Massachusetts Agriculture

1988

Massachusetts Department of Food and Agriculture

Michael S. Dukakis	*Governor*
John P. DeVillars	*Secretary of Environmental Affairs*
August Schumacher, Jr.	*Commissioner of Food and Agriculture*

A Letter from the Commissioner

Dear Colleagues,

This year was one of the most critical years in history for Massachusetts agriculture. Farmers and their many friends came together in a wondrous way to defeat an effort by animal rights advocates to alter farming practices in the Bay State.

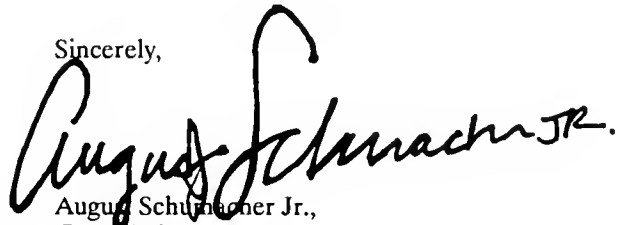
With little funding, lots of gumption, incredible hard work and plenty of political savvy, the farming community achieved a major political upset. They are to be congratulated for this effort, which received much national attention.

This was all the more remarkable given the amount of national political interest in Massachusetts with a native son, Michael S. Dukakis, the Democratic nominee for President, a fact that led to a very large voter turnout. In the end, 1.5 million voters cast ballots in favor of the Massachusetts family farm, with only some 600,000 voting for the animal rights referendum. It was a great victory, achieved with little money. The organizers are to be commended.

On other fronts, the Department worked hard to continue to achieve major objectives, resulting in the publication in October 1988, of a Task Force report entitled *The Massachusetts Farm and Food System, A Five Year Policy Framework, 1988-1993*. State farm policy continued its progress with a strong market orientation, farmland protection, attention to programs in Integrated Pest management and a major initiative to stabilize the hard-pressed dairy industry.

We especially want to thank the farmers on the animal rights issue, the Agricultural Board who continued to offer so much support and to the new Secretary of Environmental Affairs, John P. DeVillars, whose support on policy initiatives will permit the Department of Food and Agriculture to continue its worthwhile programs.

Sincerely,



August Schumacher Jr.,
Commissioner

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These board and committee members generously volunteer their time to these important groups that work to insure the integrity and success of Massachusetts agriculture. Their hard work is deeply appreciated by theCommissioner and staff of the Massachusetts Department of Food and Agriculture.

Massachusetts Department of Food and Agriculture

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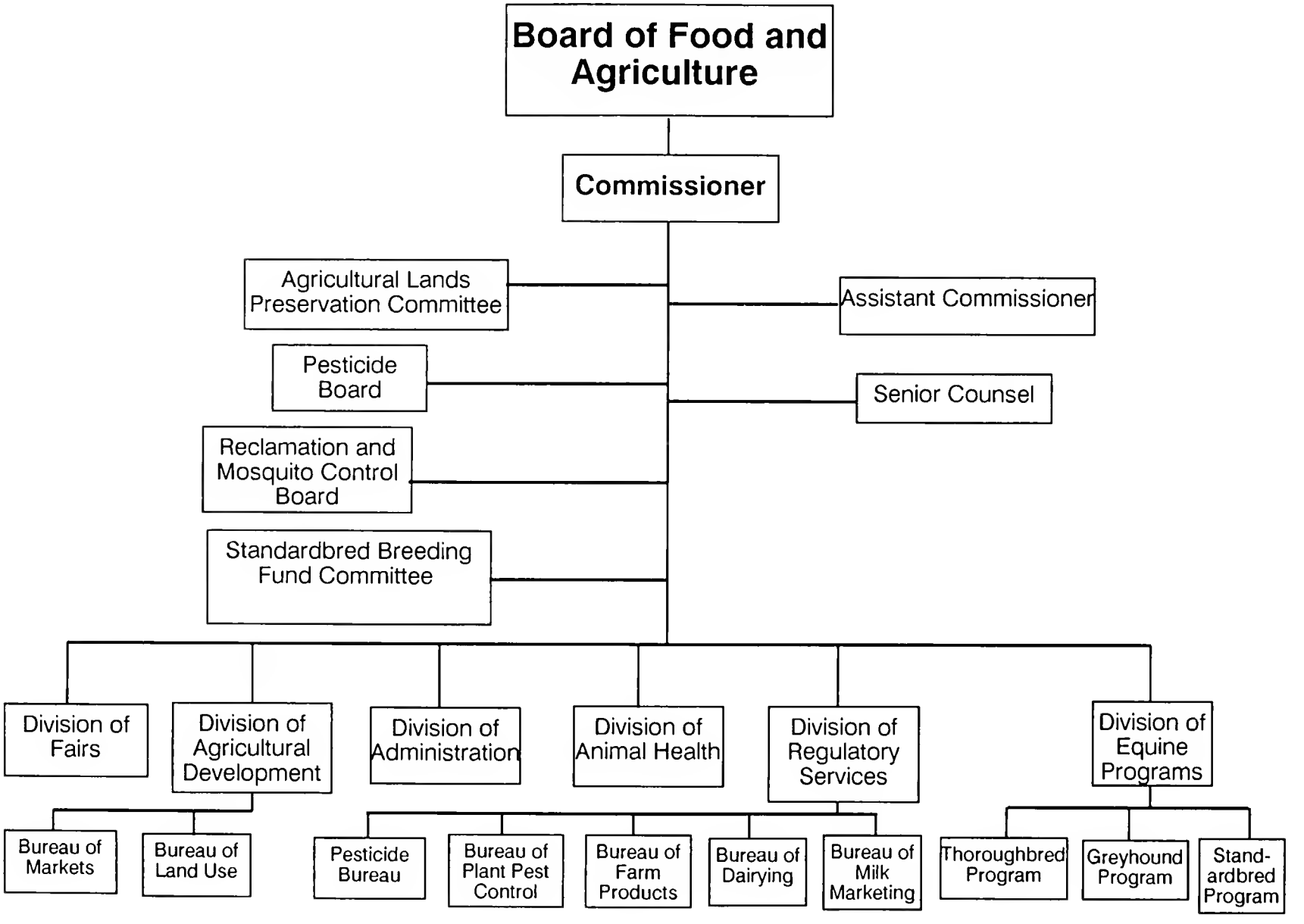
Cover photograph - Maple Sugaring at the Boyden Farm, Conway, by Diane Baedeker

ORGANIZATIONAL CHART
Massachusetts Department of Food and Agriculture



Division of Agricultural Development

Walter Larmie, Director

The mission of the Division of Agricultural Development is to ensure the continued viability of the Commonwealth's multifaceted agricultural industry through a variety of educational and promotional activities. State assistance is vital to the continued growth and viability of this $3 billion industry, particularly in a small, heavily populated industrial state like Massachusetts. While concerned with the overall health of the entire agricultural industry, the Division has focused in particular on several key areas of concern, notably the Women, Infants and Children (WIC) food coupon program, Agri-Composting, and farm labor issues.

Labor Shortage

One problem facing the entire economy of the Commonwealth is the acute shortage of labor affecting virtually every facet of Massachusetts industry. Agriculture, in particular, has been very hard hit, owing to long hours, hard work and seasonability. With no control over the maturation process of their crops, farmers are often held hostage to the lack of a ready supply of labor, and often suffer financial loss. The Department has been working with individual farmers, commodity groups and other government agencies to examine solutions to this problem. One option is the creation of a job-training program in urban areas, another involves establishing an exchange program for students from Ireland and Poland. We will continue to monitor the labor situation, and potential solutions, closely.

On-Farm Agri-Composting

The Department worked diligently with legislators in 1987 to secure a $3 million appropriation to underwrite the development of a statewide agricultural composting program. This undertaking will lessen our farmers' reliance on expensive fertiliziers and soil conditioners, while simultaneously finding a beneficial use for farm wastes and organic materials which otherwise would be disposed in our already overfull landfills. The Department is now developing regulations to help guide farmers through the composting process.

Federal-State Marketing Improvement Program

The Department of Food and Agriculture worked closely with the USDA to administer a grant program designed to help finance innovative agri-marketing programs. The USDA provides funds to state departments of agriculture to conduct cooperative marketing service projects to improve the marketing, handling, storage processing, transportaion and distribution of agricultural products. Here in Massachusetts the 1988 grants aided the development of an aquaculture operation.

Farmers' Market Coupon Program

In 1986 the Department established a program to provide low-income individuals, families and elders with coupons redemable at farmers' markets throughout the state for fresh, locally-grown produce. Since its inception, this program has been widely imitated by some 17 other states, as well as the federal government. In 1988 the program served over 30,000 clients, providing them with over $170,000 worth of foodstuffs. Not only does the program assist nutritionally at-risk people, but it also raises the income of participating farmers significantly.

Bureau of Markets

Janet Christensen, Acting Chief

Expanding the market for Massachusetts agricultural products is the major objective of the Bureau of Markets, and a strong promotional program is the key to our accomplishments in 1988.

A major component of our marketing strategy is the "Massachusetts grown...and fresher!" slogan. Over the past fifteen years this has paid off through expanded markets for many farmers in the Commonwealth and a greater awareness by Massachusetts consumers of the quality and freshness of local food products.

What our staff lacks in size, it makes up for in enthusiasm, and the many events and activities of the past year have helped us reach out in new ways for new markets for Massachusetts growers.

Supermarkets and Roadside Markets

To help promote the sale of our excellent local farm and food products, the Bureau develops "point-of-purchase" materials for use by supermarkets and roadside farmstands. This year's king-size posters picturing fruits and vegetables were colorful reminders the "The Time is Ripe for Massachusetts."

With the assistance of the Department's promotional advisory committee, the Department hosted the fourth annual "Fine Foods Dinner" to thank supermarket buyers for their interest in purchasing local products. We also arranged the proclamation ceremonies for "Massachusetts Supermarket Week" during August.

The Bureau of Markets has coordinated its efforts with the Massachusetts Association of Roadside Stands (MARS). In March, a one-day direct marketing conference was held and topics covered were of special interest to Bay State Grower-marketers. The Bureau also aided MARS in launching their newsletter "Farmstand News," which features marketing issues and MARS business.

Our regionally assigned Marketing Specialists continually aid farmstand managers with management problems and distribute our "Massachusetts Grown ... and Fresher" point-of-purchase materials.

The Foreign Trade Office assists Massachusetts agribusiness firms in launching international marketing programs geared to their products for their current regions of export and/or new global areas.

The Fresh Connection

The "Fresh Connection" project, aimed at facilitating relations between growers, food processors and those in the restaurant and food service industry, featured a luncheon, farm tours and participation in trade shows during 1988. The newsletter was also published and sent to some 600 restaurateurs, growers, food processors and members of the media. The program is designed to help local growers find direct markets, and to improve the communication between local producers and restaurant chefs.

The Bureau of Markets coordinated participation in several trade shows throughout the year. To foster direct marketing, commodity group representatives participated in the March 1988 Northeast Food Service and Lodging Exposition, which some 10,000 industry buyers attende, as well as the November New York Gourmet Shows. These producers gained increased exposure for their products and generated business.

Food Buyers Guide and Markets Information

The *Food Buyers Guide* is published weekly by the Bureau of Markets. The state has been divided into three areas: Boston and vicinity, central, and western Massachusetts for the purpose of compiling accurate prices. At the beginning of each week, a market investigator records prices of produce, meat, dairy, and fish from 4 to 5 retail stores in their respective areas.

During the Spring and throughout the harvest season, the market reporters visit roadside farmstands and farmers' markets and obtain prices on local produce.

Prices collected for each product are tabulated by range: highest to lowest as well as the most prevalent price for each product.

The *Food Buyers Guide* is mailed to Food Editors, County Extension Services, Growers and farmers market masters, as well as members of the agricultural industry in other states. The guide is an excellent source for information on the best buys of the week, future price expectations based on availability of product, and a source for comparison of prices in different areas of the state.

The cover page of the Food Buyers Guide features a specific food product with information and recipes on the product. Also a market report is given by a market investigator regarding specials in the retail market. We also work with the USDA Fruit and Vegetable Market News office, providing wholesale price information to growers during the local growing season.

Mary Moffitt is the staff member in this Markets program.

Farmers Markets

The second comprehensive Massachusetts Farmers' Market Directory was compiled this year, containing a profile of each farmers' market. The directory was mailed to growers to assist them in planning their market season and to market masters whose markets are short on farmers to assist them in recruiting more.

The Department hosted the fourth annual Taste of Msasachusetts Tomato Festival at City Hall Plaza in cooperation with Massachusetts tomato growers, the University of Massachusetts Suburban experiment station in Waltham, and the marketplace management. Entries from across the state fell into several categories including commercial, back yard grown and hydroponic. All were judged on taste, color, firmness, cutting quality, and shape.

Six new markets for the summer of 1988 were established with city and town Chambers of Commerce and Mayors' Offices cooperating.

Produce was delivered once a week to the Quincy Housing Authority from MCI Shirley.

Anneli Johnson is in charge of the farmers' markets programs; Doug Roberts covered western Massachusetts in this area for the major part of the growing season.

Farmers' Market Coupon Program

In 1988, the program was further expanded. In 1988, a total of about $225,000 was provided for coupons and administration. Twenty-two (22) markets participated, which represented a 60% expansion over 1987. 143 growers participated at these markets, an expansion of 25% over 1987. A total of 307,000 coupons were issued to more than 30,000 households. 70% went to WIC, with the rest to other recipients. Over $170,000 of coupons were redeemed, providing an average of more than $1,000 in revenues to each participating farmer.

Key changes over the 1987 program included the addition of Boston Urban Gardeners' Farmstand program. Eight farmstands located at low-income housing sites in Boston were supplied with fresh produce from local farms, and coupons were provided to assist the purchase of food. The program was unique in that it was a way to reach the truly needy when farmers themselves were unable to set up and do the actual sales. Volunteers from community centers and housing sites did much of the work to set up stands and redeem coupons.

In addition, a much greater share of the state's markets were included in the program. Redemption was large enough to have significant impact on farmers' incomes and on their decisions about where to sell. The program also confirmed the commitment of both funding sources and sponsor agencies to stay with the program as it expanded and became a permanent operation.

1988 was really the watershed year as far as demonstrating the sustainability of the Coupon Program. By this time, a dozen other states had started programs similar to that in Massachusetts. Many of these were intiated following a national meeting held in the March of 1988 in Boston, at which representatives from 22 states and the federal government heard about the program and specifics about its operation. The success of the program was also instrumental in securing Congressional support for a national pilot program.

Bureau of Land Use

James P. Alicata, Chief

To maintain a sound agricultural economy, it is essential that a sufficient amount of land suitable to agricultural production be made available to the farming community. It is the role of the Bureau of Land Use to achieve this objective. This can be accomplished through the coordination of both the public and private sector in developing plans for land use that are compatible to both the needs of development and agriculture.

1988 was a challenging and productive year for the Bureau, highlighted by the passage and signing of an Open Space Bill which included $35 million for the continuation of the Agricultural Preservation Restriction (APR) program. Due to the previous allocation of APR funds, the Bureau was able to direct attention to alternative preservation techniques which maximize the effect of tax dollars when they become available.

Professional planning services, for example, have been employed to explore ways that values can be shifted from productive farmland to non-agricultural land that would be more suited to housing or other development purposes. By working cooperatively as a Bureau and with other agencies, an awareness and appreciation of the available farmland in every community can be developed and managed. By offering communities a total package of opportunities that include the identification of active farmland through the mapping program, the purchasing of development rights through the APR program, or the proven management experience of the Massachusetts Farmland Stewardship Program and the Community Garden and Fruition programs, the objectives of effective land use management will be acheived.

Municipal Farmland Identification Program

MFI is a three-year project which inventories and maps parcels of active agricultural land on a town by town basis. This information is valuable to the Agricultural Preservation Restriction (APR) staff in their efforts to create economically viable blocks of protected farmland. In addition, these maps serve as a useful planning tool for town boards and agencies involved in land use issues such as zoning, preservation of open space and resource protection.

1988 has been a very successful year for the MFI Program. Nearly all of the towns in Hampshire, Hampden, Franklin, and southern Worcester counties have been mapped. Martha's Vineyard has been finished and several towns in Berkshire County are presently in various stages of completion. Mapping has also been completed in a number of communities in Plymouth, Bristol, and Barnstable counties.

There has been excellent cooperation from the USDA Soil Conservation Service, which performs the final cartographic work and the Agricultural Stabilization and Conservation Service who have assisted in identifying active agricultural land through the use of aerial photographs.

A very successful pilot project between DFA and the Hazardous Waste Facility Site Safety Council (HWFSSC) during the summer produced a computer generated map of APR distribution throughout the state. This map is the first attempt at digitizing information from the Bureau of Land Use using the computer capabilities of another agency. The Bureau is currently in the process of assessing the feasibility of digitizing all of the Municipal Farmland Identification maps which would help immensely in keeping the maps up to date as well as accurate.

APR Program

The Agricultural Preservation Restriction (APR) Program was established by the Legislature in December, 1977 to protect the Commonwealth's rapidly diminishing farmland resources through the purchase of Agricultural Preservation Restrictions, commonly known as development rights. It is a voluntary program whereby farmland owners apply to the Department of Food and Agriculture to sell a restriction on all or a portion of their property. After field inspections, a screening and selection process, appraisals, and approval by the Agricultural Lands Preservation Committee, the Commonwealth acquires deed restrictions, which run in perpetuity, and prohibit all activities that would destroy or impair the land for farming. Title to the land still rests with the landowner who enjoys all the traditional rights of the property ownership, such as the right to privacy, the right to lease or sell the land, and of course the right to farm the land.

Since the program's inception, more than 25,272 acres have been protected statewide, with an additional 14,300 acres currently in process. During the past six years the Legislature appropriated five million dollars for each of the first four years, twenty million dollars in 1983, another five million in 1984, and $35 million in 1987 for a total of $80 million to fund the program over the course of the 1980's.

An active farmland preservation role by the Department of Food and Agriculture came none-too-soon for

Massachusetts, as over a million and a half acres of land in farms have gone out of production in the state since World War II. During the two decades between 1951 and 1971 it has been estimated that between 11,000 and 12,000 acres of farmland were lost annually in the state because of urban conversion. One has only to drive around the countryside to witness new houses going up in fields and orchards that were recently in active agricultural production.

The loss of agricultural land in most areas of Massachusetts will probably continue because the economic incentive to sell the farm for non-agricultural uses is often too tempting for a farmer to resist, or the land is simply just too expensive for the farmer's children or neighboring farmers to purchase. It is this disparity in land value for development versus agriculture that makes the Commonwealth's Agricultural Preservation Restriction (APR) Program work.

Status of Farms Protected

All of the farms that are currently in the APR program are checked from time to time for compliance with the terms of the Preservation Restriction. At this time, all of the land currently protected remains in agricultural use.

Approximately 60 percent of the farms are in dairy production, thirty five percent are produce farms including fruits and vegetables, and approximately five percent are "other," including general livestock, flowers, etc.

Approximately 30 percent of the farms have been sold since the restriction was granted, many of which were conveyed within the family. They all remain in active agricultural production.

Proceeds from sale of the development rights were used primarily for retirement. The second highest use of the funds was for debt reduction or pay-off, and the remainder was used for improvements to the farm.

In the past seven years, the APR program has placed development restrictions on a total of 270 farms covering 25,272 acres of farmland. These farms range in size from a fifteen- acre highly intensive market garden to 340-plus-acre dairy operations. Included among these farms are apple and peach orchards, specialized vegetable farms, small fruit operations, general forage crop and livestock farms, farms producing field crops such as potatoes, cucumbers and grain corn, and diversified dairy farms. The types of farms in the Massachusetts program are an excellent cross-section of the types of food-producing agricultural enterprises in the State.

The additional funding provided under the 1988 Open Space Bill will enable APR program staff to respond to a steady and increasing stream of applicants. Numerous APR agreements have already been completed while dozens more have been in various stages of application and approval, pending the recent passage of the bill. Nineteen applications involving 3,332 acres were under purchase-and-sale agreement as of Jan 1,1988, but could not be completed before the new infusion of funds. Eighty additional farms on 8,230 acres have been under active appraisal, while 32 applications involving 2,324 acres have been on standby.

APR staff members predict that as the number of applications continues to increase, program applicants will be more closely scrutinized to assure their compatibility with program objectives. While awaiting the infusion of new funds, the APR staff has sought to elucidate and develop those objectives. One of the program's major objectives is to continue to add more restricted land in the vicinity of those farms already protected, in order to secure large areas of land for agricultural production. More and more landowners are becoming familiar with the program, and the assemblage of large blocks of protected farmland is underway in a number of towns, including Westport, Dudley, Hadley, Amherst, and others. Other program objectives include: suitability and productivity of the land for agriculture; the imminence of threat to the farmland; the economic viability of the farm; and the availability of creative financing approaches that will reduce the cost to the Commonwealth.

Cost saving financing techniques likely to receive even closer consideration by the APR staff and the ALPC in the coming year, include the following:

(1) Land banking by the owner - The Owner is willing to hold out substantial acreage which is not essential to the farming unit, for possible liquidation. By doing so, the Owner is "land banking" acreage for family residential use or sale which will reduce the cost of the APR.

(2) Compatible Development - Where a town or land trust purchases the land outright, it may be necessary or desirable to remove some of the marginal agricultural land for limited residential development in order to offset the cost of purchase.

(3) Substantial Local Contribution - Farms of high value will be expected to have a substantial local contribution. Normally this will come from the town, through town meeting appropriation or from the Conservation Fund of the Conservation Commission, or from local non-profit organizations.

(4) Cooperative Funding - Contributions, made by another state agency that has an interest in the preservation of an APR farm can help to reduce the cost of the APR for the DFA.

(5) Bargain Sale - Where the appraised value of the development rights is higher than the Commonwealth is willing to pay, the owner may be willing to sell

the development rights for less and take the difference as a charitable deduction for federal tax purposes.

State-Owned Farmland

1988 marked the eleventh year in which publicly-owned land was made available to Massachusetts farmers under the Department's State-Owned Farmland Project. Added to the project's inventory in 1988 were 24 acres of state-owned land in Lancaster and 80 acres of land in the Ware River and Wachusett Reservoir watersheds. Negotiations began with the Department of Public Health to assume leasing responsibility for 243 acres of farmland at Tewksbury Hospital, which will bring the total acres managed by the Project to over 1,000. Unless the use is dictated by special legislation (as in the case of Northampton and Foxborough), the lands are made available to farmers through a public Request for Proposals process. Farmers are selected to use the land based on their management ability, offered price per acre, and willingness to comply with any special restrictions placed on them by the agency controlling the land. Leases are for 5 years (the maximum allowed under state real property laws) and are sometimes renewable for one additional period of 5 years.

Farmland Stewardship Program

An advisory committee was formed in September of 1987 to take a broader look at Massachusetts' state-owned farmland and plan for its future use. The Committee includes members from the agricultural community and from human services and economic development agencies. The Committee will focus first on the land that was once farmed by the large campus hospitals and schools of the Departments of Mental Health, Public Health and Mental Retardation. These institutions stopped farming in the 1960's and '70's and the land has been kept open through leasing to local farms.

The large campus institutions are now being asked to plan for their current and future needs and to declare excess land surplus. This Campus Planning process is a joint effort of the Executive Office of Human Services and the Division of Capital Planning and Operations (DCPO) the agency created in 1981 to oversee all state real property matters. The Massachusetts Farmlands Stewardship Committee will develop agricultural plans to dovetail with the Campus Planning process: as lands are declared surplus, the Department of Food and Agriculture will ask that the farmland be transferred to its control to implement the Committee's plans.

Plans will be developed individually for each property, based on its agricultural capability and farm use in the surrounding area. It is hoped that new-entry farmers can get a start on some of these properties, with 30-50 year leases. Such a project is already being implemented by the New England Small Farm Institute on the old Belchertown State School farmstead.

Agricultural Land Inventory

The Bureau of Land Use is developing an inventory of all public lands used for agriculture in Massachusetts. The Bureau has begun a survey of all Massachusetts cities and towns to see how much municipally-owned land is farmed and under what sort of arrangements, i.e., lease or permit, fee simple or percentage of yield, public access permitted or not, etc.). Agricultural leasing is an effective Open Space management tool which makes good economic sense for both municipalities and for Massachusetts agriculture; and the Bureau would like to further promote its use.

Acid Rain Project

Three years of research on the effects of acid rain on Massachusetts agriculture will be completed in the spring of 1988. Grant money from the state Executive Office of Environmental Affairs was given to the environmental agencies to investigate how acid rain is affecting the quality of Massachusetts' air, water, forests and agricultural resources. The Bureau of Land Use is administering a $270,000 three-year grant for research conducted through the University of Massachusetts' Environmental Institute by Dr. Lyle Craker on the Amherst campus and Dr. William Feder at the Suburban Experiment Station in Waltham.

Researchers are finding that crop damage is caused by a complex of pollutants including acid rain, ozone, sulfur and nitrogen oxides and particulates. Damage is not restricted to urban areas where most of these pollutants are generated but hits rural areas as well. The U. Mass. researchers are finding that air pollution and acid rain can affect the ability of corn pollen to germinate on corn silk, which can reduce yields of Massachusetts' number one cultivated crop. These pollutants can also interact with common agricultural herbicides and growth hormones, causing them to act unpredictably and possibly damage crops.

Dr. Feder has developed a pollen test for nursery stock which predicts how a plant will react to pollution stress. Nursery stock used to beautify Massachusetts' urban and suburban areas represents a multi-million dollar investment and must be able to tolerate polluted conditions. To field-test all species for pollution tolerance would require 50 years, thousands of acres of land and cost millions. Dr. Feder's pollen test is cheap, accurate, and produces results in 24 hours.

Division of Animal Health

Mabel Owen, Director

The goal of the Division of Animal Health is the control or eradication of all domestic animal diseases which have either a human health impact or place an undue burden on the producer or consumer. With an office staff of seven, whose primary duty is the support of the field staff and maintenance of disease test and surveillance records, and a field staff of four Veterinary Health Officers, four Animal Health Inspectors and five Poultry and Poultry Products Inspectors the Division monitors the health of well over 120,000 cattle, 50,000 swine, almost 35,000 horses, 20,000 sheep and goats and more than two and half million birds, primarily chickens and turkeys. Since this animal population is maintained on more than 10,000 individual premises, the inspecting and record keeping presents a monumental task for such a small force. Many records are now computerized, but since most disease situations are best treated on an individual farm basis, the actual work load cannot be minimized by improved technology. Tests vary, as do the availability and use of vaccines and topical treatment. Size of farm, rapidity of disease spread, proximity of neighboring farms with similar animals, availability of medical treatment - all enter into any given disease outbreak and each carries its own monetary impact, on the Division as well as on the farmer-producer. Now that many of the older, and once-feared diseases (Tuberculosis, in particular) are considered to have been eradicated in the area, priorities have turned to others, such as Swine Pseudorabies Virus (PRV) which are relatively new to the state. Interstate and international animal, and human movement has proliferated to an extent where exotic disease pose a constant threat to our native livestock. Avian Influenza in 1986, Swine Pseudorabies in 1987 and various salmonella serotypes in 1988 have, individually, the capacity of almost wiping out any single species of animal.

Since the collective value of domestic livestock in Massachusetts now exceeds a half billion dollars, it is encumbent upon the Division to maintain it in good health. The use of land for stock adds heavily to our tax base as well as maintaining a valuable "green belt" around our cities and suburban areas. The production of safe, high-quality, available food is a source of pride to our farmers and life support to our consumers. We have a short growing season in the northeast and we must therefore make the best possible use of every week of it. The Division of Animal Health maintains an important place in the food chain - cooperating with every segment, from breeders to producer to seller to dealer to processor to consumer. Sections 1 thru 49 of Chapter 129 of the General Law apply, as well as certain other sections and chapters.

Interstate and international, animals and birds move via Permits and Charts. Included for each is an individual identification (number and letter combination) as well as the negative results for many health tests, all of which are conducted in one or more state or federally-approved laboratories. These records are maintained, in some cases as long as five years, and provide accurate means of trace-back to farms of origin in the event of disease outbreak. Animal commerce is extensive and records must be error-free, both of which require an office staff that is both talented and conscientious. Their basic understanding of disease nomenclature and eradication procedures is extensive. In addition, interstate shipment requirements change almost daily, in answer to sporadic and particular disease situations that come into existence in other states and countries. Telephone inquiries are many and extremely varied, requiring data sources from Universities, other state agencies, federal laboratories or other governmental bodies.

At the end of fy 1988 four positions remained unfilled, one field Veterinarian, one poultry/poultry products inspector and two office staff openings.The fy 1988 budget was $716,143. The Division of Animal Health prepares its own Budget (Account number: 2515-1000) which becomes a part of Food and Agriculture's departmental budget. Expenses include divisional salaries, accredited Veterinarians in the state, under a fee structure which reimburses them for farm visits, calf-hood vaccinations (Brucellosis only) and tuberculin testing. The remaining costs represent support costs; office expenses and supplies, telephone, postage, printing, ear-tags, certain antigens and testing materials and auto leasing.

The Tuberculosis Program

Massachusetts cattle are tested, on a full-herd basis, once every three years, at state expense. Each test requires two Veterinary stops, once to inject and a second, 72 hours later, to read. Animal TB-testing is the same as it is for people, essentially an allergic-reaction test. All dairy cows are tested and at least 85% of the beef herds are similarly done. Within the past fy, Connecticut has changed its testing requirements to be in line with all other New England states, a long sought-after change which will result in a substantial saving for the area's milk producers. Since all cattle sent to federal and most state slaughterplants are regularly inspected for TB, the surveillance for this important disease is more than adequate. Although Tuberculosis in man still can be found in this country, most are inner-city cases with no food-chain derivation. Massachusetts has been "Accredited Free" of Bovine Tuberculosis for more than five years. It has been

a decade since the last case was found in a herd in this state.

The Brucellosis Program

The end of fy 1988 marks the 62nd month that Massachusetts has been rated "Brucellosis-Free". This rating is now shared by 26 other states, all of which are either north or north-central. This is a coveted status, one of value to every farmer as it allows our cattle to move freely in commerce to a wide number of other states and countries. In effect, FREE Status confers an added value to Massachusetts-owned dairy animals. Since this disease remains endemic in the South, strict surveillance procedures are required in all "FREE" states.

The Brucellosis Ring Test (BRT) is the primary testing procedure. Dairy herds are monitored quarterly with this test, currently conducted under a state-federal payment system at Paige Laboratory, University of Massachusetts Amherst campus.

Cattle Dealer licensing and weekly sale/purchase reports are necessary, as is the vaccination of all heifer calves between the ages of four and eight months, as well as the re-testing of all imported cattle between 45 and 60 days post entry. Vaccination and import retesting is done at state expense, either via staff Veterinarian or by fee-basis accredited Veterinarian. Since Massachusetts is both an importing (more cattle brought in than raised here) and one across which cattle move regularly, there is an ever present danger of re-introducing this costly disease to Massachusetts herds. We are therefore unceasingly vigilant concerning Bovine Brucellosis. It remains the first priority disease- prevention Program.

Swine Brucellosis

At the end of fy 1988 one swine herd was known to be infected and this one was scheduled for the depopulation of all breeding animals before the first quarter of fy 1989. Application for Free-status in swine brucellosis is under USDA consideration. Acceptable surveillance procedures remain in question. There are no large, federally-inspected swine slaughterplants in New England and swine traceback procedures remain poor because current methods of swine identification do not remain on or with the animal throughout transportation and slaughter. First-point testing (ie; at sales or gathering points) is under consideration as is individual-herd animal testing. Swine numbers continue to diminish in Massachusetts despite the widespread changeover from garbage to grain feeding. Waste food recycling through swine remains both economically and environmentally sound; and swine feed lots also remain the primary source of neighbor complaint.

Other Swine Diseases

With the advent of federally-supported, industry-wide effort to eradicate Swine Pseudorabies Virus (PRV) slated to begin on January 1, 1989, many states have begun a surveillance program to locate any foci of disease in this area. Massachusetts conducted a serology surveillance of almost 60 swine herds in mid-fy 1988, and eleven herds were found to have one or more positive animals. Five of these were cleaned up quickly and tested negative. Six others remain, one of which is a very large herd. Since there is no state or federal indemnity available for PRV, each case must be considered individually, bearing in mind the size of the herd, its proximity to other swine herds, the severity of disease within the herd and the farmer's decision to remain a breeding operation. With the exception of the one large aforementioned herd, it is expected that Massachusetts will be essentially free of PRV in fy 1989. In the area of other swine diseases a number of threats exist. African Swine Fever is endemic in much of the Caribbean basin and Foot and Mouth Disease breaks sporadically in Europe and South America. Division of Animal Health is also a part of READEO (Regional Emergency Animal Disease Eradication Organization) a state-Federal contingency planning group which would cover any exotic/imported disease outbreak.

Pet Shop Licensing

Almost 10,000 puppies and kittens are imported into Massachusetts each year, for sale at Pet Shops. State licensing is designed to provide better care, cleaner shops and some protection to the buying public. Massachusetts requires these animals to be veterinarian inspected, and to be eight weeks of age before importation. Despite such laws, these are baby animals, already heavily traumatized by weaning, a stay at a wholesaler and further shipment. A new regulation mandating a weekly Veterinarian inspection prior to sale has been of some help, as has the requirement permitting the buyer to return the animal for either exchange or return of payment following a Veterinarian's inspection and rejection. Consumer complaints in the year following the rule changes have been minimal but not non-existent. The sale of animals from a shop often results in an emotional experience for the purchaser - not always on the plus side. The Division of Animal Health, despite job vacancies, has undertaken to inspect each of the 262 licensed Pet Shops twice annually. There was 95% completion of this program in fy 1988. These inspections do not take the place of regular visits, complaint investigations by agents of the Massachusettts Society for the Prevention of Cruelty to Animals and Animal Rescue League of of Boston and New Bedford, but do serve as a useful procedure by which each licensed shop is visited at least twice yearly. A form of "preventative medicine", these inspections frequently solve problems before they can become acute.

Equine Program

Although relatively few licensing Programs are financially self-sufficient, the Programs which issue licenses to Riding Schools, Horseback Riding Instructors and Equine Dealer-Transporters is generating a total of $28,856 in fy 1988. Full particulars appear on page 26 of this report. Designed to protect both horses and people, two of the programs remain the only ones of their kind in the country. Licensing has ensured that Instructors have sound basic knowledge, understand the principles of teaching and practice the principles of safety. Horseback riding is no more subject to personal injury than many other such sports, but careful instruction, as well as well-cared for and sound horses, reduce the risk considerably. There are number of licensed stables which offer programs of riding for the handicapped as well as lessons for the older rider. The licensing programs have also provided opportunities to inform horse owners of disease problems, legislative action or zoning changes. In fy 1988, one such informational meeting was held.

Since a number of very large breed horse shows are regularly held in Massachusetts each year, with entries from 20 or more states and Canada, it is important that incoming animals meet all of our entry requirements insofar as health is concerned. Equine Infectious Anemia (EIA) has been on the increase in New England for at least two years. Clinically-ill horses, rather than the asymptomatic carrier animal, have marked these outbreaks. Although none has occurred in Massachusetts, the number of Coggins-Test positives has risen. Since EIA virus has certain similarities to HIV (Humane immune-deficiency virus), there is research currently under way in Massachusetts using the EIA-positive horse as an "animal disease model" for AIDS.

Guard Dog Licensing

This program, in effect for five years, is designed to assure guard and sentry dogs of sound training, humane care and safe working conditions. Facilities are regularly inspected by Agents of the MSPCA and ARL as well as by both Divisional staff Veterinarian and Animal Health Inspector.

Hearing Ear Dog

Although these kennels are required to be licensed, this program has never been funded, nor have Rules and Regulations been promulgated; licenses issued, or personnel hired who have the specialized expertise the care of these highly trained animals requires. Since less than four such training kennels exist, and since each has been regularly visited by various humane agents, this program continues to have a low priority in the Division. Each year an expansion budget-budget request has been made however.

Rabies Control

Public law in Massachusetts requires that any animal inflicting a bite or skin-breaking scratch be quarantined for a minimum of ten days as a rabies prevention procedure. Town Animal Inspectors and Animal Control Officers issue quarantine and release, following notification by a hospital physician. Since rabies, in the human is almost invariably fatal, these procedures are important. The presence of a vaccinated canine population, between the wild animals who can have rabies, and the public is the latter's first line of defense against this frightening disease. The Division hold Town Animal Inspector meetings, provides numerous informational papers and regularly answers inquiries about rabies. Testing of certain suspect animals is available from the Massachusetts Department of Public Health (727-2686) as is information regarding the new diploid cell vaccines (HDC) for people who have been exposed to rabies or whose work or travel makes such protection wise.

Poultry Programs

Although surveillance procedures were maintained throughout fy 1988, no Avian Influenza was found, either in Massachusetts flocks or in those of nearby states. Tests have been provided to flock owners at no cost. In fy 1988 a new threat to the poultry industry made its appearance. It has been alleged that Salmonella enteriditis, which causes morbidity and occasional mortality in humans, is closely associated with eggs. A number of industry metings were held in fy 1988 and various testing and certification plans were considered. It appears that certain egg-connections may be made, but that very little is known regarding transmission of disease within flocks. Until research can be completed, and considerations given to indemnity for the flock owner, regulations to eradicate or control this disease cannot be completed. The emergence of salmonella enteriditis as a threat to public health has resulted in greatly improved cooperation between USDA and the states, and between the departments of public and animal health within the state.

Shows, Fairs, Activities

Every animal or bird exhibited at a Fair or exhibition was inspected by one or more of our staff professionals - Veterinarian, Animal Inspector or Poultry Inspector. Massachusetts' requirements for the health of every species shown appears in every prize list. We are grateful for the excellent cooperation we received from Fair Managers and Secretaries, as well as from Exhibitors. A fair is a "show window" for agriculture and we are proud of everyone's efforts to place only the best "in that window." Fairs remain the farmer-producer's only contact with a consuming public that is often five or more generations away from any farm contact or knowledge.

Pulling Animals

Once again randomly selected animals were tested for drugs - and once again no positives were found. We are indebted to the Racing Commission's Laboratory in Jamaica Plain for conducting these tests. Massachusetts has a reciprocal agreement with other New England states insofar as animal drugging is concerned. This agreement re- sulted in the banning of one teamster found guilty of administering drugs to his animals at a contest in a nearby state. The "draws" are increasingly popular fair events and the number of exhibitors has risen each year.

Sales/Auctions

Statistics of five regularly-scheduled sales appear on page 11. Each has either /and a Staff Veterinarian or an Animal In- spector present. This is also true of certain other sales which are annual events here - sales of feeders, purebred beef or dairy animals, lambs, sheep, other animals. Since facilities exist here in Massachu- setts which are centrally located, and served by the interstate highway system, we are a popular "sale-state." A food-animal sales tax exemption also applies.

Sheep and Goats

With increasing sales in goat milk and both goat and sheep cheeses, many towns require that goats be regularly tested for both tuberculosis and brucellosis although both species appear not to harbor either disease. These rules have caused sheep and goat owners to desire that testing requirements for showing remain in place. The Division has once again offered to meet with dairy goat associations to consider rule changes.

Specialties

Food animal "specialties" appear on the increase. There are currently one herd of bison and two farms actively considering the raising of fallow deer for venison. There is also a rapidly increasing number of llama and vicuna herds, farms on which wild horses are trained and donkeys raised and trained to protect sheep from predator attack. We also have fish culture and exotic birds raised for both food and exhibition. Agriculture, today, changes with each passing year.

Problems

Three positions lost in 1985 remain unreplaced. At the close of 1988 four other positions were unfilled; one staff Veterinarian (Worcester County); one Poultry In-spector, the Supervisor of Riding Academies and one clerical position. All are critical, and will have a major limiting effect on the work-load of the Division.

Diagnostics

The lack of long-term planning for animal disease diagnostics remains unchanged. The Division of Animal Health has funded annually a small contract ($24,000) with Veterinary Services at the University of Massachusetts in Amherst. This laboratory continues to offer Pullorum testing in Poultry and is federally funded under a state-federal agreement to carry out the Brucellosis-testing program, but these are temporary procedures and none addresses the problem in its entirety. Massachusetts Division of Animal Health remains, the only such agency in the country that does not have a properly funded, properly staffed domestic animal disease testing laboratory. This lack all but guarantees the Massachusetts inability to cope with any large animal disease outbreak. Instant diagnostic capability is a primary control tool; disease prevention is far less costly than disease eradication.

Conclusion

The seventeen people currently employed in the Division of Animal Health deserve the livestock industry's thanks for their part in maintaining the state's disease-FREE status in Tuberculosis, Brucellosis and Pullorum. No other state has accomplished so much with so few people, and so many farm premises and animals. We wish to acknowledge the help we have had from the following people and agencies:

Governor Michael S. Dukakis, Secretary of Environmental Affairs James Hoyte and Commissioner of Food and Agriculture August Schumacher, Jr. for their continued support; A number of people in the legislature, and especially the Committee on Natural Resources, for their interest and cooperation; Dr. William Smith, area Veterinarian in Charge, USDA-APHIS for a great deal of assistance; Massachusetts Farm Bureau Federation, the Animal Rescue League of Boston and Massachusetts Society for the Prevention of Cruelty to Animals for advice and support; Dr. George Faddoul of the Suburban Experiment Station and Dr. Donald Black of the Department of Animal and Veterinary Sciences, both of the University of Massachusetts, for their invaluable help in diagnostic sevices; The practicing large-animal Veterinarians in this state, the purebred associations, the cattle and swine dealers, the sale-barn managers and the entire livestock farming community for their commitment to our goals of disease-free status.

A disease-free status is attainable only when everyone concerned believes in it and works at its accomplishment.

Division of Equine Programs

Peter Bundy, Director

Thoroughbred Breeding Program

Peter Bundy, Supervisor

The thoroughbred breeding industry continued to contribute some $35 million to the Massachusetts economy in 1988, an increase of more than 200 percent over the past five years. During the same period, the amount of farmland devoted to thoroughbred breeding remained at 7,000 acres. Clearly, the breeding and raising of throughbred horses has become a significant force in the Massachusetts economy and a major contributor to the cause of open-space preservation.

Recognizing the importance of the industry, the Massachusetts Thoroughbred Breeding Program in 1988 continued to encourage and provide incentives for the breeding and raising of thoroughbred horses in the Commonwealth. Enhanced by legislation passed in 1985, the program now receives one half of one percent of the total amount wagered at Suffolk Downs. That money is used for breeder, owner and stallion owner incentive awards payable to qualified participants in the breeding program.

Breeder Awards

At Suffolk Downs and at two agricultural fairs in Massachusetts, throughbred breeders received $322,282 in awards in 1988. A breeder is the owner of a mare at the time of her foaling. If certain requirements are met, the breeder becomes eligible to receive breeder incentive awards of 25 percent of the purse won in first-, second-, and third-place finishes at licensed pari-mutuel tracks in Massachusetts.

Owner Awards

Owners of Massachusetts throughbreds received $192,985 in incentive awards during 1988. The owner of a Massachusetts-bred horse is the person who owns the horse at the time of its racing. Owner awards are 20-percent of purses won in first-, second- and third-place finishes at licensed tracks in Massachusetts. Owner awards are paid only in open competition. No owner awards are paid for horses running in races restricted to Massachusetts-bred entrants.

Owners of Massachusetts stallions gleaned $94,476 in awards during the past year. Stallion owner incentive awards of 15 percent of the purse are paid to owners of registered Massachusetts thoroughbred stallions that sired such finishers. The owner of the stallion at the time of service to the dame of such a finisher is the recipient.

In the past year, Massachusetts registered Thoroughbreds have gone to post 1,562 times at Suffolk and agricultural fairs. These starters have accounted for 184 wins, 179 seconds and 192 thirds. Stallion owners reported 329 mares bred to Massachusetts stallions in the same time period.

Stakes Racing Program

In the past fiscal year, 10 stake races, with total purses of $235,000, were offered for eligible Massachusetts-bred horses. Of that amount, the program funded $125,000, with the Suffolk Downs Horsemen's account providing $110,000 These restricted races were offered to horses of varying age and gender, and were run over varying distances and under varying conditions.

Greyhound Breeding Program

Robert E. Bennett, Supervisor

The breeding of greyhound racing dogs in the Commonwealth got off to a running start in 1988, with more than 1000 Massachusetts-bred greyhounds registered for racing from July to the end of the year. During the same period, some 110 greyhound studs were registed with the agency. While the program has just begun, it is anticipated that more than 2,000 greyound pups per year will be registered with the Department of Food and Agriculture.

Under Chapter 277 of the Acts and Resolves of 1986, the Department of Food and Agriculture's Division of Equine Programs was chosen to administer the states' new Greyhound Breeding Program. The program is funded by one-tenth of one percent of the total handle at the Wonderland and Raynham/Taunton greyhound racetracks, up to a maximum of $300,000 per year.

Division of Fairs

Steven F. Quinn, Director

The growing network of agricultural fairs and exhibitions in Massachusetts received a healthy boost in 1988 with the hiring of Joan Hobart of Middlefield as the Department of Food and Agriculture's first Supervisor of Fairs. Other staff promotions last year also made the Division of Fairs better able to meet the changing needs of the Massachusetts fair industry.

Joan Hobart, the new fairs supervisor, is based at the agency 's Western Massachusetts regional office, located on the grounds of the Eastern States Exposition in West Springfield - the largest of the more than 100 agricultural exhibitions held annually in the Commonwealth. The efficiency of that office also has been improved by the promotion of Alexandrine Porter-Martin as senior clerk-typist and overseer of computer programs. At the agency's main office in Boston, Ellen Hart was promoted to the job of administrative assistant in 1988, handling division matters in the absence of the Director.

Program Expenditures

From a total appropriation of $693,069 for Division of Fairs activities in fiscal year 1988, $375,000 was allotted for prizes; $140,000 for rehabilitation; $50,000 for exhibits and grants to agricultural youth programs; and the balance of funds for administrative purposes.

Fairs Rehabilitation

The division's ongoing effort to improve buildings and grounds at fairs statewide was aided in FY 1988 by a $50,000 increase over the previous year's appropriation. Priority was given rehabilitation projects at fairs in Adams, Bolton, Greenfield and Barnstable, as well as the Boston Flower Show.

The Big E

Some 993,000 visitors came through the gates of the 1988 Eastern States Exposition in West Springfield in September. The Massachusetts Building looked better than ever, thanks to a fine effort from the Division of Capital Planning and Operations and members of the Western Massachusetts Nurserymens' Association. The building now boasts new roofs, new paint, new railings, new lights, and new landscaping--once again dignifying our presence on the Avenue of the States. New exhibits in 1988 included expanded models of farmers' markets, local wine products, the Massachusetts Veterinary Association, the Massachusetts State Police, the Massachusetts Tree Farmers, and an exceptionally well-received exhibit on lobsters by the state's environmental law enforcement officers.

Workshops

Successful training workshops were conducted in 1988 for new fair secretaries, inspectors, cattle superintendents, and judges for fruit-, vegetable- and flower-growing competitions.

Wool Board

The Division continued its involvement in 1988 with the Massachusetts Wool Board. Producers last spring pooled together their wool, sent it out of state to be processed into blankets and then sold their goods for above-wholesale prices. In that way, participating Massachusetts shepherds earned larger returns for their clips. A similar effort to market lamb meat collectively continued to be hindered in 1988 by the lack of an appropriate packing facility within the state. Still, local growers continue to do well individually with their freezer-trade businesses.

Division of Regulatory Services

Lewis F. Wells, Director

The Division of Regulatory Services encountered another year full of important regulatory activities. Some of these activities include new initiatives (i.e. groundwater protection, right of way management) in the Pesticide Bureau, the continued battle against the spread of the Varroa and Tracheal mites, agressive inspection and enforcement of dairy and, seed, feed and fertilizer regulations. Faced with the continuing pressure on the dairy industry, the Bureau of Milk Marketing continued to closely monitor the price and supply of milk.

Bureau of Plant Pest Control

Peter Kuzminski, Chief, Bureau of Plant Pest Control retired in 1988. The Department of Food and Agriculture wishes Pete a happy retirement and thanks him for his long service to the citizens of the Commonwealth. Warren Shepard, previously with the Bureau of Markets and Pesticide Bureau was appointed as the Bureau Chief.

Apiary Inspection

A small but vital sector of Bay State agriculture is the apiary industry. And Massachusetts has fewer beekeepers than many other states. We produce a modest amount of honey, but the largely unnoticed value of the apiary industry is pollination by bees -necessary to most of our crops. The major issues for this industry are the threats from the outside - Trachael mites, Africanized bees, and Varroa mites. Trachael mite has not been the problem we first anticipated, although we must do many inspections to remain in control of the situation. Africanized bees can be placed in the same category. The largest concern is the prevention of infiltration of the Varroa mite into Massachusetts. If this occurs, the situation will be serious as there is no registered pesticide to control this mite and quarantine is difficult with the degree of bee colony movement in the state.

Pesticide Regulation

The most encouraging advances in the area of pest management have been in the area of Integrated Pest Management (IPM). The Department of Food and Agriculture continues to work with the University of Massachusetts in expanding this practice of reducing the use of chemicals by employing biological, cultural and mechanical methods of controlling pests.

International IPM Conference

In March, the Department of Food and Agriculture, World Bank and the University of Massachusetts held an international conference on Integrated Pest Management. Representatives from nearly every continent attended the conference to exchange ideas and research on ways to use an integrated approach to control pests.

Dairying and Milk Marketing

The demand for milk in the Boston metropolitan area, where most of the milk-handling industry in New England is located, has caused debate over the status of the milk industry in the Northeast and possible strategies for insuring the future of dairy farming while keeping consumer prices affordable.

Quality Control in Farm Products

The Bureau of Farm Products receives analytical support from the Seed, Feed, and Fertilizer Laboratory at the University of Massachusetts, Amherst in administering bureau programs and enforcing state laws concerning branding and storage. Bureau staff also inspects apples for export to the United Kingdom and Canada as well as to other states.

Working with other states, USDA, the Food and Drug Administration and various regulated industries, the Division of Regulatory Services helps foster high quality agricultural products while guarding the public health and safety.

Bureau of Dairying

David Sheldon, Chief

The Bureau of Dairying had a very successful F.Y. 88. All of the requests received for the inspection of Dairy Farms and Milk Plants to ship fluid milk to our market were completed in a timely manner in accordance with the requirements of Chapter 94 of the General Laws.

Dairy Farms In Massachusetts

Throughout F.Y. 88 our total dairy farm numbers in Massachusetts continued to decline. September 1, 1987 signaled the end of the dairy termination program and the erosion of our dairy farms slowed somewhat; however, we are still in a steady loss situation.

On July 5, 1988 we recorded 482 commercial dairy farms operating within the state. This number represents a drop of 63 farms from our July 1987 figure of 545 farms. Compared to our previous fiscal year's loss of 97 dairy farms the loss is not as severe, but it is significant.

A search into our records shows us that Massachusetts had 6,885 dairy farms in 1940 and that the number of dairy farms increased to 7,331 by 1953. Since 1953 there has been a steady loss of dairy farms to our present figure of 482 or 6.57% of the dairy farms we had 35 years ago. Using the same percentage loss we have experienced we would have 32 dairy farms in Massachusetts in the year 2023. It is our belief that we will experience a continued erosion of dairy farms for the reasons which are common knowledge to all of us in the agricultural field such as the best use of investment capital, labor, rate of return, size of operation necessary for an adequate return, off farm employment opportunities and the exorbitant prices being offered for land in Massachusetts. We continue to have great faith in the agricultural preservation restriction program and the real estate tax relief offered via Chapter 61A to be incentive enough to slow our loss of farms, however, it is impossible for many to show a reasonable profit even with these incentives, if the price of milk is too low as it has been for the past year. It is now essential that this state do all that is possible to assist in enhancing the price of milk at the farm.

To put our previous discussion about the loss of farms in Massachusetts in the proper light it is important to note that even though we have lost farms every year since 1953 our total production in Massachusetts had been on a slow rise up to 1983 due to more cows on remaining farms and higher production per cow. The Federal Milk Diversion program started in 1983 and it was followed up by the Federal Dairy Termination Program in 1986 which resulted in a loss of approximately 20% of the milk being produced in Massachustts. The remaining herds in the state have picked up some of this loss by adding cows and by increasing production per cow, but it is not enough to bring us back to our 1983 highpoint in milk production.

Dairy Farm, Milk Plant And Pasteurization Plant Inspections

We inspect all Massachusetts producers at least twice a year and all of our out of state producers at least once a year. In addition to the 482 active dairy farms we now have under inspection in Massachustts we had 6,070 dairy farms under inspection in our supplying states as of January 1, 1988.

On June 30, 1988 we had 8 milk plants under inspection in Massachusetts and in out of state areas we had 20 milk plants and 22 pasteurization plants under inspection.

Our statistics section at the end of this report gives the actual number of inspections made in addition to many other statistics.

The Milk Shed

We continue to have a slow but steady addition of producers in the State of New York. The New England milk shed is finite and when additional milk is needed the Massachusetts cooperatives and dealers request our inspection of producers in the State of New York.

Mastitis Program

The Mastitis program carried out in conjunction with Paige Laboratory at the University of Massachusetts continues to be of great assistance to all Massachusetts dairymen who participate. It is a voluntary program. We have approximately 325 herds enrolled in the program out of a total of 482 herds or 67% participation. The elimination of Streptococcus Agalactiae in participating herds is the main trust of the mastitis program.

Over the last two years the inspectors have been using an evaluation form at participating farms to identify the actual conditions causing the mastitis problems. We feel that it is fine to identify the organism in the samples and treat the cows as needed, but the identification of the actual problem or problems causing the infection is

essential for the program to have the greatest positive effect for the dairymen.

We have three inspectors working full time on mastitis sample collection, with one additional inspector working approximately one-half of his time on mastitis work. The remainder of his time is spent on dairy farm inspections.

U.S.D.A. Dry Milk Sampling Program

The Agri-Mark, Inc. plant in West Springfield, MA is our only dry milk plant in Massachusetts. During the past year this plant has not made any government powder and we have done no sampling. We expect the 89 fiscal year will tell the same story due to the tightness of milk supplies.

Interstate Milk Shippers Program

We have continued our efforts to come into greater compliance with the Interstate Milk Shipper's Program. We are now in the process of computerizing our dairy farm water supply records and when that project is completed we hope to computerize our driver-sampler records. Having all of these records on the computer will assist greatly by enabling us to screen the records via the computer to see who is in need of sampling or inspection etc.

We presently have thirteen separate I.M.S. bulk tank units holding a rating in Massachusetts. All of the units have been rated within the proper time frame to comply with the requirements of the I.M.S. program.

We have enhanced the ease of making the enforcement portion of an I.M.S. rating by ledgering all of our dairy farm scores. It is now very easy to evaluate one page of a producers record rather than comparing 5 or 6 separate score forms.

Dealer Registration

During the 1988 fiscal year a total of 128 Milk Dealers registered with the Bureau of Dairying as required by Chapter 94, Section F of the General Laws.

Dairy Farm Equipment Installation Forms

We have now finalized the installation application forms for a bulk tank, pipeline milking system and any related dairy equipment installation. We have sent a letter along with a set of the application forms to all Massachusetts dairymen and to all dairy equipment installers serving our dairymen. We have found that it is very helpful to identify problems with equipment installations on the application before the actual installation. In this way corrections may be made to meet the regulations before the dollars, time and labor have been expended. This creates a situation where everyone is willing to discuss what the problems are, if any. It is much more difficult to gain correction after all of the equipment is in place and it does not meet the regulations.

Legislation and Regulations

The Committee on Agriculture and Natural Resources is presently evaluating a proposal entitled the Northeast Interstate Dairy Compact. This document was assembled by legislators in New York and Vermont. Two of the major thrusts of the compact are:

A. Uniformity of Laws and Regulations of all participating States.

B. Establishment of a regional price structure to obtain additional income for dairymen.

The compact would require approval by the legislators and the signature of the Governor in each participating State. The United States Congress would than be requested to allow the compact.

One new piece of dairy legislation was signed into law in Massachusetts during F.Y. 88 when the Governor signed the bill defining goat milk with the standards set at not less than 2.5 percent milk fat and not less than 7.5 percent milk solids not fat, for goat milk in final package form for beverage use.

Dairy Laws Manual

We are still working on the complete revision of our Dairy Laws Manual, whenever time permits. We are making progress and we hope to have the Manuel completed in the near future.

Aseptic Milk

As this report is being written we are receiving requests for us to inspect aseptic processing operations in Pennsylvania and Kansas. This would be a major expansion of our milkshed; however, the volumnes of milk would be relatively small. One of the markets being targeted for this product in Massachusetts is the Elderly Nutrition Programs and we have received many requests to allow the product to be made available by the directors of these programs.

Milk Flavor Program

We presently have 18 milk plants participating in the milk flavor program. Leo Cormier heads up the program and he is the only flavor expert on the Bureau of

Dairying staff. The program is completely voluntary and interest in the program remains at a relatively mild level. Just as this fiscal year was drawing to a close we learned that Mr. Cormier was planning to resign his position with the Department of Food and Agriculture and we are presently evaluating this situation.

Staff

We have been at full staff for the past year except for our Supervising Inspector. George Pittman who was our Supervising Inspector for several years, retired on July 1, 1987. Mr. Pittman was replaced by Anthony Burgess on August 16, 1987, and Mr. Burgess is doing a fine job in that position.

In November of 1987 we were fortunate to be able to employ Karen Dixon of Holbrook, who has taken over the work of Anthony Burgess in the Worcester County area when Mr. Burgess moved up to the Supervising Inspector's position.

As of June 30, 1988 we have 11 Inspectors, 3 Senior Inspectors, 1 Supervising Inspector, 1 Chief and 2 Secretaries.

FARMS	
Dairy Farms Inspected	7,650
Approved	6,076
Not Approved	1,574
Dairy Farms Reinspected	1,886
Approved	1,505
Not Approved	381
Ten day letters sent to producers on reinspection for failure to correct violations noted on the inspection report	212
Hearing's Held	15
Producers excluded for failure to comply with the regulations after receiving a ten day letter and/or a hearing being held	15
Producers reinstated	15
Other Farm Visits	1,497
Milk Plants Inspected	60
Approved	50
Not Approved	10
Plants Spot checked	46
Dealer Visits	434
SAMPLES	
Water Samples Collected	233
Milk Samples Collected	33
MASTITIS PROGRAM	
Herds Sampled	545
Cows Sampled	30,145
Samples Collected	118,756
I.M.S. SAMPLING SURVEILLANCE PROGRAM	
Bulk Tank Samplers Checked	8
Bulk Tank Trucks Checked	205
I.M.S. DAIRY FARM INSPECTION PROGRAM	
Massachusetts Dairy Farms Rated	172
U.S.D.A. DRY MILK SAMPLING PROGRAM	
Days Sampling Skim Milk Powder	0
MILK FLAVOR PROGRAM	
Milk Samples Flavored	17,681

Bureau of Dairying Personnel traveled a total of 379,169 miles during the fiscal year to accomplish this work.

Bureau of Farm Products

James M. Cassidy, Chief

With the retirement of key field personnel and the resulting need to train new inspectors to accommodate its many services, the Bureau of Farm Products underwent some major changes in 1988.

The Bureau of Farm Products administers a diversified quality-control program for farm products, including the Federal-State Fruit and Vegetable Shipping Point Inspection Service. It also enforces truth-in-labeling laws for feed, seed, fertilizer and limestone, regulates certain produce-branding labeling and storage laws, and collects more than $100,000 annually in product registration and inspection fees. In addition, the Bureau publishes a weekly wholesale Apple Report listing market prices and storage-holding information.

Because of the complexity of the various regulated products, the Bureau's new inspectors were selected with a great deal of thought regarding their ability to be trained and to perform effectively in this inspectional field.

Our young field staff is now fully trained and licensed by the U.S. Department of Agriculture, which allows them to issue federal certificates attesting to the quality, condition and grade of Massachusetts produce shipments.

In addition, the inspectors analyze and test controlled-atmosphere apple storage rooms; sample feed, seed and fertilizer for testing at the West Experiment Station at the University of Massachusetts in Amherst; inspect and regulate produce at wholesale markets, retail store and farm stands for conformance to certain labeling and branding laws; keep accurate records of such transactions; and perform other related duties as required by the Bureau.

1988 also brought a remarkable improvement in the facilities and testing equipment at the West Experiment Station. All of our feed, seed and fertilizer samples are analyzed at this station for conformance with the label.

A new computer program designed to sort out the various grades and blends of fertilizer used on Massachusetts soils was introduced during this year. The Uniform Fertilizer Tonnage Reporting System (UFTRS) was developed by the Tennessee Valley Authority (TVA) and the entire program package was donated by TVA to the Bureau so that tonnage reports would become more accurate. During this year 90,495 tons of fertilizer was applied to our soils.

Fruit & Vegetable Inspection

Demand for our inspection services again was weighted heavily toward export apples, primarily those shipped to the United Kingdom and Canada. Apples also were inspected for shipment to California, where demand has been increasing steadily. All totalled, more than 126,000 bushels of Massachusetts apples carried federal-state inspection certificates for export.

The export apple inspections are of major importance, primarily because of the demand for controlled-atmosphere stored apples, including our valuable McIntosh variety and quality packs. McIntosh apples cannot be grown successfully in European countries. The controlled-atmosphere method of storing apples greatly lengthens the marketing season, allowing shipment of apples in good condition well into June.

Inspection certificates also are issued for potatoes and onions in the Connecticut Valley, and for cranberries on Cape Cod.

Feed Program

Some 2,975 labels of animal feed, pet food and medicated feed ingredients were reviewed and registered during the year. Samples of products offered for sale were drawn and tested at the West Experiment Station.

Fertilizer Program

A total of 1220 labels of fertilizer were reviewed and registered. Tonnage taxes were assessed and collected semi-annually. Assessment penalties in shortage of guarantee level were levied, with fines collected turned back to farmers or submitted to the state Treasury.

Seed Program

Bureau inspectors tested 715 official samples of seed,crop seed, vegetables, lawn mixtures, flower tree and shrub seed, etc., for truth in labeling. Stop-sale orders were issued on violations, involving seed packages. Seed was removed if it showed poor germination, noxious weeds, or other unfit characteristics. Violations were sent to the USDA Seed Branch for further action.

Lime Program

39 limestone brands and grades were registered and checked for conformance to labeling during the fiscal year.

Branding Law

Inspections were made at farms and at wholesale, retail, and roadside markets to enforce apple, potato and native laws. Misbranded products were relabeled or removed from sale. More than 3,000 retail stores and many packing-house operations were inspected.

Storage Laws:

Records are kept on cold-storage and controlled-atmosphere apple rooms in order to check compliance with storage laws, thereby allowing those products to move into certain market areas of the country.

Conclusion

The Bureau, through strict adherence to laws, grades, label reviews and other essential data, has done much to upgrade the quality and condition of farm products offered for sale in Massachusetts. These programs reflect general crop conditions and market situations. The uniform laws and grades allow for products in interstate and export commerce. Working with other states, the USDA, the Food and Drug Administration and various regulated industries, the Bureau and the Department have helped foster the marketing of high-quality products.

BUREAU OF FARM PRODUCTS STATISTICS

Seed Inspection Program - samples officially tested,

	1984	1985	1986	1987	1988
Agriculture	61	73	47	54	63
Mixtures (Lawn)	33	80	68	73	75
Vegetables	361	537	551	421	467
Flowers	101	158	115	104	110
Sprouts	10	-	3	-	-
TOTAL	566	848	784	654	715

Fruit And Vegetable Inspection Revenue - fiscal year

	1984	1985	1986	1987	1988
Apples	$8,678.15	9,218.41	7,972.74	6,375.35	8,861.51
Cranberry	280.00	1,321.00	140.00	700.00	420
Onions	314.02	-	-	-	-
Potatoes	920.24	469.00	66.69	41.85	100.00
TOTAL	10,192.41	11,008.41	8,179.43	7,117.20	9,381.51

Feed Fertilizer and Lime Registration - calendar year

	1983	1984	1985	1986	1987
Feed/a	1,992	2,100	2,035	2,173	2,475
Fertilizer/b	810	1,000	980	926	1,110
Fertilizer/c	20	26	27	30	30
Lime	32	26	35	35	36

Feed, Fertilizer and Lime Revenue - calendar year

	1983	1984	1985	1986	1987
Feed/a	$49,800	$52,500	$50,875	$54,325	61,875
Fertilizer/b	20,250	25,000	24,500	23,150	27,750
Fertilizer/c	2,500	3,250	3,375	3,750.00	3,750
Lime/d	800	650	875	875	900
Fertilizer/e	11,888.14	14,475.00	14,773.84	14,795.10	14,500
Fertilizer/f	7,101.30	7,842.50	8,656.67	7,073.20	7,100

TOTAL : $103,968.30

/a Brands /d Brands
/b Specialty brands /e Tonnage
/c Commercial plants /f Penalties

- Registrations and revenue are collected on a calendar year for feed and fertilizer.
- Revenue generated by inspection and registration fees totalled $125,256.51.

Bureau of Milk Marketing

John B. Kelley, Chief

The Boston fluid milk market serves a population of 8 million people. It encompasses Massachusetts, Southern New Hampshire, Rhode Island, and parts of Connecticut. The increase in the commercial disappearance of milk along with declining support prices continues to cause extreme tightness in the raw milk available in this market.

Through 1988, premiums continued to be market-driven. Along with the RCMA premium, there were additional over-order premiums. As in the past, prices in the Boston market remained competitive with other regions of the country.

In other areas affecting milk marketing in Massachusetts during 1988, the Massachusetts Producer Security Trust Fund showed continued growth. Under Massachusetts General Law Chapter 10, Section 49, Chapters 20 and 21, C.M.R. 8.00, independent producers shipping to proprietary handlers pay five cents per hundredweight into the Fund. Receiving handlers make payment to the Department before the twenty-fifth day of the month for milk received during the previous two payment periods. All payments are cross-checked by the Bureau against audited receipts on a monthly basis. Proceeds are invested by the state Treasurer in the Municipal Depository Trust.

Proprietary handlers with Massachusetts producer payrolls are required to post bond or other security, regardless of whether the receiving handler is located in-state or out-of-state. The security posted must equal the value of payment for one payment period plus ten percent. There is no limit on this bond. The security must comply with provisions of Massachusetts General Law Chapter 94, Section 42, and is reviewed on an ongoing basis.

The Bureau continues its policy of licensing fluid milk handlers operating in Massachusetts, retail establishments selling milk in the Commonwealth, bulk tank drivers, and individuals testing milk for butterfat content. Educational seminars for bulk tank drivers were held in different parts of the state during the year.

Under Mass. General Laws Chapter 94, the butterfat inspector continued to cross-test and check both on-farm and in-plant verifying payment to producers.

An automatic data processing management system is used for all licensing, security fund, and bonding data input.

Pesticide Bureau

Jeffrey Carlson, Chief

During FY88 the Pesticide Bureau continued implementation of a number of important projects.

Rights-of-Way Management

The Rights-of-Way Management Regulations became effective in June 1987 and development of a program began in ernest. The Department has been receiving 5-year Vegetation Management Plans and Yearly Operating Plans for review to assure right-of-way maintenance is in accordance with the regulations.

The Department of Food and Agriculture and the Department of Environmental Protection have begun a review of herbicides proposed for use in sensitive areas along rights-of-way. This review will generate a list of recommended herbicides for use in sensitive areas in order to protect public health and the environment. The Department will also issue or approve for use herbicide fact sheets that must be included in the Yearly Operating Plans.

In addition, the Department will be implementing a program to work with local boards of health to identify private water supplies along rights-of-ways. According to the regulations, private wells must be reported to the Board of Health and signs must be posted along the rights-of-way in order to maintain a buffer zone around the well.

Corn Herbicide Study

The second year of a study to assess the leaching potential of corn herbicides has been completed. This project, which is being conducted by the University of Massachusetts, is studying the ability of alachlor, atrazine and metolachlor to leach down to ground water. The corn herbicides were applied at two sites which were chosen to represent highly vulnerable locations where contamination is most likely to occur. Results of this study will be used to assess the environmental fate of the three herbicides and to make regulatory decisions regarding their use in Massachusetts. The study is being sponsored by the Monsanto Chemical Company which manufactures alachlor.

Pesticide Root Zone Model (PRZM)

The computer Pesticide Root Zone Model (PRZM) is now operational following the loading of weather data into the model. PRZM is a computer model which simulates the applicator of a pesticide and predicts its leaching potential. The model allows the user to vary the conditions of applications and observe the resultant leaching. The pesticide characteristics, application rates, timing, soil types, cropping practices and weather conditions can be altered. Weather data from four locations throughout the state was added to the program to represent the subclimates present in Massachusetts. The model will be used to assist in the assessment of pesticide leaching potential.

Pesticide License/Certification

Licensing and certification of pesticide applicators is an essential component of the pesticide regulatory function of the Department. As a result, the Department ensures to the public that individuals are licensed and meet the minimum competency requirements pertaining to the use of pesticides. As in previous years, the Department approved approximately 100 applicator training sessions.

	Renewals	New	Total
Commercial Certification	2,086	350	2,436
Private Certification	1,633	252	1,885
Applicator License	787	465	1,252
Dealer License	116	12	128
Total	4,622	1,079	5,701

These figures indicate the total number of licenses and certifications issued by the Department for pesticide use in FY88.

Enforcement

Last year four additional inspectors were added to the Enforcement Program and as a result, the Department was able to respond to all legitimate complaints.

Number of Complaints Received	84
Withdrawn	3
Investigated/not pesticide related	8
Referred to EPA	1
Received from EPA	1

Complaints Investigated	
Distributor	1
License/Certification	8
Commercial	
Trees/Shrubs	5
Lawn care	14
Residential	14
Termite	5
Institutional general pest control	7
Storage/Disposal	1
Right-of-Way	1

Private (no license or certification required)	
Potatoes	1
Mosquitoes	1
Corn	1
Cranberry	1
Greenhouse	2
Fly Control	3
Institutional general pest control	1
Storage/Disposal	1
Wood Preservative	1
Weed Control	3

In addition to inspections and investigations conducted in response to complaints, the Pesticide Bureau also conducted affirmative inspections of pesticide users. The intent of these inspections is to assure compliance with Department regulations, review record keeping procedures and provide general oversight.

Number and Type of Affirmative Inspections	
Restricted Dealers	38
Marketplace	168
Product Cancellations	65
Producer Establishment Inspections	26
Experimental Use Permits	6
Emergency Exemptions	2
Agricultural Applicator Use Observations	6
Commercial Applicator Use Observations	23
Record Inspections	
Private	27
Commercial	70

Enforcement Actions

	Administrative Order	Letter of Warning	Civil
Misuse of a pesticide	3	3	
License/Certification	18	4	
Cease and Desist use	2		
Records	3	63	
Distribution w/o permit	2		
Distribution of damaged product		4	
Use of un-registered pesticide	2	1	
Use of restricted use product by uncertified applicator	1		
Distribution of unregistered pesticide	4	1	1
Use in a careless manner	2	3	
Imposition of restrictions	1		
Notification		3	

- License Denial 2
- Adjudicatory Hearing 1
- Criminal Complaints 2

Bureau of Plant Pest Control

Peter C. Kuzmiski, Chief

Nursery Inspections

The annual inspection of nurseries was completed on September 1, 1988. Five inspectors and a foreman inspector were employed for this work starting on July 1. Our inspection certificates expire on July 1 of each year. New nurseries are inspected subsequent to July 1 as they become known. The summer inspection crew consisted of temporary personnel usually recruited from the local colleges or schools, and applicants must have had courses in entomology or related subjects.

While no unusual infestations of plant pests were found in the nurseries, the following insects and diseases were found during the summer inspection period: Japanese Beetle, Aphids, White Fly, White Pine Weevil, Spruce Gall, Black Vine Weevil, Pine Tip Borer, Leaf Gall, Leaf Spot and Powdery Mildew.

Nurseries inspected this year amounted to 310. There were 46 greenhouses inspected and certified. It should be noted that due to both organic and chemical pest controls, pest problems in the nurseries are being kept to a minimum.

Agent's licenses issued to individuals and establishments numbered 335. The chart below describes the fee system imposed upon the inspection of nurseries and greenhouses, and registration of agents:

Schedule of Inspection Fees

NURSERIES	
less than one acre in stock	$ 5.00
1 - 5 acres	$ 15.00
6 - 25 acres	$ 20.00
26 - 100 acres	$ 25.00
Over 100 acres	$ 35.00
Greenhouse (Not in nursery)	$ 20.00
Agents	$ 20.00

SPECIAL CERTIFICATION:	
State plant phytos issued	156
State Tree and Shrub seed certificates issued	369
Federal Plant phytos issued	75
Federal phytos for apple export	145
Ribes control--area permits for 70 Ribes plants	20
Houseplant inspection certificates	85

Survey and Trapping

Surveys were conducted for presence of Golden Nematode, Red Steele Disease of Strawberry, and Gypsy Moth on lands around nurseries. Trapping was done for European Chafer outside the known infested area. GN, RS, and EC surveys were negative. The Gypsy Moth was found to be light to none on lands around the nurseries.

Two new certification programs were instituted this year: the growing of virus free strawberry plants and Cape American Beachgrass, (Ammophila breviliqulata Fern).

Collaboration with USDA--APHIS

Pest detection, Black Stem Rust, Postentry quarantine, insect, plant pathogen, soil and snail importations into this state were cooperative activities with APHIS. Forty one sites this year grew plants from foreign countries under Postentry quarantine No. 37.

Five seasonal apiary inspectors were employed this year under direction of our Chief Apiary Inspector to inspect our honeybees. The inspection period usually starts around May 1 and ends October 31 each year. Honey plants such as Black Locust, Blackberry, Sumac, Basswood, Clover, Purple Loosestrife and Goldenrod secreted enough nectar to ensure an above average crop. Samples of bees were taken and examined for presence of the Tracheal Mite in conjunction with APHIS. Tracheal Mites were found in several colonies owned by two of our migratory beekeepers. There were no mites found in colonies of our hobbyist beekeepers. Over 500 samples of adult honeybees have been collected and examined for tracheal mite using a laboratory at the University of Massachusetts. Apiary inspectors have been trained and instructed to be on the lookout for Varroa mite and the Africanized honeybee.

The Defeat of the Animal Rights Referendum - "Save the Family Farm"

by Diane Baedeker

The 1988 election ballot in Massachusetts included four referendum questions. Question number three, *a question relative to the humane treatment of farm animals*, asked voters if they approved of a law that would require the Commissioner of the Massachusetts Department of Food and Agriculture to issue regulations to ensure that farm animals are maintained in good health and that cruel or inhumane practices are not used in the raising, handling or transportation of farm animals." The question was put on the ballot through the initiative petition procedure in which the proponents of the referendum collected enough signatures to bypass the normal legislative process.

Question Three did not receive as much public attention as the questions concerning the prevailing wage (#2) and nuclear power (#4). To many, it was not considered a serious issue. To Massachusetts farmers, it was a very serious issue.

Its proponents claim that inhumane farming practices exist in Massachusetts; especially in the raising of veal calves and poultry. They contended that veal calves are kept in enclosures that do not allow them to stand up, lie down, groom themselves or turn around. They also claimed that laying hens are housed in overcrowded cages and that male chicks, of no use to the egg producers, are disposed of by grinding them alive or suffocating them in plastic bags. Furthermore, they demand the use of anesthetics or the presence of a veterinarian for surgical procedures such as castration and dehorning.

Opponents of the bill asserted that the state already has sufficient regulation in this area. Any new regulations would prove so expensive to Massachusetts family farmers that many would have to go out of business. The implications of this are far reaching; if farms go out of business, the state economy would suffer, food prices would rise, and farmers would be forced to sell out to developers thus diminishing the amount of open space in the state.

The issue received much national attention within the agricultural sector. Other states were watching what would happen in Massachusetts because of the precedent that would be set for similar legislation in their own states. They feared that the referendum would pass be cause Massachusetts is not a major agricultural state and its citizenry largely unaware of agricultural practices and issues, and the implications of such a law.

The Players

The issue was raised by animal rights activists, many of whom are members of organizations such as the Coalition to End Animal Suffering and Exploitation (CEASE) and Citizens for Humane Farming, an offshoot organization of CEASE.

Formed about 10 years ago in Massachusetts, CEASE claims to have a diverse membership of about 20,000 with a core of 20 to 30 volunteers. According to Steven Ronan, one of the organization's leaders, members include professors, students, housewives - anyone who is concerned about animal welfare.

CEASE is a fund-raising organization and is one of some 20 regional groups. Ronan said that their efforts in Massachusetts are not part of a national scheme but they hope for spillover effects to other states. The group is also involved in opposing the use of animals for laboratory testing, and their fur and skins in the manufacture of clothing.

On the other side of the issue were several factions. The primary group opposing the referendum were those that would be directly affected - the farmers. The many organizations that represent the agricultural interests stood behind them; groups such as the Department of Food and Agriculture, the Farm Bureau, United Cooperative farmers, Trustees of Reservations and the various local farm and commodity groups.

The national and local Grange also opposed Question 3. The official Grange response summed up the views of many opponents, "The Grange shares everyone's respect for humane treatment of all animals, and we believe that livestock and poultry producers are in the most advantageous position to determine the most humane treatment of animals. Millions of dollars and countless hours have been spent doing in-depth research which has resulted in today's modern husbandry practices. The well-being of farm animals is essential to the success of the livestock and poultry operation. Moreover, the Massachusetts Department of Food and Agriculture has an existing system of animal protection, along with the existing network of humane agencies in Massachusetts, that effectively addresses the concerns outlined in the referendum."

Members of Farm Bureau and other agricultural organizations combined their opposition efforts under an

ad hoc organization called *Save the Family Farm*. This organization was responsible for all campaigning against the referendum.

The humane organizations such as the Massachusetts Society for the Prevention of Cruelty to Animals and the Animal Rescue League did not support the referendum as it was currently written.

The Strategies

According to August Schumacher, Jr., state Commissioner of Food and Agriculture, the *Save the Family Farm* strategy was clear cut and five pronged:

- Define their message early, that is, - "Save the Family Farm."
- Win the early support of the Governor, the legislature, and the Commissioner.
- Keep the issue a local one, keep national lobbyists out.
- Get the message out to every editorial board in the state early. The Commissioner, Farm Bureau and many farmers personally spoke with virtually every editor.
- Save the paid media campaign until the last few weeks.

Schumacher explained that they simply tried to keep CEASE off-balance and reacting to the Save the Family Farm messages which were changed frequently.

Funds for the campaign were very limited, most coming from small contributions. Early in the campaign, funds were used for signs, bumper stickers, buttons, and printed literature; in the last week before the election for television advertisements.

The CEASE strategy, as recounted by Steven Ronan, consisted of the following:

- Keep the attention focused on animal welfare issues. De-emphasize issues such as drugs administered to farm animals and their possible impact on public health. CEASE felt peripheral issues such as this would not help the primary issue of animal welfare.
- Send core members out on the editorial office circuit.
- Try to get free air time on television. Funds for television advertising were limited.
- Buy a full page ad in the *Boston Globe* to appear for one day during the last week of the campaign.

The Media

While media coverage for Question 3 was not as heavy as for the other referenda, the contact with editorial boards by the Massachusetts Farm Bureau, Commissioner Schumacher and the farmers evidently paid off because all the major newspapers, i.e. the *Boston Globe*, the *Boston Herald*, the *Middlesex News* and the *Worcester Telegram*, supported the *Save the Family Farm* movement through news articles, feature articles and editorials. The *Boston Herald* called it the "Booby-prize Bill" and the "silliest bill of the year". The *Worcester Telegram*, in its Viewpoint section said that the initiative petition process was abused by CEASE and that CEASE's "hidden agenda seems to be to promote a vegetarian life style, even if that means driving the cost of farming in Massachusetts so high as to effectively destroy the industry."

Pork 88, a national trade magazine for the pork industry, featured the issue as a national one with a side bar on the Massachusetts situation. "Why worry about farm animals in Massachusetts?" wrote Marlys Miller, "Because it's the kind of state - politically liberal, primarily industrial, urban and financially comfortable - that is rich soil to plant model legislation dictating how to raise livestock. If it takes root there, it can be cultivated on a grander scale - on your farm - via Capitol Hill."

The Election Results

Question 3 was defeated by Massachusetts voters 71% to 29% on November 8th, a surprisingly resounding defeat considering that fact that the question was rather benign, most people naturally being in favor the animal welfare. Mabel Owen, Director of Animal Health for Massachusetts said in the *Pork 88* article, "The summary...sounds like motherhood, apple pie and warm fuzzies. The voter has no way of knowing how the state will be affected or that food prices will change."

In Retrospect

Steven Ronan feels that CEASE was outnumbered, outmaneuvered and out-financed. While their few members were out collecting signatures for the petition, the opposition made a sweep of the editorial boards. They were fighting organized and well established groups.

Commissioner Schumacher's analysis of the campaign: "CEASE underestimated the opposition, overestimated the power of their message and did not campaign very hard." He observed that CEASE was always on the defensive, only able to react to the opposition's messages.

Animal rightists say that they will not give up on this issue. With the issue defeated in Massachusetts for now, they say the focus must now turn to other states.

Massachusetts Agricultural Mission to Israel and Holland

by Diane Baedeker

Since the dawn of civilization, Israel has been a crossroads and a battlefield sitting at the junction of Europe, Asia and Africa. It is a country and a people that has learned much about destruction, rebuilding and survival in a hostile climate.

History books tell us that this is the birthplace of agriculture. Flint sickles have been found dating back to 14,000 to 7500 BC, the Mesolithic (Middle Stone Age) period suggesting that man had progressed from gathering plants to cultivating them. What have the Israelis learned in those many thousand of years? What can we learn from them and what can they learn from us?

In search of an answer to these question, sixteen members of the Massachusetts agricultural community journeyed to Israel on January 23, 1988. The members were from a variety of backgrounds - growers, Cooperative Extension agents, and Massachusetts Department of Food and Agriculture staff.

The 12-day trip was planned and hosted by the Department of Food and Agriculture at the invitation of the Israel Ministry of Agriculture. The tour was expanded to include Holland, a country with a climate more similar to ours that has made much progress in extended season growing, hydroponics and marketing.

The group departed New York's Kennedy Airport by way of a Pan Am shuttle flight from Boston and a transfer to the international terminal. Security boarding El Al, the nation airline of Israel, was very tight. The Intefadeh or Palestinian uprising had begun one month earlier.

Each passenger was interrogated before being allowed to proceed to the gate area: Who packed your suitcase? Did anyone give you anything, such as a suitcase, package or letter, to take aboard the plane? How well do you know the people you are travelling with? Why do you want to go to Israel? Who paid for your trip? Do you really make enough money to pay for this trip yourself? Who do you live with? What nationality are they? The line of questioning that I received seemed more probing than the others in the group reported. I must have fit a certain profile of which they were suspicious.

Israel

When the Boeing 747 landed in Tel Aviv, I noticed cultivated date palms growing right up to the edge of the runway at Ben Gurion Airport. This was a portent of what we would find to be the basis of Israeli agriculture: making the most of limited resources.

Climate

The climate of Israel is rather different from that of New England. The country, which is about the size of New Jersey, encompasses several climatic zones: Mediterranean climate, Steppe climate, desert climate, and extreme desert climate. The temperature in the fertile coastal zone ranges from the mid-forties to the mid-sixties in January. It was in the upper half of that range while we were there.

Although the climate is warm by New England standards, Israeli farmers do extend their season through the use of greenhouses and plastic coverings. Israel is self-supporting for most of its food supply so winter crops are important.

Crops are uncovered during the warm days and recovered at night. When the plastic is removed for the season, it is burned, leaving black charred areas on the ground and plastic fragments to be blown away by the wind.

Types of Farm Establishments

In the northern Hadera region, we visited greenhouses on both types of Israeli farm establishments - the Moshave and the Kibbutz. The moshave is analogous to our farming system. It is a community of families that work their own land but market their products cooperatively. The kibbutz is a cooperative farming settlement where the residents labor for the whole community. Each resident is given lodging and spending money in return. Kibbutz decisions are communal and education is provided for the children.

We ventured into a corner of the occupied territories to visit an Palestinian village where a farmer was growing greenhouse cucumbers and tomatoes. The town was poverty stricken. The streets were deep mud through which some residents were travelling on donkeys. Houses were simple cement "blocks" on stilts. Despite the poor conditions, the farmer reported success in growing his crops in greenhouses and under row covers. The tour group was invited onto the farmhouse porch for bitter Arabian coffee served unadorned in small handleless cups.

Irrigation

Drip irrigation is widespread due to Israel's severe water shortage. The Sea of Galilee in the north, is theprimary source of fresh water for entire country.

Nearly half of the country's 1.1 million acres of farmland are under irrigation. Not a drop of water is wasted; even decorative plants along the highways and on city streets are drip irrigated. Miles of black tubing keeps Israel growing while conserving water and much of the irrigation is computerized.. Israel has become so proficient in this area that it even exports irrigation systems.

Product Exports

The major crops that Israel produces for export are citrus fruits, flowers, vegetables, olives, dates, pomegranates, and persimmons. Most products are sold through marketing cooperatives and exported under a common brand name such as Jaffa oranges and Carmel flowers.

Exports are mostly to Europe via ship, due to its proximity, but some are sent by air to South America, Mexico and the United States. Products to be sent by air are brought to Ben Gurion Airport near Tel Aviv and shipped out of the Agrexco Freight Terminal. The terminal has state of the art equipment for keeping the produce as fresh as possible - computerized refrigeration and transportation systems - during the short time it is stored there. Shipments by sea embark from the bustling port of Haifa to the north.

Only the best quality products are exported. Any second-rate produce is kept for internal consumption andmuch of that produce is sold at the open air market which covers several city blocks in Tel Aviv. Similar to, but larger than Boston's Haymarket, the Tel Aviv market offers products from fruits and vegetables to cured fish and meats displayed uncovered.

Land Shortage

With the minimal amount of arable land in Israel (about half the country is arid) not a meter is left unused. Crops are planted to the edge of highways and under seemingly insurmountable conditions.

In the desert region of Negev, several miles from the Gaza strip, a former New Yorker named Suzy grows flowers in sand. Through the use of drip irrigation, she produces Baby's Breath and Statice, as well as some vegetables. She and many other farmers are utilizing land that no one else wants.

In the central part of the country, between Tel Aviv and Jerusalem, an Israeli name Nogah Hareuvani and an American, Helen Frenkley, 20 years ago took 500 acres of virtual wasteland on the then-Jordanian border and transformed it into a reserve for biblical flora and fauna. Neot Kedumim is situated on land that no one else wanted for physical and political reasons. Today it is a popular stop for tourists as well as an educational center for local schools and universities.

Packing and Processing

We toured the Carmel Flower packing plant, the Jaffa Orange packing plant and the Hazera seed processing plant. The flowers are sorted and packed by hand, the seeds are also sorted by hand. The Jaffa plant is fully automated although the oranges are hand inspected. Crates of oranges are given a special bar code that is read by a device using a laser beam. This allows the crates to be sorted by count.

Research

Agricultural research is conducted at several institutions in Israel. The Volcani Agricultural Research Institute, is testing new carnation varieties. Variations included coloring and number of flowers per stem. One variety appeared to be dead, but the researcher assured us it was alive and becoming very popular with florists in Europe for use in arrangements.

We were asked to participate in a marketing test for olive varieties grown at the institute. Some eight varieties were laid out in bowls and numbered randomly. We were asked to taste them and rate each on such qualities as pungency, color, texture, and oiliness. The test is conducted with all groups that visit the institute so that the best tasting olive can be developed based on the characteristics that are most well received.

Our guide in Israel, Dan Dikstein, was a full-time tour guide and part-time chicken farmer. He was extremely knowledgeable about Israel's agriculture and a colorful speaker. He was, however, reluctant to talk about the current crisis. Most Israelis that we met encouraged us to tell people at home in the U.S. that the situation is distorted by the media.

Dan assured us that it was safe to walk the streets of Tel Aviv at night as long as we stayed on the main thoroughfares such as Ben Yehuda Street and Disengoff Street. "Go for a walk, have a coffee," he said. And walk we did. Every night after dinner at our hotel, the Grand Beach, we strolled the sidewalks of Tel Aviv, some of them crowded, some of them quiet, with their little shops closed for the night. We enjoyed the international flavor of the city - falafel, blinztes towering with whipped cream and cappuccino or Arabian coffee. Israel boasts its own fast food chain - they call it MacDavid's.

Interspersed with our visits to agricultural operations, were stops at several historical and/or biblical sites. The day that we travelled north of Tel Aviv, Dan brought us to Caesaria by the Sea, a city built by King Herod on the Mediterranean shore. Much of the fortified city is now in ruins, but the ampitheater, with the Mediterranean as it backdrop, still stands and is used today for current performing artists from around the world. Herod chose the site of Caesaria for its beauty rather than it amenities. There was no source of fresh water at the site so he built

an aqueduct to bring water from a source some 18 miles away. Parts of the aqueduct still remain on the beach nearby, burnished gold by the setting sun each evening since Herod's reign.

Tel Aviv is a "young" city, founded just 75 years ago. It is marked by high rise office buildings and resort hotels along its Mediterranean beaches. On the city's southern perimeter, stands the old city of Jaffa, the original part of Tel Aviv dating back thousands of years. Jewish tradition says that Noah's son Japheth founded the city after the great flood. There are many other references to Jaffa in both the Bible and in Greek mythology. The crest of the highest hill in Jaffa offers a panoramic view of modern Tel Aviv.

The latter part of our stay in Israel brought us to Jerusalem. Approaching the city from the northeast, we viewed it for the first time from the Mount of Olives. The city spread out before us, a sprawling sculpture of white limestone, interrupted only by the golden Dome of the Rock. A city ordinance ensures that the visual unity is maintained by requiring that all new buildings be constructed of limestone.

I was the target of the only violence our group encountered and that was of an agricultural nature. As we were walking through the winding streets of old Jerusalem, passing through the Moslem quarter, I came upon and old Palestinian woman sitting on the cobblestones selling vegetables. Wearing traditional clothes and with her lined and weathered face, I thought she would make an interesting picture. I stopped about five feet away, and was focussing my camera when she picked up a softball sized onion and threw it at me. Her aim was true but I ducked in time to save myself and my camera. Unfortunately I did not get the picture.

While it is true that we did not see any real violence, neither did we really enter the troubled areas. Tension was felt only in Jerusalem where, due to the Moslem strike, all shops in the Christian and Moslem quarters were closed. Streets that should have been bustling bazaars were deadly quiet. The army is omnipresent in all parts of the country.

Holland

From Israel we moved on to spend a few days in Holland. There we found the complete agricultural antithesis of Israel. The land is extremely wet. Farmland is bounded and bisected by narrow canals that catch the run off from the soil.

The city of Amsterdam has a network of canals that serve many functions. They are a means of transportation for goods and people, and they are home to those that live in house boats moored along the sides of the canals.

Land Use

Open farmland is used for the grazing of dairy cows and sheep, cheese a major product of the Netherlands, as well as for orchards and some crops. Flowers, the country's premier product, are grown primarily under glass.

Greenhouse growing is extensive in Holland. One area, know as the "glass city", as acres of land covered by greenhouses. The only open spaces are the streets and the canals. The Dutch keep their greenhouses in near-sterile condition. Spotlessly clean, they are sectioned off so that visitors cannot enter growing areas, but only look through the glass.

Dutch growers also use drip irrigation, although not as extensively as the Israelis, and almost exclusively indoors. They are also doing much experimentation in the area of soilless growing. Crops are grown in a variety of mediums including rock wool.

Marketing

One of the major vehicles for exporting the Netherlands' large flower crop is the Aalsmere Flower Auction. The auction building has a total floor area of 320,000 square meters. The auction is actually a growers cooperative. Over 4,000 flower and plant growers are members and joint owners of the auction building. Buyers from all over the world including exporters, wholesalers, retail florists and street vendors, participate in the auction.

The Aalsmere building has six auditorium style auction rooms. At the from of the room are two "clocks" each with a hand that rotates and stops on the bidding price when a buyer pushes a button. Flowers move through the front of the room on racks pulled by a track system. Only fifteen minutes elapse between auctioning and delivery to buyer.

Holland has an identical auction for selling vegetables, though not as large. Here the clock system is also used.

Conclusion

All of the sixteen tour participants returned home with and enhanced view of global agriculture, and each will use the information in ways that is sure to benefit Bay State farming. The Massachusetts Department of Food and Agriculture is continuing an exchange of research information with the Israel Ministry of Agriculture.

NOTE: All participants of this tour travelled at their own expense.

Massachusetts Founding Farms

Cultivators of Our National Heritage

Massachusetts is, of course, the cradle of American history. So much of our country's heritage was forged right here, from the Old North Church to Lexington and Concord where the embattled farmers fired the "Shot Heard 'Round the World."

We take great pride in our history and perhaps nothing in Massachusetts has more history than our farms. The Pilgrims began farming not long after landing at Plymouth Rock in 1620, sowing the seeds for what would become a rich tradition, a tradition that still thrives some 360 years later.

Today, Massachusetts counts more than 6,000 farms and they produce nearly $500 million of food and other products each year. Of that number, 39 working farms have been in the same family for 200 years or more. This is truly a remarkable achievement.

With the encouragement of the United States Department of Agriculture, the Massachusetts Department of Food and Agriculture honored these 39 farms in September, 1988, as part of the national celebration of the 200th anniversary of the U.S. constitution. Other state departments of agriculture also commemorated bicentennial farms in their states.

The farms are found across the state, from the seaside communities of the North Shore to the scenic mountains of the Berkshires. They include the grande dame of Massachusetts farms - Appleton Farms in Ipswich (which date to 1638) - to the "baby" of the bunch, 202-year-old Bridgemont Farm in the Hampshire County town of Westhampton.

The 39 farms produce a wide variety of products: milk, vegetables, small fruit, tree fruit, hay, timber, flowers, and 20th century innovations like cattle embryo transplants.

But perhaps the most important contribution of these farms is continuity. They represent a way of life established long before our country was founded. When a farm is passed on from generation to generation it lends a stability that is all too rare in today's world. At least one of these farms has four generations living on the farm.

Fascinating stories abound in this collection of historic farms. A coin toss decided ownership of the Colchester Farm in Plympton in 1866. the Churchill brothers - Thomas and James - found the farm could not support both their families when they returned from the Civil War. A flip of the coin gave Thomas the farm and sent James and his family West to seek it fortune.

The Shakers of Hancock Shaker Village in Pittsfield introduced the idea of selling seed in paper packets. Elsie the Borden Cow was born and bred on the Elm Hill Farm in Brookfield; the same farm was home to Bathsheba Spooner, the last woman hanged in Massachusetts.

Just about every one of the farms has it own interesting tale. In September, 1988, we saluted them not only because of their past, but because of the hope they give us for the future of agriculture in Massachusetts - 360 years old and still going strong.

Berkshire County
Hancock Shaker Village - 1783
Ridge view Farm - 1765
Sunsett Farm - 1736

Essex County
Appleton Farm - 1638
Arrowhead Farm - 1683
Barker Farm - 1642
Clark Farm - 1728
Cobblers Brook Farm - 1670
Cold Springs Farm - 1650

Franklin County
Burnett Farm - 1781
Griswold Farm - 1783
Gunn Farm, Inc. - 1745
Meadow View Farm - 1770
Mt. Toby Farm - 1775
Scott Farm - 1782
Woodslawn - 1784

Hampden County
Gibraltar Farm - 1762
The Kelso Homestead Farm - 1779

Hampshire County
Arthur Cory Bardwell Farm - 1683
Bridgemont Farm - 1786
Double BBR Farm -1753
Luther Belden, Inc. - 1719
Mayval Farm - 1778
Phelps Farm - 1751
Warner Farm - 1771
Wolf Hill Farm - 1764

Middlesex County
Pilot Grove Farm - 1681

Plymouth County
Colchester Farm - 1761

Worcester County
Ashland Farm - 1730
Balance Rock Farm - 1780
Charbrook Farm - 1757
Crawford-Bigelow Farm - 1736
Elm Hill Farm - 1780
Elm View Farm - 1715
Highloft Farm - 1716
Nourse Farm - 1722
Silvermine Farm - 1727
Stone Farm - 1765
Third Century Farmstead - 1724

Massachusetts Agricultural Highlights, 1988

Compiled by Thomas Gallagher, Statistician, Massachusetts Department of Food and Agriculture
Data entered by Alexandrine Porter, Massachusetts Department of Food and Agriculture

BERRIES

FARMS: 890

Acres by Berry

Berry	Acres
Blackberries	7
Tame Blueberries	370
Wild Blueberries	449
Cranberries	12,091
Raspberries	94
Strawberries	372
TOTAL	13,383

County Distribution

COUNTY	FARMS PRODUCING	ACRES
WESTERN MASSACHUSETTS		
Berkshire	18	25
Franklin	31	265
Hampshire	43	137
Hampden	43	272
Region Total	135	699
CENTRAL MASSACHUSETTS		
Worcester	58	169
Region Total	58	169
EASTERN MASSACHUSETTS		
Essex	51	103
Middlesex	32	54
Norfolk	18	63
Suffolk	--	--
Plymouth	439	10,649
Bristol	60	422
Region Total	600	11,291
CAPE COD AND THE ISLANDS		
Barnstable	88	946
Dukes	6	withheld
Nantucket	3	withheld
Region Total	97	not available
State Total	890	13,385

Source: 1987 Census of Agriculture, U.S. Department of Commerce

Small Fruit Production Trends

BERRY	1982		1987
		(pounds)	
Blackberries	3,465		6,107
Tame Blueberries	404,013		477,264
Wild Blueberries	140,543		316,089
Cranberries	1,194,692*		1,433,505*
Raspberries	121,050		148,588
Strawberries	2,083,206		1,506,102

*Barrels

CRANBERRIES

ACREAGE: **12,142 productive, 580 not bearing, 12,722 total**

PRODUCTION: **1,861,000 barrels**

GROWERS: **498 (60% of growers manage 11 acres of bog)**

MARKET: **7 handlers**

Massachusetts produces approximately 48 percent of the U.S. crop. Cranberry production occurs in 45 communities in seven counties in eastern Massachusetts. Eighty percent of the total acreage is highly concentrated in a cluster of Plymouth county communities. Sixty-one percent of the Commonwealth's 498 growers manage 11 acres of bog or less.

Counties with Acreage in Cranberry Fruit

County	Communities	% of All Acres
Middlesex	1	<1%
Worcester	1	<1%
Norfolk	3	<1%
Bristol	8	3%
Nantucket	1	2%
Barnstable	11	7%
Plymouth	20	87%
Dukes		<1%
	45	100%

Plymouth County: The Nucleus of Cranberry Production

Community	% of All Acres
Carver	24%
Wareham	13%
Plymouth	9%
Rochester	8%
Middleborough	8%
	62%

Cranberry Fruit: Productive Acres and Acres Not Yet Bearing

Year	Productive Acres	Non-Bearing Acres	Total
1986	11,644	1,093	12,737
1987	11,976	678	12,654
1988	12,142	580	12,722

Source: Ocean Spray, 1988, New England Agricultural Statistics (USDA), and Agricultural Stabilization and Conservation Service (USDA)

CHRISTMAS TREES

ACREAGE: **6,000 acres, estimated**

PREDOMINANT SPECIES: **spruces and firs**

PRODUCTION: **50,000 trees harvested in 1988 and expected to steadily increase.**

MARKET OUTLET: **95% of the trees are direct marketed at roadside.**

Production: Most Massachusetts, grown Christmas Trees are planted as seedling on farms, but a small percentage comes from natural stands. Depending on the species, it takes approximately eight years to grow a tree to the average retail sales height of feet. The Massachusett's harvest is estimated tobe 50,000 trees. Spruces and firs dominate the market.

Farms producing: The Massachusetts industry is dominated by nearly 500 small operators most of which is family operated. Producers grow Christmas trees on a part-time basis or to supplement other farm related enterprises.

Market Outlet: Growers market 95 percent of their trees at roadside to retail cusomers. Many growers open their tree farms as "choose and cut" to customers who want to select their own Christmas trees.

Distribution of Christmas Tree Farms

COUNTY	GROWERS	ACRES
WESTERN MASSACHUSETTS		
Berkshire	32	389
Franklin	44	524
Hampshire	54	642
Hampden	72	862
Subtotal	202	2,417
CENTRAL MASSACHUSETTS		
Worcester	124	1,489
Subtotal	124	1,489
EASTERN MASSACHUSETTS		
Essex	54	642
Middlesex	56	676
Norfolk	11	135
Plymouth	27	321
Bristol	20	236
	168	2,010
CAPE COD AND THE ISLANDS		
Barnstable	6	34
Dukes	n/a	n/a
Nantucket	n/a	n/a
	6	34
TOTAL	500	5,950

Source: Massachusetts Christmas Tree Association

Distribution of Christmas Tree farms and land, 1988

Region	Farms	Acreage
Western Massachusetts	202	2,417
Central Massachusetts	124	1,489
Eastern Massachusetts	168	2,010
Cape Cod and the Islands	6	34
State Total	500	5,950

Source: Massachusetts Christmas Tree Association and Massachusetts Department of Food and Agriculture

FEED CROPS*

	Hay*	Corn Silage
ACRES:	121,000 acres	28,000 acres
FARMS:	2,874 farms	604 farms
PRODUCTION:	251,000 tons (dry)	524,819 tons (green)

Distribution of Hay and Corn Silage

COUNTY	HAY	SILAGE CORN ACRES
WESTERN MASSACHUSETTS		
Berkshire	17,720	4,131
Franklin	15,587	3,923
Hampshire	13,534	4,200
Hampden	7,688	2,646
Total	54,529	14,900
CENTRAL MASSACHUSETTS		
Worcester	30,440	6,623
Total	30,440	6,623
EASTERN MASSACHUSETTS		
Essex	9,286	757
Middlesex	9,810	1,211
Suffolk	----	----
Norfolk	3,295	not available
Plymouth	5,462	2,206
Bristol	8,089	2,731
Total	35,942	not available
CAPE COD AND THE ISLANDS		
Barnstable	not available	not available
Dukes	499	not available
Nantucket	not available	not available
Total	not available	not available
State Total	121,498	28,463

* Hay - Alfalfa, other tame, small grains, wild, grass silage, green chop, etc.

Source: 1987 Census of Agriculture, United States Department of Commerce

GREENHOUSE & NURSERY

FARMS: **824** (other sources believe this figure is conservative and may be over 1,000 operations)

GROWING AREA: **over 10,000,000 square feet under cover and in excess of 3200 acres in open ground**

MAJOR CROP CATEGORIES: **floriculture, nursery, vegetables, and sod**

MARKETING OUTLETS: **retail florists, garden centers, farm stands, chain stores, wholesale market, and landscapers.**

Change in Production Area

	Sq ft under cover	Acres in open
1982	8,261,749	2,605
1987	10,066,833	3,208

County Distribution, 1987

County	Farms producing	Square feet under cover	Acres in the open
WESTERN MASSACHUSETTS			
Berkshire	32	286,409	withheld
Franklin	54	284,578	525
Hampshire	60	783,354	160
Hampden	72	862,151	266
Total	218	2,216,492	not available
CENTRAL MASSACHUSETTS			
Worcester	123	985,061	303
Total	123	985,061	303
EASTERN MASSACHUSETTS			
Bristol	86	1,204,181	239
Essex	85	1,114,624	389
Middlesex	120	2,489,743	868
Norfolk	54	1,152,642	105
Plymouth	75	543,093	224
Suffolk	3	51,000	withheld
Total	423	6,555,283	not available
CAPE COD AND THE ISLANDS			
Barnstable	42	206,463	73
Dukes	12	29,434	7
Nantucket	6	74,100	withheld
Total	60	309,997	not available
STATE TOTAL	824	10,066,833	3,208

Source: 1987 Census of Agriculture, U.S. Department of Commerce

1987 County Business Patterns Landscape and Horticultural Services Employees, Payroll and the Number of Firms

	Number of Employees for the week including March 12	Payroll ($1,000) First Quarter	Annual	Firms
WESTERN MASSACHUSETTS				
Berkshire	109	228	2,095	44
Franklin	53	135	886	17
Hampshire	85	190	1,543	29
Hampden	346	1,087	6,589	93
Total	593	1,640	11,113	183
CENTRAL MASSACHUSETTS				
Worcester	444	1,406	11,662	151
Total	444	1,406	11,662	151
EASTERN MASSACHUSETTS				
Essex	446	1,546	12,144	180
Middlesex	1,427	4,854	35,324	430
Norfolk	589	1,679	12,059	173
Suffolk	275	1,623	7,580	37
Plymouth	487	1,507	11,700	126
Bristol	434	1,005	6,644	96
Total	3,658	12,214	85,451	1,042
CAPE COD AND THE ISLANDS				
Barnstable	500	1,503	12,170	170
Dukes	69	97	1,106	17
Nantucket	68	141	1,325	22
Total	637	1,741	14,601	209
STATE	5,332	17,001	122,827	1,585

Landscape and horticultural services includes establishments engaged in landscape counseling and planning, lawn and garden services, and ornamental shrub and tree services.

Source: 1987 County Business Patterns Massachusetts; U.S. Department ofCommerce

MAPLE

PRODUCTION: 44,000 gallons

VALUE: $1,610,000

PRODUCERS and PROCESSORS: 200

MARKET OUTLET: primarily retail sales

Distribution of the Maple Industry

COUNTY	PERCENT of PRODUCERS and PROCESSORS
Berkshire	10
Franklin	43
Hampshire	27
Hampden	8
Worcester	8
Other counties	4

Maple Syrup: Percentage by Type of Sale

	1986	1987	1988
Retail	59	73	64
Wholesale	29	21	18
Bulk	12	6	18

Production Trends

Year	Gallons
1984	43,000
1985	42,000
1986	30,000
1987	28,000
1988	44,000

FACTS:

- Maple production is highly concentrated in areas within Franklin and Hampshire counties. Located within are 70% of the state's 200 producers and processors.
- Syrup production potential is 70,000 gallons.
- Fifty percent of production is sold during sugaring season. The balance of the crop is sold between Thanksgiving and Christmas.
- More sales are shifting into the retail category. Many producers are increasing sales through mail order.

Sources: Massachusetts Maple Producers Association and New England Agricultural Statistics (USDA)

ORCHARDS*

FARMS PRODUCING: 572

ACREAGE: 9,380

MARKET OUTLETS: virtually all of the fruit is produced for fresh market. An estimated50% 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** -Over 50% of the state's tree fruit acreage straddles the boundary of Worcester and Middlesex counties.
- **Connecticut River Valley** - over 30 percent of the state's tree fruit acreage is found here.

County Distribution

COUNTY	FARMS PRODUCING	ACRES
WESTERN MASSACHUSETTS		
Berkshire	27	250
Franklin	61	1,157
Hampshire	44	943
Hampden	68	923
Total	200	3,273
CENTRAL MASSACHUSETTS		
Worcester	147	3,443
Total	147	3,443
EASTERN MASSACHUSETTS		
Essex	29	484
Middlesex	74	1,327
Norfolk	20	158
Plymouth	30	138
Bristol	53	422
Total	206	2,529
CAPE COD AND THE ISLANDS		
Barnstable	9	38
Dukes	7	80
Nantucket	not available	not available
Total	not available	not available
STATE TOTAL	572	9,379

*includes apples, apricots, cherries, grapes, nectarines, peaches, pears, plums etc.
Sources: 1987 Census of Agriculture, United States Department of Commerce and Massachusetts Department of Food and Agriculture.

Production Trends (1)

	APPLES 1,000 42-Pound Units	PEACHES 1,000 48 Pound Units
1984	2,309	40
1985	2,119	44
1986	2,261	38
1987	2,285	42
1988	2,357	44

(1) Total Production

Tree Fruit	Acres	Farms
apples	8,415	526
apricots	2	13
cherries	28	48
grapes	251	87
nectarines	9	10
peaches	484	186
pears	144	79
plums	26	36
other	16	9

Source: New England Agricultural Statistics (USDA) and 1987 Census of Agriculture, United States Department of Commerce

TOBACCO

ACREAGE:	458
VALUE:	$8,043,000
FARMS:	21

County Distribution

COUNTY	FARMS PRODUCING	ACRES
Franklin	5	withheld
Hampshire	5	217
Hampden	11	withheld
Total	21	458

Source: 1987 Census of Agriculture, U.S. Department of Commerce

Production Trends

Outdoor Type

Year	Yield/Acre Pounds	Production 1,000 Pounds
1984	1,965	295
1985	1,960	255
1986	1,925	250
1987	1,800	198
1988	1,850	185

Shade Type

Year	Yield/Acre Pounds	Production 1,000 Pounds
1984	1,400	490
1985	1,460	526
1986	1,095	372
1987	1,110	455
1988	1,385	582

Sources: New England Agricultural Statistics (USDA) and 1987 Census of Agriculture, United States Department of Commerce

VEGETABLES

ACREAGE: 18,728 TOTAL - 16,100 (vegetables) 2,628 (potatoes)

FARMS PRODUCING: 1,008 (vegetables) 93 (potatoes)

MARKET 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.

Key Vegetable Growing Areas

Upper Connecticut Valley - (Franklin and Hampshire counties) over 5,000 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.

Lower Connecticut Valley - (Hampden County) communities surrounding metropolitan Springfield cultivate nearly 2,000 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 4,500 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 3,500 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.

Major Vegetables Cultivated

Percent of Total Vegetable Acres	
Sweet corn	44%
Squashes	11%
White potatoes	14%
Pumpkins	6%
Peppers	4%
Cucumber	3%
Tomatoes	3%
Other	15%

Sources: Massachusetts Department of Food and Agriculture and 1987 Census of Agricuture, United States Department of Commerce.

Vegetable Production Trends

POTATOES

	YIELD/ACRE CWT	TOTAL PRODUCTION 1,000 CWT
1984	200	580
1985	250	825
1986	230	667
1987	235	658
1988	220	572

TOMATOES

	YIELD/ACRE CWT	TOTAL PRODUCTION 1,000 CWT
1984	230	152
1985	245	164
1986	215	127
1987	215	125
1988	185	105

SWEET CORN

	YIELD/ACRE CWT	TOTAL PRODUCTION 1,000 CWT
1984	88	713
1985	94	743
1986	94	790
1987	90	639
1988	91	655

Source: New England Agricultural Statistics (USDA)

SPROUTS

VALUE: **$2,559,000 (estimated)**

MARKET OUTLET: **virtually all is wholesaled to supermarkets and restaurants.**

Massachusetts Sprout Production (estimated)

Producers	Production (pounds)
8 bean	6,700,000
8 alfalfa	750,000

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

WINE GRAPE VINEYARDS

FARMS:	36
ACRES:	288 vineyard size ranges from 1/4 acre to over 60 acres.
PLANTINGS:	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	GROWERS	ACRES
Barnstable	1	9.00
Berkshire	1	4.50
Bristol	7	121.25
Dukes	2	31.00
Hampden	1	1.50
Hampshire	8	7.00
Middlesex	1	4.00
Nantucket	1	7.00
Norfolk	1	2.00
Plymouth	12	93.00
Worcester	2	5.00
TOTAL	37	285.25

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

APIARIES

NUMBER OF COLONIES: **20,158 (during peak pollination season)**

- colonies primarily in honey production: 8,870
- colonies used for pollination of apple and cranberry crops: 11,288
- pounds of honey produced per hive: (estimated) 18

Migratory Colonies

11,288 colonies are rented to ensure pollination and improve crop yields. Many of the rental colonies are managed by migratory beekeepers. After pollination season, these beekeepers transport their hives to apiary yards in southern states to permit their honey bees to rebuild in a warmer climate.

Distribution of Massachusetts Apiaries

COUNTY	BEEKEEPERS	COLONIES
WESTERN MASSACHUSETTS		
Berkshire	169	411
Franklin	231	608
Hampshire	172	659
Hampden	188	846
Total	760	2,524
CENTRAL MASSACHUSETTS		
Worcester	710	1,903
Total	710	1,903
EASTERN MASSACHUSETTS		
Essex	340	1,377
Middlesex	462	3,252
Norfolk	328	1,370
Suffolk	14	43
Plymouth	353	4,239
Bristol	254	4,797
Total	1,751	15,078
CAPE COD AND THE ISLANDS		
Barnstable	118	238
Dukes	26	170
Nantucket	2	245
Total	146	653
STATE TOTAL	3,367	20,158

Source: Massachusetts Department of Food and Agriculture, 1987

DAIRY

Current Status

- 481 herds; 38,249 milking cows
- Median herd size, approximately 60 cows milking
- 1,268,000 pounds milk sold daily
- The predominant breed (90 percent of all herds) is Holstein.

Distribution of the Dairy Industry

- 78 percent of our milk production comes from five counties in central and western Massachusetts.
- The area of Worcester, Franklin and Hampshire counties is our largest dairy region. Dairy farms here generate 55 percent of the state's milk production.

Milk Production Trends

	Average Number of Milk Cows 1,000	Milk per Milk cow pounds	Total production of milk (million pounds)
1984	48	11,938	573
1985	47	12,660	595
1986	42	13,310	559
1987	35	14,400	504
1988	32	14,469	463

Milk Market Trends

	Sold to plants Million pounds	Sold directly to consumers Million pounds
1985	565	20
1986	535	17
1987	480	17
1988	439	16

Dairy Farms Protected by Agricultural Preservation Restriction

- 72 dairy farms are participating in the APR program, representing an investment $18,807,700 in land development rights since the inception of the program in 1980.
- 48.5 dairy farms, on 9,686.5 acres, are located in prime dairy regions.

Sources: Massachusetts Department of Food and Agriculture, New England Agricultural Statistics (USDA)

Massachusetts' Most Productive Dairy Region

	Farms	Milking Cows	% of Total Milk Production
Worcester County	118	9,023	24.9%
Franklin County	93	7,163	17.9%
Hampshire County	66	4,993	12.6%
	277	21,179	55.4%

- 58% of all dairy farms.
- 55% of all milking cows.
- 55% of all milk production

Source: Massachusetts Department of Food and Agriculture

Massachusetts Dairy Farms Producing Milk For Sale, 1988.

County inventory of farms, herd size and pounds of milk produced expressed as a percent of total pounds produced in the state.

Region County	Farms	Herd Size	Pounds of milk produced as a percent of total pounds
WESTERN MASSACHUSETTS			
Berkshire	52	5,215	14.4
Franklin	93	7,163	17.9
Hampshire	66	4,993	12.6
Hampden	43	3,627	7.8
Region Total	254	20,998	52.7
CENTRAL MASSACHUSETTS			
Worcester	118	9,053	24.9
Region Total	118	9,053	24.9
EASTERN MASSACHUSETTS			
Essex	17	1,388	3.3
Middlesex	18	1,600	4.1
Suffolk	---	---	---
Norfolk	10	399	
Plymouth	16	1,016	2.5
Bristol	46	3,735	11.0
Region Total	107	8,138	21.7
CAPE COD AND THE ISLANDS			
Barnstable	1	30	<1.0
Dukes	1	30	<1.0
Nantucket			
Region Total	2	60	<1.0
State Total	481	38,249	100

Source: Massachusetts Department of Food and Agriculture

EQUINE

Equine: Estimated County Distribution, 1988

	Horses	Ponies
Western Massachusetts		
Berkshire	1,147	208
Franklin	1,464	177
Hampshire	1,494	142
Hampden	1,143	168
Region Total	5,248	695
Central Massachusetts		
Worcester	3,839	563
Region Total	3,839	563
Eastern Massachusetts		
Essex	3,218	348
Middlesex	3,363	357
Suffolk	---	---
Norfolk	3,135	232
Bristol	1,774	307
Plymouth	1,363	383
Region Total	12,853	1,627
Cape Cod and the Islands		
Barnstable	635	98
Dukes	173	97
Nantucket	46	18
Region Total	854	213
State Total	22,794	3,098

Source: Massachusetts Department of Food and Agriculture

POULTRY

Commercial poultry production is a three segmented industry centered on 50 farms.

Type	Number of farms	Production
(1)Market Brown Eggs	26	262 million eggs
(2)Poultry Breeding	6	11.9 million egg-type chicks(1)
(3)Turkey Production	18	3 million pound meat

Egg Production Trends

YEAR Annual Average	LAYERS 1,000	AVERAGE DAILY RATE per layer (percent)	EGG PRODUCTION million
1984	1,059	69.1	268
1985	1,026	68.6	257
1986	1,195	72.2	315
1987	1,050	70.8	273
1988	973	73.4	262

MARKET: Ninety-five percent of egg production is marketed to jobbers and wholesalers, while 5percent is retailed directly to consumers.

Turkey Production Trends

YEAR	NUMBER RAISED 1,000	POUNDS PRODUCED 1,000 POUNDS
1984	152	3,314
1985	156	3,229
1986	145	3,103
1987	140	2,800
1988	150	3,000

Market: An estimated 80 percent of turkey production is retailed directly to consumers and the remaining production is marketed through wholesale channels.

Poultry Breeding

Information specific to commercial hatcheries is unavailable.

Market: Poultry breeders produce baby chicks for brown egg producers in both domestic and foreign markets.

Geographic Distribution of Commercial Poultry Farming

REGION	FARMS
Western and Central Massachusetts	24
Eastern Massachusetts (including Cape Cod and the Islands)	26

(1) Massachusetts data not available, New England data provided.
Sources: New England Agricultural Statistics (USDA), Massachusetts Department of Food and Agriculture.

AGRICULTURAL PRESERVATION RESTRICTION PROGRAM

FARMLAND PROTECTED: 22,486 acres (1980-1988)

PARCELS 243

FUNDS INVESTED: $51,344,630 (1980-1988)

MEAN COST PER ACRE $2,283

The Agricultural Preservation Restricition Program compensates farmers for placing a permanent deed restriction on their land. This means that the property will be permanently protected for agricultural production and the farmer can obtain some of the equity from his land without selling it for development.

Farmland valuation: Chapter 61A of the Massachusetts General laws was established to provide fair and accurate tax classification for owners of farmland in active agricultural use. The values are determined on an annual basis by the farmland valuation assessment commission.

Geographic Distribution of APR Dollars and Acreage

	Dollars	Acres
Eastern Massachusetts	39%	24%
Cape Cod & the Islands	5%	2%
Western Mass.	27%	41%
Central Mass.	29%	33%

Regional Distribution of Agricultural Preservation Restriction (APR)

Dollars invested, parcels and acreage, 1980-1988

Geography	Parcels	Acres	Dollars	Dollar Avg./Acre
State	243	22,486	$51,344,630	$2,283
Western	102	9,183	$13,728,795	$1,495
Central	62	7,350	$14,766,600	$2,009
Eastern	74	5,503	$20,071,735	$3,647
Cape Cod	5	450	$ 2,777,500	$6,172

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

YEAR	PARCELS ENROLLED	ACRES	FUNDS INVESTED	AVG. ACRE COST
1980	12	1,144	$2,376,325	$2,077
1981	21	1,863	$3,701,900	$1,987
1982	28	2,311	$2,890,775	$1,251
1983	31	3,286	$5,033,060	$1,532
1984	28	2,335	$4,430,200	$1,897
1985	31	3,338	$5,080,900	$3,338
1986	54	4,271	$17,078,700	$3,999
1987	14	1,486	$2,252,000	$1,515
1988	24	2,452	$8,500,770	$3,467
TOTAL	243	22,486	$51,344,630	$2,283

(1) Includes state and municipal funds

Source: Department of Food & Agriculture

CHAPTER 61A, FARMLAND VALUATIONS BY LAND USE CATEGORY, FY81-85

Per Acre Range of Values

Land Use Classes	Fiscal Year (Dollars)			
	1981-1982	1982-1983	1983-1984	1984-1985
1. Cranberry Bog	900 - 1,300	1,000 - 1,500	1,000 - 1,600	1,100 - 1,700
2. Tobacco, Sod	700 - 1,100	800 - 1,200	800 - 1,300	900 - 1,300
3. Nursery	350 - 500	400 - 550	400 - 600	450 - 650
4. Vegetables	250 - 350	250 - 400	250 - 400	250 - 450
5. Orchards, Vineyards	400 - 650	450 - 700	500 - 750	500 - 800
6. Forage Cropland (Field Crops and Dairy*)	125 - 200	130 - 200	140 - 220	150 - 230
7. Pasture	50 - 90	60 - 100	70 - 100	70 - 110
8. Woodland including sugarbush, and wild Christmas Tree Stands.	45 - 65	50 - 75	50 - 75	50 - 80
9. Christmas Tree Plantations	45 - 75	50 - 75	50 - 75	50 - 80
10. Necessary Related Land: eg. farm roads, ponds, waterways, sand and gravel pits for on-farm use exclusively, land under farm buildings not including land under retail sales buildings and residence.	35 - 45	35 - 50	35 - 50	35 - 55
11. Non-productive Land: eg. Wetlands, scrub land, rocky land.	10 - 20	10 - 20	10 - 20	10 - 20

Source: Massachusetts Department of Revenue

CHAPTER 61A, FARMLAND VALUATIONS BY LAND USE CATEGORY, FY85-89

Per Acre Range of Values

Land Use Classes	Fiscal Year (Dollars) 1985-1986	1986-1987	1987-1988	1988-1989
1. Cranberry Bog	900 - 1,400	12,600 - 18,800	14,300 - 21,400	9,850 -18,300
2. Tobacco, Sod	450 - 700	1,000 - 1,500	1,100 - 1,700	625 - 925
3. Nursery	300 - 450	500 - 750	550 - 850	625 - 925
4. Vegetables	550 - 850	300 - 500	350 - 550	625 - 925
5. Orchards, Vineyards	160 - 250	550 - 900	650 - 1,000	890 - 1,330
6. Forage Cropland (Field Crops and Dairy*)	70 - 120	170 - 270	200 - 300	
7. Pasture		80 - 130	100 - 150	113 - 167
8. Woodland including sugarbush, and wild Christmas Tree Stands.	60 - 85	60 - 100	70 - 110	113 - 167
9. Christmas Tree Plantations	60 - 90	60 - 100	70 - 110	113 - 167
10. Necessary Related Land: eg. farm roads, ponds, waterways, sand and gravel pits for on-farm use exclusively, land under farm buildings not including land under retail sales buildings and residence.	30 - 60	40 - 70	50 - 80	
11. Non-productive Land: eg. Wetlands, scrub land, rocky land.	15 - 25	15 - 25	20 - 30	28 - 42

ON-FARM COMPOSTING

The Department of Food and Agriculture is encouraging on-farm composting as a management strategy for farm generated materials as well as for appropriate non-farm generated organic materials such as leaves, manures and food processing by-products that otherwise have gone to disposal in landfills or incinerators. The facilities included in this listing are handling in excess of 200 tons each per year.

Massachusetts On-Farm Composting Facilities, 1988*

Region	Farm Composting	Tons Per Year
Western Massachusetts	3	4,500
Central Massachusetts	2	30,100
Eastern Massachusetts	7	25,500
Total	12	60,100

* Facilities handling in excess of 200 tons per year
Source: Department of Food and Agriculture

DIRECT MARKETING

In the broad view of American agriculture, the output of Massachusetts is a minor part of the national whole. Massachusetts agriculture, however, is significant because it has one of the best markets in the country: a high percentage of high income consumers. Commercial farms, therefore, usually specialize in crops of high value such as market vegetables, fruits, nursery materials and more for direct consumption. Many farmers are ingenious individuals who study market possibilities and develop a specialty to satisfy a particular need. For example, there are gardeners who raise an assortment of exotic vegetables exclusively for chinese restaurants and food shops. There are those who produce sod for landscape contractors, flowers for wholesale florists, and game birds for gourmet restaurants and delicatessens. Farmers may have their own sales stand or direct contact with wholesale or other retail outlets. The direct market is for many Massachusetts farmers a particular advantage.

The pages that follow present the state-wide distribution pattern of two direct marketing outlets;roadside stands and farmers' markets. Although not apparent from the table, the propensity for roadside stands is greatest near fruit and vegetable growing areas in close proximity to consumers in urban areas. Farmers' markets, however, are generally located in population centers.

FARMERS' MARKETS

County/location	Mkts./week	Weeks of Mktg	Farmers(1)
BERKSHIRE			
Great Barrington	1	24	10
North Adams	1	12	4
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			
Chicopee	1		12
Holyoke	1	25	24
Springfield			
(Avocado Street)	1	16	11
(Civic Center)	1	27	8
Westfield	1	24	12

Western Massachusetts Summary:

- 15 farmers' markets
- 16 markets per week in the prime harvest period

ESSEX			
Haverhill	1	18	7
Newburyport	1	12	7
Lawrence	1	18	11
Peabody	1		5
Topsfield	1	13	30
Wenham	1	17	4
West Newbury	1	10	9
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

(1) Farmers selling during part or all of the market season.

County/location	Mkts./week	Weeks of Mktg	Farmers(1)
WORCESTER			
Barre	1	15	15
Fitchburg	1	16	9
Gardner	1	16	7
Holden	1	18	6
Shrewsbury	1	12	4
Southbridge	2	18	8
Worcester	2	16	25
NORFOLK			
Brookline	1	20	13
Quincy	1	22	13
SUFFOLK/Boston			
Brighton	1	16	3
City Hall Plaza(Scollay Sq.)	1	5	3
Fanueil Hall Mkpl.	1	4	2
Fields Corner	1	16	3
Jamaica Plain	1	22	1
Roslindale	1	17	2
PLYMOUTH			
Brockton			
(Fairgrounds)	1	17	4
(City Hall)	1	17	6
Hanson	1		
Hingham	1	25	4
Plymouth	1		
BRISTOL			
Fall River	1	27	30
Middleboro	1		26
New Bedford	1		10
Taunton	1	19	1
BARNSTABLE			
Falmouth	1	22	3
DUKES			
West Tisbury	1	15	25
NANTUCKET			
Nantucket	1		2

Eastern Massachusetts Summary

- 43 market locations
- 45 markets per week in the prime harvest period

STATE TOTALS

- 58 market locations
- 62 markets per week during the prime period of the harvest season
- over 350 farmers selling

Source: Massachusetts Department of Food and Agriculture, Bureau of Markets

ROADSIDE STANDS/PICK-YOUR OWN

The following figures represent roadside marketers of vegetables, fruits, Christmas trees, maplesyrup, 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
STATE TOTAL	204	551

FOOD PROCESSING

VALUE: $3,764,000,000

EMPLOYMENT: 26,000 employees

FOOD PLANTS: 570

Massachusetts Food Processing by Product

Type of Manufacturing	Plants	Employees	Value (millions)
diary 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 vegetable	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 Processing 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	126.4
	431	20,800	$2,982.9
CENTRAL MASSACHUSETTS			
Worcester (bakery)	54	2,400	257.9
	54	2,400	257.9
WESTERN MASSACHUSETTS			
Berkshire	---	---	---
Franklin	---	---	---
Hampshire	---	---	---
Hampden	41	1,900	319.9
	41	1,900	319.9

(1) partial listing

Source: 1982 Census of Manufacturers

MASSACHUSETTS STATE-OWNED FARMLAND LEASING

In Massachusetts 84 farmers or agricultural educational institutions are leasing 4,480 acres ofstate-owned farmland in 63 locations across the state. Seven agencies issue these leases or use permits. The Department of Food and Agriculture leases land under its care and control and alsoleases land for other agencies under Chapter 20 of the Massachusetts General Laws.

The Massachusetts Farmlands Stewardship Committee, formed by the Department of Food and Agriculturein September of 1987, is looking at additional ways to protect and improve the management of state-owned farmland. One technique under consideration is the long-term (30 year) leasing of state-owned land to farmers. This is now being done under the Department of Mental Retardation's lease of the Belchertown State School farmstead to the New England Small Farm Institute.

Leasing Agency	Acres leased	Farmers/ Institutions renting	Locations
Food and Agriculture	981	16	12
Fisheries and Wildlife	1,833	40	24
Environmental Mgt.	592	18	18
Massport	166	1	1
Corrections	80	1	1
Mental Health	294	3	3
Mental Retardation	534	5	4
TOTAL	4,480	84	63

MASSACHUSETTS DEPARTMENT OF FOOD AND AGRICULTURE BUDGET

Appropriations

ACCOUNT #	CATEGORY	1987 FY AMOUNT	1988 FY AMOUNT	1989 FY AMOUNT
2511-0100	Administration	518,276	602,411	586,528
2511-3000	Regulatory	1,690,418	1,874,468	1,882,313
2511-3001	Alar Research	0	50,000	
2511-3002	IPM	250,000	400,000	360,000
2511-4000	Ag. Development	862,741	1,047,336	1,041,037
2515-1000	Animal Health	678,462	716,143	705,386
2518-1000	Fairs	657,242	693,069	661,184
2518-2500	Equine	97,350	173,504	169,211
2518-3000	Thoroughbred	460,000	0	0
2518-4000	Tufts Vet School	115,625	0	0
2518-5000	Standardbreds	300,000	175,000	0
2520-0100	Reclamation Board	69,172	99,806	99,892
	SUB-TOTAL DFA	5,699,286	5,831,737	5,505,551
2520-0100	RECLAMATION BOARD	0	0	0
	Mosquito Control Projects	3,177,820	3,345,753	3,253,071
	SUB-TOTAL DFA WITH MOSQUITO PROJECTS	8,877,106	9,177,490	8,758,622

Retained Revenues

2511-3005	Rights of Way	0	0	0
2518-3001	Thoroughbreds	0	900,000	900,000
2518-4001	Tufts	0	200,000	200,000
2518-6000	Greyhounds	0	300,000	300,000
	SUB-TOTAL RETAINED REVENUES	0	1,400,000	1,400,000

Bond Allotments

STATE			
Farmland Protection (APR)	16,425,708	4,367,056	11,395,896
Compost Development	0	0	0
SUB-TOTAL	16,425,708	4,367,056	11,395,896
FEDERAL FUNDS			
Pesticide Management 0310	166,440	140,157	125,155
0320	21,022	20,532	15,419
Market Development (FSMIP)	86,408	38,400	15,000
Farmers' Market Coupons	0	0	0
SUB-TOTAL	273,870	199,089	155,574
TOTAL	16,699,578	4,566,145	11,551,470

Massachusetts Agricultural Statistics

Compiled by

New England Agricultural Statistics
22 Bridge Street, Room 301
Concord, New Hampshire, 03303-1444

- Aubrey R. Davis, State Statistician
- R. Robert Scranton, Deputy State Statistician
- Beverly A. LaCroix, Administrative

LIVESTOCK HIGHLIGHTS

INVENTORY

The inventory of cattle and calves in Massachusetts on January 1, 1988 totaled 70,000 head, 18 percent less than on January 1, 1987 and the smallest of record. This inventory consisted of 33,000 milk cows, 10,000 beef cows, 11,000 heifers 500 pounds and over, 4,000 steers and bulls, and 12,000 calves. The 1987 calf crop (calves born) of 46,000 head was 2 percent lower than in 1986. The inventory value on January 1, 1988 averaged $625 per head, $55 more than on January 1, 1987 but $175 lower than the record high on January 1, 1982. Lower cattle numbers more than offset the increased average value per head, causing the total inventory value to be $43.8 million, 10 percent less than previous year and 46 percent lower than the record high total inventory on January 1, 1981.

Inventory of sheep and lambs totaled 14,000 head on January 1, 1988, the same number as a year earlier. This inventory had a value of $1.6 million, or $114 per head. This compares with a total of $1.5 million, and a per head value of $110 a year earlier. The lamb crops in 1986 and 1987 totaled 11,000 lambs born.

Massachusetts hogs and pigs on December 1, 1987 numbered 33,000 head, up 3 percent from December 1 the previous year. However, total inventory value declined 1.5 percent to $2,838,000, as the average value per head dropped $4.00 from 1986 to $86.00. The Massachusetts pig crop numbered 39,00 head in 1987, an increase of 1,000 head from 1986.

PRODUCTION AND MARKETINGS:

The 1987 marketings of cattle numbered 55,000 head, with a total live weight of 25.5 million pounds, down 3.58 million pounds from 1986. The number of cattle marketed was down 4,000 head from a year ago; however, calve marketings increased by 3,000 head. Farmers received an average price of $50.00 and $63.00 per cwt. for cattle and calves respectively during 1987. Cattle prices were up $8.00 per cwt. and calve prices rose $10.00 per cwt. above previous year.

Wool production during 1987 totaled 107,000 pounds, up 26 percent over the 1986 amount. All of the increase was because of an increase in the number of sheep shorn, as average weight per fleece remained at 7.1 pounds in both years. Number of sheep shorn was 15,000 in 1987 and 12,000 in 1986. Total value of the wool produced in 1987 was $85,000, up sharply from $50,000 in 1986. Average price received for wool was 79 per pound in 1987, 20 higher than the preceding year. Production of lamb and mutton in 1987 totaled 951,000 pounds live weight, up 2 percent from 1986, while marketings increased to 795,000 pounds in 1987 from 334,000 pounds in 1986. Gross income from 1987 marketings was $664,000.

Massachusetts pork producers marketed nearly 8.2 million pounds of pork in 1987, a 6 percent decrease from 1986. However, gross income held steady at $4.2 million despite the smaller volume marketed as the average price received increased $3 from 1986 to $49.00 per cwt.

MINK

Massachusetts 1987 mink pelt production totaled 12,100, up 300 pelts from year-earlier levels of 11,800 pelts. Of the pelts produced in 1987, 34 percent were Demi-Buff, 10 percent were Pastel, 25 percent were Pearl and 31 percent were other colors. Mink females bred to produce kits in 1988, at 2,800, showed a decrease of 1,100 from the previous year.

CATTLE: NUMBER AND VALUE OF ALL CATTLE AND CALVES ON FARMS JANUARY I, MASSACHUSETTS, I977 - I988

YEAR	NUMBER	VALUE	
		PER HEAD	TOTAL
	1,000	Dollars	1,000 Dollars
1977	104	380	39,520
1978	99	415	41,085
1979	102	560	57,120
1980	104	690	71,760
1981	104	785	81,640
1982	98	800	78,400
1983	103	700	72,100
1984	98	595	58,310
1985	100	565	56,500
1986	100	560	56,000
1987	85	570	48,450
1988	70	625	43,750

CATTLE: JANUARY I, INVENTORY BY CLASSES, MASSACHUSETTS, I977 - I988

YEAR	ALL CATTLE AND CALVES	COWS & HEIFERS THAT HAVE CALVED		HEIFERS 500 LBS. & OVER			STEERS 500 LBS.+	BULLS 500 LBS.+	STEERS, HEIFERS & BULLS -500 LBS.
		BEEF	MILK	REPLACEMENTS		OTHER			
				BEEF COW	MILK COW				
				1,000					
1977	104	9	53	2	17	1	2	2	18
1978	99	8	51	2	16	1	2	2	17
1979	102	10	49	3	16	1	2	2	19
1980	104	9	46	3	16	1	3	2	24
1981	104	10	45	4	14	1	4	2	24
1982	98	10	47	3	13	1	3	2	19
1983	103	10	49	2	17	1	3	2	19
1984	98	8	50	2	14	1	2	2	19
1985	100	9	47	3	15	1	3	2	20
1986	100	10	46	3	15	1	3	2	20
1987	85	11	37	2	14	1	3	1	16
1988	70	10	33	2	8	1	3	1	12

CATTLE AND CALVES: PRODUCTION AND INCOME, MASSACHUSETTS, 1977 - 1987

YEAR	PRODUCTION	MARKETINGS	PRICE PER 100 POUNDS		VALUE OF HOME CONSUMPTION	GROSS INCOME
			CATTLE	CALVES		
	1,000 Pounds		Dollars		1,000 Dollars	
1977	33,240	40,790	26.20	38.20	676	11,591
1978	27,080	26,560	41.90	57.00	1,441	12,846
1979	22,058	21,858	57.00	76.00	1,471	14,258
1980	24,650	22,830	55.00	71.00	1,892	14,651
1981	21,650	21,610	50.00	63.00	1,290	12,424
1982	17,310	9,390	45.00	57.00	1,548	6,022
1983	20,080	22,930	42.00	52.00	1,646	11,483
1984	20,090	14,910	42.00	52.00	1,659	8,137
1985	16,990	14,890	40.00	46.00	1,192	7,334
1986	18,680	29,060	42.00	53.00	1,226	13,728
1987	15,620	25,480	50.00	63.00	1,440	14,570

CATTLE AND CALVES: INVENTORY, SUPPLY AND DISPOSITION, MASSACHUSETTS, 1977 - 1987

YEAR	ALL CATTLE ON HAND JAN. 1	CALF CROP	INSHIPMENTS	MARKETINGS		FARM SLAUGHTER CATTLE & CALVES	DEATHS	
				CATTLE	CALVES		CATTLE	CALVES
				1,000				
1977	104	52	7	35	20	1	2	6
1978	99	50	5	23	19	2	2	6
1979	102	47	1	19	18	1	2	6
1980	104	45	1	21	14	1	3	7
1981	104	47	1	20	23	1	3	7
1982	98	48	1	10	23	1	3	7
1983	103	48	1	23	23	1	2	5
1984	98	50	1	16	24	1	2	6
1985	100	51	1	13	31	1	2	5
1986	100	47	1	29	27	1	2	4
1987	85	46	1	25	30	1	2	4

HOGS: NUMBER AND VALUE ON FARMS, DECEMBER I, MASSACHUSETTS, 1976 - 1987

YEAR	NUMBER			VALUE	
	BREEDING	MARKET	TOTAL	PER HEAD	TOTAL
		Head		Dollars	1,000 Dollars
1976	7,000	43,000	50,000	50.50	2,525
1977	8,000	52,000	60,000	59.50	3,570
1978	8,000	52,000	60,000	76.50	4,590
1979	9,000	51,000	60,000	55.50	3,330
1980	7,000	42,000	49,000	74.50	3,651
1981	6,000	43,000	49,000	79.50	3,896
1982	7,000	39,000	46,000	88.50	4,071
1983	7,000	35,000	42,000	79.00	3,318
1984	5,000	35,000	40,000	78.50	3,140
1985	5,000	29,000	34,000	89.00	3,026
1986	4,000	28,000	32,000	90.00	2,880
1987	5,000	28,000	33,000	86.00	2,838

HOGS: PIG CROP, SOWS FARROWED AND PIGS SAVED, MASSACHUSETTS, 1977 - 1987

YEAR	SPRING CROP (DEC - MAY)			FALL CROP (JUN - NOV)			TOTAL PIG CROP
	SOWS	PIGS / LITTER	PIGS SAVED	SOWS	PIGS / LITTER	PIGS SAVED	
			Head				
1977	5,000	6.9	35,000	6,500	6.6	43,000	78,000
1978	5,000	7.2	36,000	6,000	6.8	41,000	77,000
1979	6,000	6.5	39,000	6,500	6.5	42,000	81,000
1980	4,000	7.4	30,000	6,000	5.8	35,000	65,000
1981	4,000	6.6	26,000	5,000	6.4	32,000	58,000
1982	3,700	7.5	28,000	4,500	7.6	34,000	62,000
1983	4,900	6.5	32,000	4,000	7.0	28,000	60,000
1984	3,700	6.9	26,000	3,700	6.5	24,000	50,000
1985	3,200	6.2	20,000	3,000	6.5	20,000	40,000
1986	3,000	6.3	19,000	2,800	6.8	19,000	38,000
1987	2,500	7.1	18,000	3,000	7.1	21,000	39,000

HOGS: INVENTORY NUMBER, PIG CROP AND DISPOSITION, MASSACHUSETTS, 1977 - 1987

YEAR	ON HAND DEC 1st PREVIOUS YEAR	PIG CROP		MARKETINGS	FARM SLAUGHTER	DEATHS
		DEC - MAY	JUN - NOV			
			H e a d			
1977	50,000	35,000	43,000	61,000	1,000	6,000
1978	60,000	36,000	41,000	71,000	1,000	5,000
1979	60,000	39,000	42,000	76,000	1,000	4,000
1980	60,000	30,000	35,000	71,000	2,000	3,000
1981	49,000	26,000	32,000	55,000	1,000	2,000
1982	49,000	28,000	34,000	61,000	1,000	3,000
1983	46,000	32,000	28,000	59,000	2,000	3,000
1984	42,000	26,000	24,000	49,000	1,000	2,000
1985	40,000	20,000	20,000	42,000	1,000	3,000
1986	34,000	19,000	19,000	37,000	1,000	2,000
1987	32,000	18,000	21,000	35,000	1,000	2,000

HOGS: PRODUCTION AND INCOME, MASSACHUSETTS, 1977 - 1987

YEAR	PRODUCTION	MARKETINGS	PRICE PER 100 POUNDS	VALUE OF HOME CONSUMPTION	GROSS INCOME
	1,000 Pounds		Dollars	1,000 Dollars	
1977	15,832	14,063	37.00	291	5,494
1978	17,211	16,640	45.00	304	7,792
1979	18,640	17,820	44.00	297	8,138
1980	16,412	16,185	37.00	500	6,488
1981	13,267	12,825	43.00	290	5,805
1982	14,547	14,380	54.00	316	8,081
1983	11,651	11,010	42.00	378	5,002
1984	9,745	9,600	46.00	269	4,685
1985	9,836	9,630	41.00	314	4,262
1986	9,000	8,715	46.00	207	4,216
1987	8,963	8,195	49.00	221	4,237

SHEEP AND LAMBS: INVENTORY NUMBER BY CLASS AND VALUE, JANUARY I, MASSACHUSETTS, I977 - I988

YEAR	LAMBS			ONE YEAR AND OVER		ALL SHEEP & LAMBS	VALUE	
	ALL LAMBS	EWES	WETHERS AND RAMS	EWES	WETHERS AND RAMS		PER HEAD	TOTAL
	Head						Dollars	1,000 Dollars
1977	1,400	1,000	400	4,900	400	6,700	48.00	322
1978	1,600	1,100	500	4,700	500	6,800	53.50	364
1979	1,300	1,000	300	4,900	500	6,700	63.00	422
1980	2,500	2,000	500	7,000	500	10,000	78.00	780
1981	2,000	1,600	400	6,400	600	9,000	88.00	792
1982	2,600	2,000	600	8,000	400	11,000	109.00	1,199
1983	2,600	2,000	600	7,000	400	10,000	104.00	1,040
1984	2,200	1,700	500	8,000	800	11,000	103.00	1,133
1985	2,400	1,700	700	8,000	600	11,000	121.00	1,331
1986	2,300	1,700	600	7,000	700	10,000	122.00	1,220
1987	3,700	2,200	1,500	9,500	800	14,000	110.00	1,540
1988	3,800	2,000	1,800	9,200	1,000	14,000	114.00	1,596

SHEEP AND LAMBS: INVENTORY NUMBERS, LAMB CROP AND DISPOSITION, MASSACHUSETTS, I977 - I987

YEAR	ALL SHEEP AND LAMBS ON HAND JAN. 1	LAMB CROP	MARKETINGS		FARM SLAUGHTER SHEEP & LAMBS	DEATHS SHEEP & LAMBS
			SHEEP	LAMBS		
	Head					
1977	6,700	5,700	1,100	3,100	400	1,000
1978	6,800	5,300	1,000	2,900	500	1,000
1979	6,700	5,500	800	2,000	500	900
1980	10,000	7,200	2,600	3,800	600	1,200
1981	9,000	7,500	100	3,200	900	1,300
1982	11,000	9,100	3,300	5,200	300	1,300
1983	10,000	8,200	900	5,000	200	1,100
1984	11,000	10,000	2,000	6,500	300	1,200
1985	11,000	8,500	3,000	5,000	500	1,000
1986	10,000	11,000	0	4,900	600	1,500
1987	14,000	11,000	3,300	5,600	700	1,400

SHEEP AND LAMBS: PRODUCTION AND INCOME, MASSACHUSETTS, 1977 - 1987

YEAR	PRODUCTION	MARKETINGS	PRICE PER 100 POUNDS		VALUE OF HOME CONSUMPTION	GROSS INCOME
			SHEEP	LAMBS		
	1,000 Pounds		Dollars		1,000 Dollars	
1977	431	357	29.00	72.00	46	244
1978	406	329	38.00	84.00	67	282
1979	474	210	39.00	85.00	82	215
1980	586	573	42.00	77.00	89	416
1981	479	170	45.00	100.00	89	252
1982	602	654	41.00	94.00	68	465
1983	708	465	36.00	93.00	80	453
1984	801	720	36.00	96.00	91	644
1985	699	689	40.00	106.00	135	638
1986	932	334	41.00	104.00	142	490
1987	951	795	39.00	95.00	140	664

WOOL: PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	SHEEP SHORN	WEIGHT PER FLEECE	SHORN WOOL PRODUCTION	PRICE PER POUND	VALUE
	Head	Pounds	1,000 Pounds	Cents	1,000 Dollars
1977	6,200	7.1	44	78	34
1978	6,300	6.8	43	74	32
1979	7,000	6.9	48	84	40
1980	9,000	6.9	62	88	55
1981	10,000	6.9	69	90	62
1982	10,000	6.8	68	66	45
1983	11,000	6.9	76	63	48
1984	10,000	7.3	73	67	49
1985	10,000	7.1	71	62	44
1986	12,000	7.1	85	59	50
1987	15,000	7.1	107	79	85

MINK: PRODUCTION AND FEMALES BRED TO PRODUCE KITS, MASSACHUSETTS, 1983 - 1988

COLOR CLASS	PELTS PRODUCED					FEMALES BRED TO PRODUCE KITS				
	1983	1984	1985	1986	1987	1984	1985	1986	1987	1988
Standard	1,400	2,200	2,200	2,500	1/	560	710	600	1,200	500
Demi-Buff	3,900	5,900	5,300	1/	4,100	1/	1,200	700	1/	600
Pastel	2,300	1,600	1,300	1,200	1,200	590	470	500	1/	1/
Pearl	1/	3,500	1/	3,100	3,000	830	880	1/	800	800
Others	4,900	2,400	5,100	5,000	3,800	2,220	740	1,400	1,900	900
TOTAL	12,500	15,600	13,900	11,800	12,100	4,200	4,000	3,200	3,900	2,800

1/ Included in others to avoid disclosing individual operations.

DAIRY HIGHLIGHTS

PRODUCTION AND MARKETINGS

Milk production on Massachusetts farms totaled a record low 504 million pounds in 1987, 10 percent lower than year-earlier levels. The number of milk cows decreased to a record low average of 35,000 head, down 7,000 from the 1986 average. The number of milk cows has generally been on a decline since 1924's record high average of 148,000 head. However, the rate of production set a record high 14,400 pounds per cow. This continues the long term upward trend, up 1,090 pounds from a year ago.

Dairymen used 5 million pounds of milk to feed calves and 2 million pounds for home use in 1987. Both the amount utilized for home use and fed to calves remained unchanged from previous year. Four hundred and ninety-seven million pounds of milk were marketed, with an average price received of $14.14 per cwt. during 1987. Milk marketed decreased by 55 million pounds, while the average price received per cwt. was up 36 from previous year. The decrease in the amount of milk produced more than offset the increase in average price per cwt., resulting in a 1987 cash receipts of only $70.3 million, a drop of $5.77 million below 1986 total.

MANUFACTURED DAIRY PRODUCTS

Massachusetts dairy plants manufactured a combined total of 50.8 million gallons of ice cream and milk sherbet for 1987, an 8 percent increase from last year's yield of 46.9 million gallons. Ice cream production totaled 48.8 million gallons, 8 percent above 1986 levels. Milk sherbet production totaled 1.95 million gallons, 12 percent higher than in 1986.

MILK COWS: AVERAGE NUMBER ON FARMS, BY QUARTERS AND ANNUAL, MASSACHUSETTS, 1977 - 1987

YEAR	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC	ANNUAL
			1,000		
1977	52	51	51	51	51
1978	50	48	48	49	49
1979	49	48	47	46	48
1980	46	46	46	46	46
1981	45	46	47	47	46
1982	47	47	46	47	47
1983	49	49	46	48	48
1984	49	48	47	47	48
1985	47	47	46	46	47
1986	46	44	39	37	42
1987	37	36	34	34	35

MILK PRODUCTION: AVERAGE PER COW, BY QUARTERS AND ANNUAL, MASSACHUSETTS, 1977 - 1987

YEAR	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC	ANNUAL
			Pounds		
1977	2,850	3,060	2,890	2,870	11,706
1978	2,900	3,110	2,920	2,820	11,673
1979	2,920	3,090	2,940	2,980	11,792
1980	3,110	3,240	3,000	3,050	12,391
1981	3,180	3,295	3,020	3,000	12,565
1982	3,190	3,320	3,180	3,185	12,809
1983	3,190	3,245	3,200	3,150	12,771
1984	3,080	3,020	2,880	3,020	11,938
1985	3,190	3,230	3,150	3,220	12,660
1986	3,320	3,400	3,285	3,460	13,310
1987	3,570	3,700	3,500	3,530	14,400

MILK PRODUCTION, BY QUARTERS AND ANNUAL, MASSACHUSETTS, 1977 - 1987

YEAR	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC	ANNUAL
			Million Pounds		
1977	148	156	147	146	597
1978	145	149	140	138	572
1979	143	148	138	137	566
1980	143	149	138	140	570
1981	143	152	142	141	578
1982	150	156	146	150	602
1983	156	159	147	151	613
1984	151	145	135	142	573
1985	150	152	145	148	595
1986	153	150	128	128	559
1987	132	133	119	120	504

MILK: QUANTITY MARKETED, PRICE AND CASH RECEIPTS, MASSACHUSETTS, 1977 - 1987

YEAR	SOLD TO PLANTS			SOLD DIRECTLY TO CONSUMERS			COMBINED MARKETINGS		
	QUANTITY	PRICE PER CWT.	CASH RECEIPTS	QUANTITY	PRICE PER QUART	CASH RECEIPTS	QUANTITY	PRICE PER CWT.	CASH RECEIPTS
	Million Pounds	Dollars	1,000 Dollars	Million Quarts	Cents	1,000 Dollars	Million Pounds	Dollars	1,000 Dollars
1977	550	10.70	58,850	16.7	42	7,032	586	11.24	65,882
1978	530	11.50	60,950	14.9	43	6,400	562	11.98	67,350
1979	525	12.80	67,200	14.4	46	6,633	556	13.28	73,833
1980	530	13.70	72,610	14.0	51	7,116	560	14.24	79,726
1981	540	14.60	78,840	13.5	53	7,149	569	15.11	85,989
1982	565	14.50	81,925	13.5	53	7,149	594	15.00	89,074
1983	575	14.60	83,950	13.0	53	6,902	603	15.07	90,852
1984	540	14.40	77,760	10.7	53	5,670	563	14.82	83,430
1985	565	13.70	77,405	9.3	54	5,023	585	14.09	82,428
1986	535	13.40	71,690	7.9	55	4,349	552	13.78	76,039
1987	480	13.70	65,760	7.9	57	4,507	497	14.14	70,267

MILK: QUANTITIES USED AND MARKETED BY FARMERS, MASSACHUSETTS, 1977 - 1987

YEAR	TOTAL PRODUCED	MILK, USED ON FARMS WHERE PRODUCED			MILK MARKETED BY FARMERS		
		USED FOR MILK, CREAM AND BUTTER	FED TO CALVES	TOTAL	SOLD TO PLANTS AND DEALERS	SOLD DIRECTLY TO CONSUMERS	TOTAL
				Million Pounds			
1977	597	6	5	11	550	36	586
1978	572	5	5	10	530	32	562
1979	566	4	6	10	525	31	556
1980	570	4	6	10	530	30	560
1981	578	4	5	9	540	29	569
1982	602	3	5	8	565	29	594
1983	613	2	8	10	575	28	603
1984	573	2	8	10	540	23	563
1985	595	2	8	10	565	20	585
1986	559	2	5	7	535	17	552
1987	504	2	5	7	480	17	497

MILK SOLD TO PLANTS: MONTHLY AND ANNUAL AVERAGE PRICE PER 100 POUNDSRECEIVED BY FARMERS, MASSACHUSETTS, 1977 - 1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE
						Dollars							
1977	10.60	10.50	10.20	10.20	9.90	10.00	10.50	10.90	11.20	11.40	11.40	11.20	10.70
1978	11.10	11.20	11.00	10.70	10.70	10.60	11.00	11.60	12.10	12.70	12.90	12.70	11.50
1979	12.70	12.80	12.50	12.20	12.00	12.00	12.50	13.10	13.40	13.80	13.90	13.40	12.80
1980	13.60	13.40	13.30	13.00	13.00	12.80	13.30	13.70	14.20	14.70	14.80	14.70	13.70
1981	14.90	14.70	14.50	14.30	14.00	13.80	14.30	14.60	14.90	15.20	15.00	14.80	14.60
1982	14.90	14.70	14.50	14.20	13.80	13.70	14.20	14.60	14.90	15.00	15.10	14.80	14.50
1983	14.80	14.80	14.40	14.30	13.90	13.80	14.20	14.70	14.90	15.10	15.20	14.60	14.60
1984	14.60	14.30	14.10	13.90	13.80	13.60	14.00	14.50	14.90	15.30	15.40	14.90	14.40
1985	14.90	14.60	14.10	13.60	13.20	12.70	13.20	13.40	13.60	13.80	13.80	13.60	13.70
1986	13.40	13.30	13.00	12.70	12.60	12.50	13.10	13.70	14.10	14.50	14.70	14.40	13.40
1987	14.40	14.10	13.50	13.10	12.60	12.60	13.20	13.60	14.20	14.40	14.30	13.80	13.70

MILK: PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	AVERAGE NUMBER OF MILK COWS	PRODUCTION					
		PER MILK COW		PERCENTAGE OF FAT IN ALL MILK PRODUCED	TOTAL		VALUE OF MILK PRODUCED
		MILK	MILKFAT		MILK	MILKFAT	
	1,000	Pounds		Percent	Million Pounds		1,000 Dollars
1977	51	11,706	431	3.68	597	22	67,103
1978	49	11,673	428	3.67	572	21	68,526
1979	48	11,792	429	3.64	566	21	75,160
1980	46	12,391	447	3.61	570	21	81,150
1981	46	12,565	456	3.63	578	21	87,349
1982	47	12,809	466	3.64	602	22	90,273
1983	48	12,771	469	3.67	613	23	92,359
1984	48	11,938	445	3.73	573	21	84,912
1985	47	12,660	471	3.72	595	22	83,837
1986	42	13,310	498	3.74	559	21	77,003
1987	35	14,400	540	3.75	504	19	71,257

MANUFACTURED DAIRY: PRODUCTION MAJOR FROZEN PRODUCTS, MASSACHUSETTS, 1977 - 1987

YEAR	ICE CREAM	ICE MILK	MILK SHERBET
	1,000 Pounds	1,000 Gallons	
1977	45,255	7,483	2,180
1978	42,909	9,779	2,102
1979	42,463	10,454	1,829
1980	43,986	9,817	1,992
1981	43,193	10,173	2,089
1982	44,444	6,574	2,198
1983	44,510	9,138	2,297
1984	46,862	7,802	2,155
1985	46,992	7,442	1,991
1986	45,186	6,792	1,733
1987	48,826	1/	1,947

1/ Estimate discontinued.

POULTRY HIGHLIGHTS

EGGS

Laying flocks in Massachusetts produced 273 million eggs in 1987, a 13 percent decrease from the previous year. Daily rate of lay averaged 70.8, a decrease from 72.2 in 1986. The average price per dozen was 90, a decrease of 4 from 1986. Value of egg production declined 17 percent in 1987 from $25 million in 1986to S20 million.

CHICKENS

As of December 1, 1987, the total number of chickens was 1.3 million, the same as 1986. Hens and pulletscomprised 70 percent of the total birds, compared with 86 percent in 1986. Total value of chickens in 1987 was $2.7 million, down from $S2.6 million the previous year. Price per bird was $2.10, a 15 increase from$1.95 in 1986.

TURKEYS

Turkeys raised during 1987 totaled 140,000 birds, down 5,000 from 1986. Production totaled 2.8 millionpounds liveweight in 1987, 10 percent less than a year earlier. Valued at $.99 per pound, the total output had an aggregate value of $2.8 million, a 2 percent drop from the previous year.

POULTRY: INVENTORY BY CLASS AND VALUE, MASSACHUSETTS, DECEMBER 1, 1976 - 1987

YEAR	CHICKENS, EXCLUDING BROILERS				OTHER	TOTAL	VALUE PER HEAD	TOTAL VALUE
	HENS AND PULLETS OF LAYING AGE		PULLETS NOT OF LAYING AGE					
	HENS	PULLETS	3 MONTHS AND OLDER	UNDER 3 MONTHS				
	1,000						Dollars	1,000 Dollars
1976	593	782	239	241	15	1,870	2.40	4,488
1977	465	1,005	290	180	50	1,990	2.o5	4,080
1978	550	620	196	174	40	1,580	2.05	3,239
1979	617	755	126	197	31	1,726	2.15	3,711
1980	644	811	108	209	18	1,790	2.30	4,117
1981	650	622	141	153	37	1,603	2.55	4,088
1982	742	458	156	166	18	1,540	2.55	3,927
1983	595	514	110	138	21	1,378	2.45	3,376
1984	651	450	160	225	34	1,520	2.60	3,952
1985	360	680	192	109	24	1,365	2.85	3,890
1986	500	630	30	130	20	1,310	1.95	2,555
1987	305	585	134	222	24	1,270	2.10	2,667

POULTRY: AVERAGE NUMBER OF LAYERS BY QUARTERS AND ANNUAL, MASSACHU5ETTS, 1977 - 1987

QUARTER	1977	1987	1979	1980	1981	1982	1983	1984	1985	1986	1987
						1, 000					
DEC-FEB 1/	1,483	1,430	1,330	1,331	1,365	1,345	1,155	1,089	1,040	1,189	1,176
MAR-MAY	1,521	1,496	1,433	1,330	1,318	1,340	1,036	1,083	964	1,255	1,130
JUN-AUG	1,518	1,373	1,411	1,321	1,209	1,272	1,027	1,031	997	1,177	998
SEP-NOV	1,425	1,353	1,374	1,397	1,323	1,230	1,030	1,034	1,105	1,156	924
ANNUAL	1,487	1,413	1,387	1,345	1,303	1,297	1,062	1,059	1,026	1,195	1,056

EGGS: DAILY RATE OF LAY BY QUARTERS AND ANNUAL, MASSACHUSETTS, 1977 - 1987

QUARTER	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
						Percent					
DEC-FEB 1/	64.4	64.5	67.7	67.6	65.1	66.9	67.3	69.4	68.4	74.8	65.0
MAR-MAY	65.7	66.1	66.7	67.0	68.5	66.5	68.2	70.3	68.8	71.9	69.3
JUN-AUG	66.6	66.5	65.5	65.0	69.2	66.7	68.8	70.6	67.6	12.0	73.0
SEP-NOV	64.8	67.4	65.0	66.1	67.3	65.2	69.4	67.0	69.6	70.3	73.7
ANNUAL	65.4	66.1	67.0	66.2	67.4	66.3	68.5	69.1	68.6	72.2	70.5

EGGS: TOTAL PRODUCTION BY QUARTERS AND ANNUAL, MASSACHUSETTS, 1977 - 1987

QUARTER	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
						Million					
DEC-FEB 1/	86	83	81	81	80	81	70	68	64	50	72
MAR-MAY	92	91	88	82	83	82	65	70	61	83	72
JUN-AUG	93	84	85	79	77	78	65	67	62	78	67
SEP-NOV	84	83	55	84	81	73	65	63	70	74	62
ANNUAL	355	341	339	326	321	314	265	268	257	315	273

1/ December previous year

CHICKENS: LOST, SOLD AND VALUE OF SALES, MASSACHUSETTS, 1977 - 1987

	NUM8ER	S O L D		PRICE	VALUE
		NUMBER	LIVEWEIGHT	POUND	SALES
	1, O O O		1,000 Pounds	Cents	1,000 Dollars
1977	170	1,200	6,600	11.3	752
1978	130	1,300	7,150	12.3	885
1979	100	900	4,950	13.2	660
1980	107	1,150	6,325	8.3	SZ9
1981	91	1,650	9,075	9.0	8ZZ
198Z	104	880	4,840	8.0	391
1983	86	989	5,440	10.5	576
1984	81	708	3,894	16.5	651
1985	77	1,107	6,089	12.0	731
1986	92	1,168	6,190	9.0	557
1987	77	1,07Z	5,896	9.0	531

EGGS: PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	EGGS PRODUCED	PRICE PER DOZEN	VALUE OF PRODUCTION
	M i l l i o n	Cents	1,000 Dollars
1977	355	69.9	Z0,679
1978	341	66.2	18,812
1979	339	73.8	20,849
1980	326	74.5	20,239
1981	3Z1	86.0	Z3,005
198Z	314	84.0	21,980
1983	Z65	91.0	Z0,096
1984	268	109.0	24,344
1985	Z57	98.0	20,988
1986	315	94.0	24,675
1987	Z73	9x x	Zx'475

TURKEYS: PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	NUMBER RAISED	POUNDS PRODUCED	PRICE PER POUND	VALUE OF PRODUCTION
	1,000	1,000 Pounds	Cents	1,000 Dollars
1977	1Z5	2,600	58	1,508
1978	146	2,993	68	2,035
1979	140	2,800	65	1,820
1980	1Z6	Z,470	78	1,9Z6
1981	145	3,045	77	2,345
198Z	145	3,089	77	Z,378
1983	160	3,31Z	84	Z,78Z
1984	15Z	3,314	83	Z,750
1985	156	3,ZZ9	86	Z,777
1986	145	3,103	91	Z,8Z4
1987	140	Z,800	99	2,772

HATCH: EGG-TYPE CHICKS BY COMMERCIAL HATCHERIES, NEW ENGLAND, 1980 - 1987

MONTH	1980	1981 1	1982	1983	1984	1985	1986	1987
			1, 000					
JANUARY	2,150	1,767	1,102	1,626	1,911	1,670	1,700	1,075
FEBRUARY	1,899	1,837	1,230	1,370	1,828	1,580	1,456	1,080
MARCH	1,990	2,024	1,685	1,008	2,385	1,709	1,695	1,190
APRIL	1,797	2,060	2,015	1,947	2,299	2,137	1,664	1,945
MAY	2,098	1,954	2,221	2,018	1,981	1,858	1,803	1,542
JUNE	1,899	1,970	1,763	2,070	2,269	1,689	1,766	1,227
JULY	1,782	1,676	1,646	1,716	1,891	1,465	1,327	764
AUGUST	2,097	1,647	1,368	1,687	1,862	1,819	1,229	989
SEPTEMBER	1,714	1,748	1,426	1,894	1,613	1,635	1,464	1,405
OCTOBER	1,934	1,896	1,603	1,669	2,034	1,777	1,784	1,851
NOVEMBER	1,693	1,538	1,512	1,797	1,912	1,718	1,273	1,500
DECEMBER	1,738	1,467	1,74D	2,094	1,909	1,732	1,737	1,539
ANNUAL	22,791	21,584	19,311	21,896	23,894	20,784	18,898	16,107

CROP HIGHLIGHTS

CORN SILAGE:

Corn silage production in the Commonwealth totaled 629,000 tons in 1987, 3 percent under the 1986 silage crop. Growers planted 40,000 acres to corn in 1987, 3,000 acres short of the previous season. Most planting was complete by the last week in June, with adequate moisture and warm temperatures promotinggood conditions at emergence. An extremely dry summer followed, placing severe stress on the crop through late August. The season finished up with a wet fall, which helped restore some tonnage. Massachusetts farmers chopped 34,000 acres for silage, averaging 18.5 tons per acre. The value of the 1987 crop was placed at $17.3 million, 5 percent under the 1986 crop value.

HAY:

Hay output from Massachusetts farms totaled 291,000 tons in 1987, 10 percent under 1986's big crop. A wet spring, dry summer and wet fall made for poor haying conditions in 1987. The first crop weighed in with good tonnage, but quality was off due to late cutting. Second crop hay was very light due to lack of moisture, followed by a heavy third cutting, again harvested late due to wet conditions. Hay yields averaged 2.29 tons per acre, 11 percent under last year's high yielding crop.

Alfalfa and alfalfa mixtures comprised 24 percent of all hay production, weighing in at 78,000 tons. Other hay output totaled 213,000 tons, 9 percent under 1986 production. The 1987 hay crop was valued at $26.5 million, 9 percent below a year ago.

TOBACCO:

Massachusetts broadleaf and shade tobacco output totaled 653,000 pounds in 1987, 5 percent above 1986 production. A reduced market for havana seed tobacco encouraged farmers to switch to growing broadleaf tobacco in 1987. Broadleaf yields averaged 1,800 pounds per acre, which placed production 21 percent under 1986 havana seed output. Improved shade tobacco yields, combined ywith a 70 acre increase in acreage, placed shade production 22 percent above the previous year. The 1987 tobacco crop was valued at $7.4 million, 40 percent above the value of the 1986 crop.

CORN: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	ACRES PLANTED FOR ALL PURPOSES	SILAGE			
		ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION	VALUE OF PRODUCTION
	1,000		Tons	1,000 Tons	1,000 Dollars
1977	44	38	16.0	608	13,923
1978	45	40	16.5	660	14,850
1979	44	39	17.0	663	16,575
1980	45	40	17.0	680	19,380
1981	46	39	20.0	780	19,968
1982	46	39	17.0	663	18,763
1983	43	39	17.0	663	19,956
1984	45	40	15.5	620	18,724
1985	46	39	19.0	741	22,230
1986	43	36	18.0	648	18,144
1987	40	34	18.5	629	17,298

HAY: ALFALFA AND ALL OTHER, ACREAGE AND PRODUCTION, MASSACHUSETTS, 1977 - 1987

YEAR	ALFALFA HAY			ALL OTHER HAY		
	ACRES HARVESTED	YIELD PER ACRE	PRODUCTION	ACRES HARVESTED	YIELD PER ACRE	PRODUCTION
	1,000 Acres	Tons	1,000 Tons	1,000 Acres	Tons	1,000 Tons
1977	28	2.30	64	92	1.90	175
1978	28	2.60	73	92	2.15	198
1979	27	2.90	78	92	2.25	207
1980	27	2.40	65	88	2.10	185
1981	28	2.80	78	90	2.15	194
1982	29	2.80	81	90	2.25	203
1983	29	3.00	87	94	2.40	226
1984	30	2.80	84	96	2.25	216
1985	30	2.90	87	91	2.10	191
1986	29	3.10	90	98	2.40	235
1987	30	2.60	78	97	2.20	213

HAY: ALL, ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	ACRES HARVESTED	YIELD PER ACRE	PRODUCTION	PRICE PER TON	VALUE OF PRODUCTION
	1,000 Acres	Tons	1,000 Tons	Dollars	1,000 Dollars
1977	120	1.99	239	69.00	16,491
1978	120	2.26	271	73.00	19,783
1979	119	2.39	285	72.00	20,520
1980	115	2.17	250	76.00	19,000
1981	118	2.31	272	80.00	21,760
1982	119	2.39	284	89.00	25,276
1983	123	2.54	313	92.00	28,796
1984	126	2.38	300	95.00	28,500
1985	121	2.30	278	94.00	26,132
1986	127	2.56	325	90.00	29,250
1987	127	2.29	291	91.00	26,481

TOBACCO, SHADE-GROWN: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION 2/	PRICE PER POUND	VALUE OF PRODUCTION
		Pounds	1,000 Pounds	Dollars	1,000 Dollars
1977	980	1,600	1,568	6.00	9,408
1978	860	1,300	1,118	7.50	8,385
1979	770	1,400	1,078	8.50	9,163
1980	940	1,475	1,387	9.80	13,593
1981	900	1,575	1,418	10.00	14,180
1982	250	1,200	300	12.50	3,750
1983	170	1,470	250	11.00	2,750
1984	350	1,400	490	12.50	6,125
1985	360	1,460	526	12.65	6,654
1986	340	1,095	372	13.10	4,873
1987	410	1,110	455	15.50	7,053

TOBACCO, OUTDOOR 1/: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION 2/	PRICE PER POUND	VALUE OF PRODUCTION
		Pounds	1,000 Pounds	Dollars	1,000 Dollars
1977	180	1,880	338	0.98	331
1978	170	2,000	340	1.10	374
1979	220	1,850	407	1.20	488
1980	250	2,000	500	1.31	655
1981	240	2,300	552	1.40	773
1982	300	1,840	552	1.35	745
1983	255	2,090	533	1.40	746
1984	150	1,965	295	1.55	457
1985	130	1,960	255	1.60	408
1986	130	1,925	250	1.60	400
1987	110	1,800	198	1.70	337

1/ Predominantly Havana Seed grown prior to 1987. Broadleaf tobacco grown in 1987.
2/ Excludes tobacco leaves harvested and destroyed for any reason.

FRUIT, POTATO AND VEGETABLE HIGHLIGHTS

FRUIT:

Massachusetts cranberry growers harvested 1.49 million barrels in 1987, 20 percent under last year's record crop. Despite the lower output, the Commonwealth remains number one in cranberry production in the Nation. Bogs overwintered well, and bloom was average to heavy, with average fruit set. Dry conditions throughout the summer promoted generally medium sized berries, but color and quality of the crop was excellent. Yields averaged 122.8 barrels per acre for the 1987 season.

Commercial apple production totaled 2.3 million bushels (42-pound units) in 1987, 1 percent above the previous year's crop. Prolonged dry conditions during the summer months promoted generally medium sized fruit. An estimated 2 million pounds were left unharvested due largely to a higher incidence of fruit drop. Value of the 1987 crop totaled $19.3 million, 7 percent above a year ago.

Peach growers in Massachusetts harvested 42,000 bushels (48-pound units) in 1987, 5 percent above 1986 output. Trees survived the winter in good shape, and frost damage was generally light to non-existent. Good bloom was reported, but cool, windy weather provided less than ideal pollinating conditions. The value of utilized 1987 production totaled $1.04 million, 20 percent above the previous year.

POTATOES:

Potato production in Massachusetts totaled 658,000 cwt. in 1987, down 1 percent from a year ago. Dry conditions persisted throughout the summer, with precipitation averaging 50 percent of normal until late August. Yields were extremely variable in the Commonwealth, depending on irrigation availability and shower patterns. Snow and heavy rains hit when the crop was ready to dig, making harvest slow and difficult. Despite less than optimum weather conditions, yields averaged 235 cwt. per acre, helping to offset a 100 acre drop in potato acreage. Value of the 1987 crop was placed at $4.3 million, 4 percent under the previous year's value.

VEGETABLES:

Production of tomatoes for fresh market sales totaled 125,000 cwt. in 1987, 2 percent less than in 1986. An increase in the average price per hundredweight from $55 to $65 between 1986 and 1987 raised the value of production to $8.1 million, a 16 percent increase. Production of sweet corn for fresh market sales in 1987 totaled 690,000 cwt., a 19 percent drop from 1986. Yield per acre, at 90 cwt., and acres harvested, at 7,1000, both were lower in 1987 than in 1986 and contributed to the decline in total amount produced. Average price received per cwt., of $15.80 was down from the record high of $17.50 in 1986. Value of the crop produced in 1987 totaled $10.1 million, 27 percent lower than the 1986 crop's value.

CRANBERRIES: ACREAGE, PRODUCTION, UTILIZATION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION 1/	UTILIZATION			SEASON AVERAGE PRICE PER BARREL 3/	VALUE OF UTILIZED PRODUCTION 4/
				FRESH SALES	PROCESSED	SHRINKAGE 2/		
		Barrels	1,000 Barrels				Dollars	1,000 Dollars
1977	11,200	78.1	875	207	576	92	17.70	15,488
1978	11,200	105.4	1,180	247	833	100	21.60	25,488
1979	11,200	96.4	1,080	130	880	70	26.60	28,728
1980	11,200	105.8	1,185	110	1,016	59	33.50	39,698
1981	11,200	104.6	1,172	205	875	92	41.50	48,639
1982	11,200	114.9	1,287	169	998	120	46.30	59,588
1983	11,200	126.9	1,421	177	1,217	27	51.70	73,466
1984	11,200	148.5	1,663	170	1,442	51	54.50	90,634
1985	11,300	149.3	1,687	167	1,472	48	54.80	92,448
1986	11,300	160.4	1,813	159	1,529	125	51.70	93,732
1987	11,800	122.8	1,449	143	1,277	29	n/a	n/a

1/ Includes cranberries that were put in set aside under the Cranberry Marketing Order.
2/ Berries paid for by processors and lost because of dehydration and berry breakdown after delivery.
3/ Equivalent return at first delivery point, screen basis.
4/ Excludes cranberries that were put in set aside under the Cranberry Marketing Order.

APPLES: PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	TOTAL PRODUCTION 1/	UTILIZED PRODUCTION	PRICE PER UNIT	VALUE OF UTILIZED PRODUCTION
	1,000 42-Pound Units		Dollars	1,000 Dollars
1977	2,262	2,190	5.38	11,776
1978	2,500	2,500	5.80	14,490
1979	2,262	2,262	6.51	14,725
1980	2,381	2,381	6.11	14,550
1981	1,976	1,976	8.35	16,501
1982	2,381	2,381	7.26	17,290
1983	2,310	2,310	7.10	16,403
1984	2,310	2,310	7.82	18,063
1985	2,119	2,024	7.70	15,594
1986	2,262	2,190	8.24	18,048
1987	2,286	2,238	8.63	19,319

1/ Estimates relate to production in orchards of 100 or more trees.

PEACHES: PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	TOTAL PRODUCTION	UTILIZED PRODUCTION	PRICE PER UNIT	VALUE OF UTILIZED PRODUCTION
	1,000 48-Pound Units		Dollars	1,000 Dollars
1977	42	42	10.48	440
1978	38	38	13.74	522
1979	38	38	15.16	576
1980	42	42	14.29	600
1981	4	4	17.50	70
1982	31	31	21.77	675
1983	35	35	22.34	782
1984	40	40	19.00	760
1985	44	44	19.57	861
1986	40	38	23.04	864
1987	42	42	24.76	1,040

POTATOES: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS 1977 - 1987

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION	AVERAGE PRICE PER CWT.	VALUE OF PRODUCTION
		Cwt.	1,000 Cwt.	Dollars	1,000 Dollars
1977	3,700	240	888	5.40	4,795
1978	3,600	225	810	6.30	5,103
1979	3,400	220	748	5.60	4,189
1980	3,400	220	748	7.50	5,610
1981	3,300	225	743	5.40	4,012
1982	3,800	205	779	3.90	3,038
1983	3,400	190	646	7.20	4,651
1984	2,900	200	580	5.40	3,132
1985	3,300	250	825	3.40	2,805
1986	2,900	230	667	6.70	4,469
1987	2,800	235	658	6.50	4,277

TOMATOES: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION	AVERAGE PRICE PER CWT.	VALUE OF PRODUCTION
		Cwt.	1,000 Cwt.	Dollars	1,000 Dollars
1977	560	190	106	20.40	2,162
1978	550	210	116	21.80	2,529
1979	510	190	97	24.60	2,386
1980	680	210	143	21.70	3,103
1981	760	215	163	20.10	3,276
1982	660	220	145	30.00	4,350
1983	570	165	94	30.00	2,820
1984	660	230	152	27.00	4,104
1985	670	245	164	27.00	4,428
1986	590	215	127	55.00	6,985
1987	580	215	125	65.00	8,125

SWEET CORN: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION	AVERAGE PRICE PER CWT.	VALUE OF PRODUCTION
		Cwt.	1,000 Cwt.	Dollars	1,000 Dollars
1977	7,800	60	468	8.90	4,165
1978	7,200	88	634	7.00	4,438
1979	7,700	84	647	8.99	5,817
1980	8,200	88	722	9.09	6,563
1981	8,800	85	748	11.71	8,752
1982	7,700	88	678	14.00	9,492
1983	8,700	92	800	13.30	10,640
1984	8,100	88	713	14.50	10,339
1985	7,900	94	743	12.80	9,510
1986	8,400	94	790	17.50	13,825
1987	7,100	90	639	15.80	10,096

MAPLE SYRUP

The production of maple syrup during the 1987 season in Massachusetts totaled 28,000 gallons, 7 percent less than the previous season. The decrease in production from previous year was due to lower yield per tap which more than offset a higher number of taps. The season was reported as being unfavorable, with the weather being mostly too warm. The season lasted 26 days. The average opening date was March 6, with the average closing date of April 1. The sweetness of sap was near normal with a reported average of 41 gallons of sap to make a gallon of syrup. The color of syrup was mostly medium to light. The 1987 maple crop averaged a record high $31.80 per gallon compared to $25.10 per gallon for maple syrup produced in 1986. The value of production for 1987 season totaled $890,000, up $137,000 from the 1986 crop. The increased value of production was due to the increase in average price, more than offsetting the decrease in production.

MAPLE SYRUP: PRODUCTION AND VALUE, MASSACHUSETTS, 1977 - 1987

YEAR	PRODUCTION	SEASON AVERAGE PRICE PER GALLON	VALUE OF PRODUCTION
	1,000 Gallons	Dollars	1,000 Dollars
1977	27	14.20	383
1978	28	14.10	395
1979	30	15.90	477
1980	20	18.40	368
1981	50	18.70	935
1982	48	20.20	970
1983	32	20.90	669
1984	43	20.60	886
1985	42	22.10	928
1986	30	25.10	753
1987	28	31.80	890

MAPLE SYRUP PRICES: BY TYPE OF SALE AND SIZE OF CONTAINER, MASSACHUSETTS, 1977 - 1987

YEAR	RETAIL					WHOLESALE					ALL SALES EQUIVALENT PER GALLON
	GAL	1/2 GAL	QUART	PINT	1/2 PINT	GAL	1/2 GAL	QUART	PINT	1/2 PINT	
	Dollars										
1977	12.30	6.90	4.05	2.65	1.80	11.20	6.05	3.70	2.40	1.50	14.20
1978	13.10	7.40	4.29	2.81	1.86	11.66	6.59	3.79	2.41	1.49	14.10
1979	14.88	8.37	4.84	3.12	2.13	12.53	7.13	4.09	2.66	1.77	15.90
1980	17.66	9.69	5.88	3.69	2.46	16.25	8.94	4.73	3.07	1.98	18.40
1981	18.69	10.73	6.23	4.07	2.59	16.44	9.39	5.39	3.33	2.01	18.70
1982	19.39	11.31	6.61	4.20	2.68	16.38	9.87	5.41	3.46	2.13	20.20
1983	19.29	11.08	6.56	4.23	2.64	17.09	9.76	5.74	3.42	2.23	20.90
1984	19.40	11.16	6.56	4.28	2.66	16.80	9.54	5.48	3.50	2.25	20.60
1985	20.30	11.70	6.80	4.20	2.75	17.75	10.20	5.70	3.50	2.25	22.10
1986	22.85	13.00	7.60	4.70	3.15	20.40	11.60	6.85	4.05	2.65	25.10
1987	27.85	16.00	9.30	5.80	3.75	26.35	15.85	8.60	5.05	3.20	31.80

PRICES PAID BY FARMERS INDEX NUMBERS ANNUAL AVERAGE UNITED STATES 1977 - 1987 BY YEARS (1977 = 100)

YEAR	COMMODITIES & SERVICES INTEREST TAXES & WAGE RATES	PRODUCTION ITEMS INTEREST, TAXES, & WAGE RATES	PRODUCTION ITEMS	INTEREST PAYABLE PER ACRE	TAXES PAYABLE PER ACRE	WAGE RATES FOR HIRED FARM LABOR 1/
1977	100	100	100	100	100	100
1978	108	109	108	117	100	107
1979	123	125	125	143	107	117
1980	138	139	138	178	115	127
1981	150	151	148	216	123	138
1982	159	159	153	249	124	144
1983	161	159	152	258	129	148
1984	165	162	155	257	132	151
1985	163	157	151	237	133	154
1986	159	150	144	219	134	160
1987	162	152	147	207	136	167

1/ Interest on indebtedness secured by farm real estate.
2/ Taxes on farm real estate.

INDEX NUMBERS OF PRICES RECEIVED BY FARMERS, BY COMMODITY GROUPS U.S. ANNUAL AVE. 1977 - 1987 (1977 = 100)

		C R O P S						LIYESTOCK & PROOUCTS				
YEAR	FOODS	GRAINS HAY	TOBACCO	COTTON	OIL BEARING CROPS	FRUIT	COM-MERCIAL VEGTABLES	TOTAL	DAIRY PROD-UCTS	POULTRY & EGGS	MEAT ANI-MALS	TOTAL	ALL PRODUCTS
1977	100	100	100	100	100	100	100	100	100	100	100	100	100
1978	122	101	109	91	93	137	105	105	109	106	134	124	115
1979	147	114	118	96	103	144	110	116	124	111	166	-147	132
1980	165	132	125	114	102	124	113	125	135	112	156	144	134
1981	166	141	140	111	110	130	136	134	142	116	150	143	139
1982	146	120	153	92	88	175	126	121	140	110	155	145	133
1983	148	143	155	104	102	128	130	128	140	118	147	141	135
1984	144	145	153	108	109	202	133	138	139	135	151	146	142
1985	133	122	153	93	84	180	129	120	131	119	142	136	128
1986	109	98	138	91	77	170	130	107	129	128	145	138	123
1987	103	98	129	98	79	182	144	106	129	107	163	146	127

FARM PRODUCTION EXPENDITURES, NORTHEAST 1/ AND UNITED STATES, 1987

EXPENDITURE 2/	NORTHEAST		UNITED STATES	
	AVERAGE PER FARM 3/	TOTAL EXPENDITURE 4/	AVERAGE PER FARM 3/	TOTAL EXPENDITURE 4/
	Dollars	Million Dollars	Dollars	Million Dollars
TOTAL FARM PRODUCTION EXPENDITURES	52,582	8,063	50,791	110,142
LIVESTOCK & POULTRY:	3,629	557	4,929	10,688
Cattle Purchased	1,894	290	3,817	8,278
Hogs & Pigs Purchased	101	15	405	879
Poultry Purchased	1,258	193	415	900
Sheep and Lambs Purchased	33	5	79	170
Other Livestock & Poultry Expenses	344	53	212	460
FEED:	12,867	1,973	6,857	14,869
Grains	1,385	212	1,181	2,560
Hays & Forages	513	79	669	1,451
Complete Rations or Formula Feeds	8,579	1,316	2,804	6,081
Protein Meals or Concentrates	1,281	196	1,217	2,640
Supplements	817	125	558	1,211
Minerals, Salts & Other Additives	292	45	427	927
FARM SERVICES:	8,136	1,248	11,061	23,987
Crop Custom Services	323	50	697	1,511
Livestock Custom Services	110	17	186	404
Transportation	1,182	181	528	1,146
Rent	1,142	175	4,685	10,160
Cash Rent	974	149	2,071	4,492
Share Rent	167	26	2,614	5,668
Marketing & Storage Expenses	823	126	922	1,999
Insurance	1,081	166	1,104	2,394
Leasing 5/	182	28	198	429
Miscellaneous Farm Business Expenses 6/	734	113	834	1,809
Utilities	1,633	250	1,354	2,936
Electricity	1,425	219	1,137	2,465
AGRICULTURAL CHEMICALS & SPRAYS 7/	1,057	162	1,731	3,754
FERTILIZER: 8/	2,192	336	2,951	6,399
Commercial Fertilizers	1,876	288	2,787	6,044

FARM PRODUCTION EXPENDITURES, NORTHEAST 1/ AND UNITED STATES, 1987

EXPENDITURE 2/	NORTHEAST AVERAGE PER FARM 3/	NORTHEAST TOTAL EXPENDITURE 4/	UNITED STATES AVERAGE PER FARM 3/	UNITED STATES TOTAL EXPENDITURE 4/
	Dollars	Million Dollars	Dollars	Million Dollars
INTEREST:	3,021	463	4,005	8,685
Farm Real Estate	2,256	346	2,697	5,849
Operating Loans	765	117	1,308	2,836
TAXES (PROPERTY ~ REAL ESTATE): 9/	1,795	275	1,259	2,730
LABOR EXPENSES:	5,566	854	4,613	10,003
Cash Wages	4,388	673	3,637	7,886
FUELS & LUBRICANTS:	1,694	260	2,006	4,351
Diesel	723	111	984	2,135
Gasoline - Bulk	432	66	442	959
Gasoline - Service Station	185	28	189	410
FARM SUPPLIES:	1,226	194	874	1,895
Supplies Used in Production	818	125	561	1,216
Containers Used for Marketing	448	69	313	679
BUILDING & FENCING:	2,934	450	1,145	2,482
New Construction & Remodeling	2,344	360	775	1,680
FARM AND LAND IMPROVEMENTS:	325	50	353	766
New Construction	231	35	238	516
TOTAL FARM MACHINERY:	5,693	873	5,072	10,998
SEEDS AND PLANTS:	1,311	201	1,633	3,540
TRUCKS AND AUTOS:	887	136	852	1,848
Trucks including beds, hydr. systems, etc. -	744	114	726	1,574

1/ Includes eleven states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont.
2/ Farm share.
3/ Total expenditure divided by number of farms.
4/ Totals may not add, due to rounding.
5/ Includes equipment renting.
6/ Excludes telephone and water, but includes irrigation water cost.
7/ Excludes seed treatments.
8/ Includes materials and applications.
9/ Includes landlord expenditures.

FARM BALANCE SHEET (Excluding Farm Households), MASSACHUSETTS, DECEMBER 31, 1982 - 1986

ITEM	1982	1983	1984	1985	1986
			Million Dollars		
Assets:					
Real Estate 1/	1,016.4	1,049.1	1,217.9	1,417.9	1,549.3
Livestock and Poultry 2/	81.1	66.1	64.9	64.1	55.5
Machinery and Motor Vehicles 3/	179.3	181.0	175.5	163.1	152.5
Crops 4/	26.1	26.1	26.4	24.3	18.1
Financial Assets	69.7	73.1	76.5	81.6	83.9
TOTAL FARM ASSETS	1,372.7	1,395.5	1,561.2	1,751.1	1,859.3
Claims:					
Real Estate Debt 5/	83.2	84.2	81.4	77.4	92.9
Non-Real Estate Debt 6/	140.5	126.7	133.0	126.7	118.8
TOTAL FARM DEBT	223.7	210.9	214.4	204.1	211.7
Equity	1,148.9	1,184.6	1,346.7	1,547.0	1,647.6

1/ Excludes value of operator dwellings.
2/ Excludes horses, mules, and broilers.
3/ Includes only farm share value for trucks and autos.
4/ All non-CCC crops held on farms plus the value above loan rate for crops held under CCC.
5/ Excludes debt on operator dwellings, but includes CCC storage and drying facility loans.
6/ Excludes debt for non-farm purposes.

FARM PRODUCTION EXPENSES, MASSACHUSETTS, 1982 - 1986

CURRENT FARM OPERATING EXPENSES	1982	1983	1984	1985	1986
			Million Dollars		
Feed	47.8	54.9	46.0	40.6	35.5
Livestock & Poultry	1.0	1.1	1.1	1.1	1.2
Seed	6.0	5.7	6.5	6.3	5.6
Fertilizer, Lime & Pesticides	13.7	12.3	12.6	15.0	13.3
Fuel & Oil	16.6	15.8	15.1	13.9	10.1
Repair & Operation	16.0	16.8	17.6	20.1	23.2
Labor	48.4	46.7	46.4	46.8	47.2
Interest	28.3	25.6	22.9	15.1	14.7
Property Taxes	12.3	14.8	14.2	15.8	16.4
Miscellaneous Expenses	45.5	50.4	52.4	49.7	49.3
Capital Consumption	73.2	75.1	79.8	84.2	91.8
Net Rent to Non-Operator Landlords	1.6	2.2	3.4	3.0	3.3
TOTAL PRODUCTION EXPENSES	310.4	321.2	318.1	311.6	311.7

FARM INCOME, MASSACHUSETTS, 1982 - 1986

ITEM	1982	1983	1984	1985	1986
			Million Dollars		
Gross Income					
Cash Receipts from Farm Marketings	351.9	368.3	413.4	389.1	422.8
Government Payments	.6	.7	3.1	2.4	5.7
Other Farm Income	9.2	9.7	11.9	13.8	13.7
Non Cash Income	65.7	68.0	66.1	82.4	94.2
Farm Production Expenses	310.4	321.2	318.1	311.6	311.7
Value of Inventory Adjustment	-1.5	-3.3	.9	-58.9	50.2
Net Farm Income	115.5	122.0	177.3	117.2	275.0

CROP AND LIVESTOCK PRODUCTION: RANK AMONG STATES, MASSACHUSETTS AND NEW ENGLAND, 1987

ITEM	UNIT	MASSACHUSETTS			NEW ENGLAND		
		PRODUCTION	RANK	%U.S. TOTAL	PRODUCTION	RANK	%U.S. TOTAL
CROPS:		1,000			1,000		
Cranberries	barrels	1,449	1	43.6	n/a	n/a	n/a
Apples	42-pounds	2,286	14	.9	7,500	8	3.0
Peaches, Freestone	48-pounds	42	28	.1	n/a	n/a	n/a
Corn for Silage	tons	629	31	.7	3,915	7	4.6
Hay, All	tons	291	43	.2	1,969	28	1.3
Potatoes, Fall	cwt.	658	21	.2	24,259	4	7.1
Tobacco	pounds	653	16	.05	3,369	14	.3
Sweet Corn	cwt.	639	8	4.1	n/a	n/a	n/a
Tomatoes	cwt.	125	18	.4	n/a	n/a	n/a
Maple Syrup	gallons	28	n/a	n/a	355	n/a	n/a
LIVESTOCK AND POULTRY:							
Eggs	each	273,000	37	.4	2,992,000	9	4.3
Milk	pounds	504,000	39	.4	4,515,000	8	3.2
Wool	pounds	107	33	.1	422	29	.5
Sheep	head	3.3	33	.3	18.4	18	1.4
Lambs	head	5.6	37	.1	34.6	29	.6
Hogs and Pigs	head	35	42	*	73.9	36	.1
Cattle	head	25	45	.05	194.2	38	.4
Calves	head	30	41	.3	163.7	26	1.5

* Less than-.05 percent

FARMS: NUMBER AND LAND, MASSACHUSETTS AND NEW ENGLAND, 1977 - 1988 1/

YEAR	MASSACHUSETTS			NEW ENGLAND		
	NUMBER OF FARMS	AVERAGE SIZE Acres	LAND IN FARMS 1,000 Acres	NUMBER OF FARMS	AVERAGE SIZE Acres	LAND IN FARMS 1,000 Acres
1977	6,200	111	690	28,300	182	5,155
1978	5,900	115	680	28,700	180	5,165
1979	6,200	113	700	29,900	173	5,165
1980	6,200	116	720	30,660	169	5,185
1981	6,100	115	700	30,920	169	5,225
1982	6,100	113	690	30,000	169	5,075
1983	6,100	110	670	30,200	167	5,045
1984	6,100	111	680	29,650	170	5,038
1985	6,000	113	680	28,950	169	4,893
1986	6,000	113	680	28,650	169	4,843
1987	6,000	113	680	28,650	169	4,833
1988	6,100	111	680	28,750	167	4,792

1/ A farm is a place as of June 1 that sells or could sell $1,000 of agricultural products during the year.

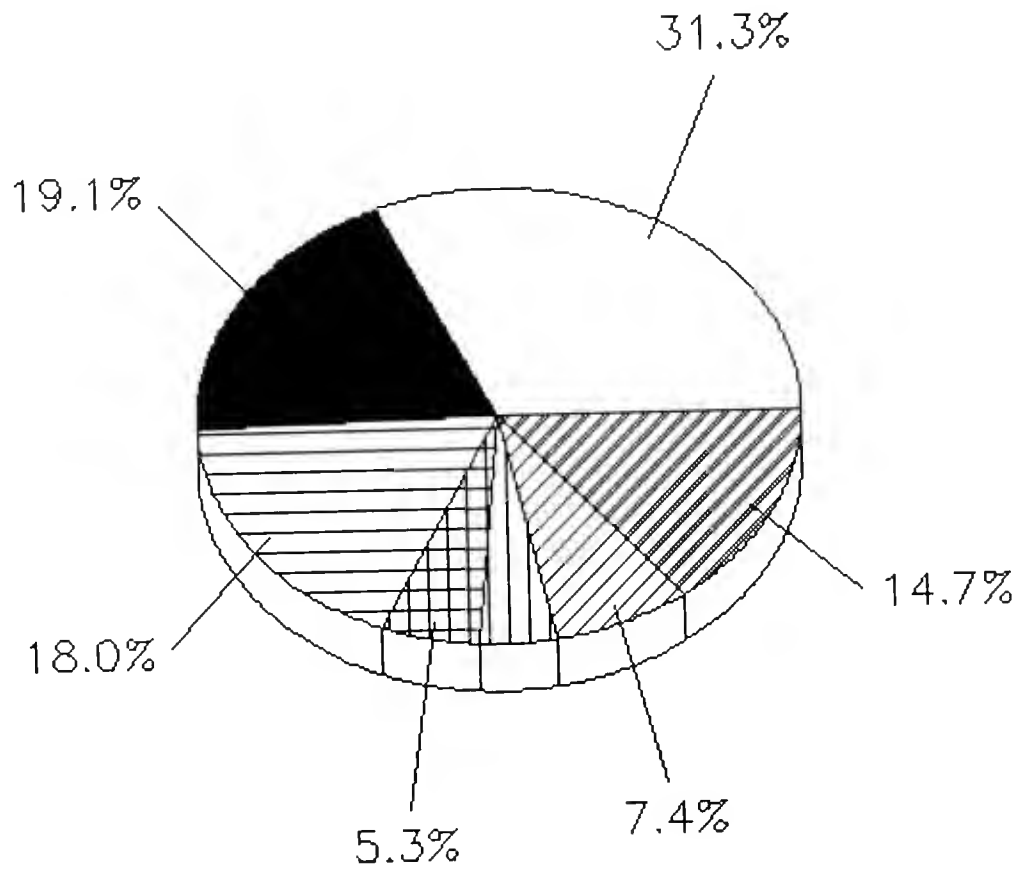
CASH RECEIPTS: MASSACHUSETTS, 1985 -1987

COMMODITY	1985	1986	1987
		1,000	
CROPS			
Hay	4,579	5,439	5,341
Tobacco	6,582	7,062	5,273
Potatoes	2,786	3,404	4,256
Corn, Sweet	9,510	13,054	10,096
Tomatoes	4,428	6,985	8,125
Misc. Veg.	12,156	13,054	12,750
Apples	15,956	18,297	17,671
Peaches	820	864	1,040
Cranberries	92,448	93,732	74,448
Other Berries	2,650	2,750	2,750
Misc. Fruit	400	475	475
Maple	928	753	890
Forest Prod.	1,400	1,400	1,400
Green/Nursery	105,344	116,604	122,123
Misc. Crops	3,850	3,150	3,150
TOTAL CROPS	263,837	287,794	269,788

COMMODITY	1985	1986	1987
		1,000	
LIVESTOCK			
Cattle/Calves	6,142	12,502	13,130
Hogs	3,948	4,009	4,016
Sheep/Lambs	504	486	524
Dairy Products	82,428	76,039	70,267
Chickens, Farm	731	557	531
Eggs	20,988	24,675	20,475
Turkeys	2,777	2,824	2,772
Other Poultry	3,560	2,972	2,562
Misc. Livestock	5,544	5,449	5,484
TOTAL LIVESTOCK	126,622	129,513	119,761
ALL COMMODITIES	390,459	417,307	389,549

MASSACHUSETTS CASH RECEIPTS

1987



- Green/Nursery
- Cranberries
- Dairy Product
- Eggs
- Other Crops
- Other Livesto
- Fruit/Veg.