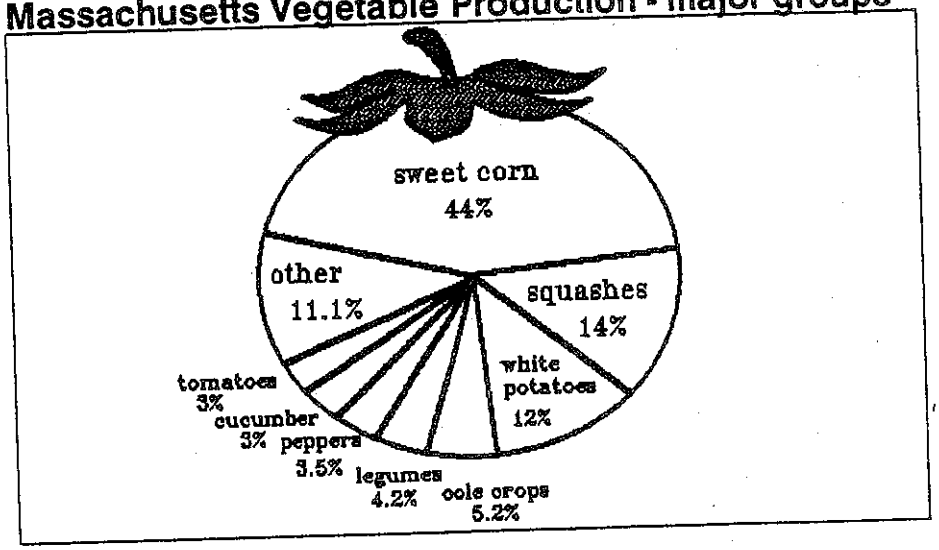
The Lower Connecticut Valley - (Hampden County) communities surrounding metropolitan Springfield cultivate nearly 2000 acres. A large portion of the acreage lies in Agawam, Southwick and Westfield.

Southeastern Massachusetts - primarily Bristol and parts of Plymouth counties. Between the metropolitan regional markets of Boston and Providence, Rhode Island over 4500 acres are cultivated in vegetables for the fresh market. Production clusters in communities near Dighton and Taunton. Major crops are sweet corn, butternut squash, pumpkins, beans, peppers and tomatoes.

Northeastern Massachusetts - (Essex, Middlesex, and eastern Worcester counties) over 3500 acres are cultivated. Vegetable cultivation in this area is more randomly scattered and less pronounced than in other key areas, although Methuen, Concord, and Northborough are important growing sites. Growers emphasize sweet corn, pumpkins and salad crops and market primarily through roadside stands.

(1) New England Agricultural Statistics,1986

Massachusetts Vegetable Production - major groups



Vineyards

TOTAL:

- **value:** unknown (1)
- **vineyards:** 36
- **planted acres:** 288, vineyard size ranges from 1/4 acre to over 60 acres.
- **planting:** significant plantings of vinifera varieties exist,however, French hybrids (crossing of vinifera varieties with American species) form the backbone of Massachusetts vineyards.
- **market outlets:** Most of the current production goes to local wineries. Small amounts of grapes are sold to home winemakers and the fresh fruit market.

Key Growing Areas:

Vineyards are currently found in 11 counties, however, over 75 percent of the planted acres are in Bristol, Plymouth, Barnstable,Dukes and Nantucket counties. There are also some smaller vineyards in Western Massachusetts where there is considerable experimentation with hybrid plantings..

COUNTY	COMMUNITIES	GROWERS	ACRES
Barnstable	1	1	9
Berkshire	1	1	4.5
Bristol	3	7	121.25
Dukes	2	2	31
Hampden	1	1	1.5
Hampshire	6	8	7.0
Middlesex	1	1	4
Nantucket	1	1	7
Norfolk	1	1	2
Plymouth	9	12	93
Worcester	2	2	5
TOTAL	**28**	**36**	**288.75**

(1) This commodity group is not surveyed by New England Agricultural Statistics.

Sources: Department of Food and Agriculture, Massachusetts Cooperative Extention, Massachusetts vineyard owners and the New England Wine Council

Apiaries

TOTAL:

- **number of colonies:** (during peak pollination and honey season) **21,013**
- **colonies primarily in honey production:** **9,172**
- **colonies used for pollination of apple and cranberry crops:** **11,841**
- **pounds of honey produced per hive:** (estimated) **25**

Of the 11,841 colonies used primarily for pollination of the apple and cranberry crops, most colonies are managed by migratory beekeepers who transport their hives to southern states such as South Carolina and Florida to permit the honey bees to rejuvinate and rebuild in a warmer climate.

Distribution of Massachusetts Apiaries

COUNTY	COMMUNITIES	BEEKEEPERS	COLONIES
Western Massachusetts			
Berkshire	29	177	411
Franklin	24	242	608
Hampshire	20	181	659
Hampden	18	197	846
	91	**797**	**2524**
Central Massachusetts			
Worcester	60	744	1993
	60	**744**	**1993**
Eastern Massachusetts			
Essex	33	356	1442
Middlesex	52	484	3405
Norfolk	27	344	1435
Suffolk	3	15	45
Plymouth	27	370	4462
Bristol	20	266	5023
	162	**1835**	**15,812**
Cape Cod and the Islands			
Barnstable	14	120	250
Dukes	5	27	178
Nantucket	1	2	256
	20	**149**	**684**
TOTAL	333	3525	21,013

Source: Department of Food and Agriculture, 1987

Poultry

TOTAL

- **industry:** **Three segments:**
  1. market brown egg production
  2. poultry breeding
  3. fresh turkey production
- **production:** 21 million dozen brown eggs and 164,000 turkeys for local consumption. Poultry breeders produce baby chicks for brown egg production and market to domestic and foreign egg producers.
- **value:** **$30,471,000** (1)
- **typical farm:** The average poultry farm is family owned and operated and manages 20 to 30 thousand birds.
- **market:** Massachusetts' one million egg layers supply 17 percent of our 5.8 million consumers. Ninety-five percent of egg production is marketed to jobbers and wholesalers. Approximately 5 percent is retailed directly to consumers. However, the percentage of production of fresh turkey retailed directly from farmer to consumer is about 80 percent with the balance marketed to wholesalers.

Massachusetts poultry capacity is 1,430,000 birds on 60 farms as of December 1987. Total capacity consists of:

• Laying hens	1,113,000	34 farms
• Breeders	104,000	8 farms
• Turkeys	164,000	16 farms
• Game birds and ducks	48,000	5 farms

Distribution of the Poultry Industry

REGION	FARMS	BIRD POPULATION
Western and Central Massachusetts	32	1,127,000
Eastern Massachusetts (including Cape Cod and the Islands)	31	302,600
TOTAL	**63**	**1,429,600**

(1) New England Agricultural Statistics, 1986 crop year.

Sources: Cooperative Extension of Massachusetts and Department of Food and Agriculture.

Farmers' Markets

County/location	Mkts. /week	Weeks of Mktg	Farmers
BERKSHIRE			
Great Barrington	1	24	10
North Adams	1	12	12
Pittsfield (Allendale)	2	52	26
Williamstown	1	17	10
FRANKLIN			
Greenfield	1	26	29
HAMPSHIRE			
Amherst	1	27	23
Belchertown	1	16	5
Easthampton	1	31	3
Huntington	1	20	6
Northampton	1	27	12
HAMPDEN			
Holyoke	1	25	24
Springfield			
(Avocado Street)	1	16	11
(Civic Center)	1	27	8
Westfield	1	24	12

Western Massachusetts Summary:

- 14 farmers' markets
- 15 markets per week in the prime harvest period
- 344 markets for the entire season

ESSEX			
Beverly	1	14	4
Haverhill	1	18	7
Newburyport	1	12	7
Topsfield	1	13	30
Wenham	1	17	4
West Newbury	1	10	9
Lawrence	1	18	11
MIDDLESEX			
Cambridge	1	17	10
Framingham	1	17	1
Lowell	1	23	9
Newton	1	17	15
Somerville	1	19	10
Sudbury	1	18	3
WORCESTER			
Auburn	1	15	25
Barre	1	15	15
Fitchburg			
(Valley West Plaza)	1	16	9
(In-Town Garage)	1	16	9
Gardner	1	16	7
Holden	1	18	6
Shrewsbury	1	12	4
Southbridge	2	18	8
Worcester			
(Center Courtyard)	2	16	25
(South Main Street)	1	16	25

County/location	Mkts. /week	Weeks of Mktg	Farmers
NORFOLK			
Brookline	1	20	13
Quincy	1	22	13
SUFFOLK			
Boston			
> Brighams Circle	1	16	1
> Brighton	1	16	3
> Cardinal Cushing Park	1	5	3
> Copley Square	2	44	4
> Fanueil Hall Mkpl.	1	4	2
> Fields Corner	1	16	3
> Jamaica Plain	1	22	1
> Roslindale	1	17	2
> South End	1	16	1
PLYMOUTH			
Brockton			
> Fairgrounds	1	17	4
> City Hall	1	17	6
Hingham	1	25	4
BRISTOL			
Fall River	1	27	30
Taunton	1	19	1
BARNSTABLE			
Falmouth	1	22	3
DUKES			
West Tisbury	1	15	25

Eastern Massachusetts Summary

- 41 market locations
- 44 markets per week in the prime harvest period
- 772 markets for the entire harvest season

STATE TOTALS:

- 55 market locations
- 60 markets per week during the prime period of the harvest season
- 1116 markets for the entire harvest season
- over 450 farmers selling

Roadside Stands/Pick-Your-Own

The following figures represent roadside marketers of vegetables, fruits, Christmas trees, maple syrup, dairy products, eggs, turkeys and other farm produce. Most farm stands are seasonal operations, however some stands are lengthening thier marketing season with the addition of new products through farm-based food processing. Pies, pre-cooked turkeys, apple cider and ice cream are examples of added-value processing which enables farmers to diversify their product line.

County	Communities	Establishments
Western Massachusetts		
Berkshire	9	10
Franklin	10	24
Hampshire	9	24
Hampden	17	55
total	**45**	**113**
Central Massachusetts		
Worcester	31	62
total	**31**	**62**
Eastern Massachusetts		
Essex	19	39
Middlesex	36	92
Suffolk	1	1
Norfolk	18	49
Plymouth	24	81
Bristol	16	83
total	**114**	**345**
Cape Cod and the Islands		
Barnstable	9	21
Dukes	4	8
Nantucket	1	2
total	**14**	**31**
TOTAL	**204**	**551**

Food Manufacturing

TOTAL

- **value:** $3,764,000,000
- **employment:** 26,000 employees
- **food plants:** 570

Food Manufacturing

Type of Manufacturing	Plants	Employees	Value (millions)
dairy products	85	3,900	869.3
fishery products	74	4,200	642.2
soft drink bottlers	57	3,100	557.7
sugar and confections	49	3,400	470.0
bakery products	109	5,300	385.0
meat products	62	2,400	360.9
preserved fruits and vegetables	35	1,000	140.1
grain mill products	20	300	70.3
fats and oil products	6	200	29.7
miscellaneous	73	2,100	238.6
TOTAL	**570**	**26,000**	**$3,764**

Massachusetts' Food System Employment

Sectors	Number of Employees
farming	15,000
food manufacturing	26,000
food wholesaling	20,000
food stores	76,000
eating and drinking places	140,000
TOTAL	**277,000**

Source: Census of Manufacturing, 1982

Food Manufacturing Plants[(1)] - employment and value by region and county

County	No. of Plants	No. of Employees	Value (millions)
EASTERN MASSACHUSETTS			
Suffolk (meat, sugar, confections, fish)	96	5,800	968.1
Middlesex (bakery, beverage, confections)	108	6,800	934.9
Essex (dairy, beverage)	78	3,200	392.0
Norfolk (dairy, beverage)	47	1,600	343.3
Bristol (bakery)	75	2,500	218.4
Plymouth	27	900	126.2
	431	**20,800**	**$2,982.9**
CENTRAL MASSACHUSETTS			
Worcester (bakery)	54	2,4000	257.9
	54	**2,400**	**257.9**
WESTERN MASSACHUSETTS			
Berkshire	---	< 450	---
Franklin	---	< 450	---
Hampshire	---	---	---
Hampden	41	1,900	319.9
	41	**< 2800**	**319.9**

(1) partial listing

Source: 1982 Census of Manufacturers