

# MAINE STATE LEGISLATURE

The following document is provided by the  
**LAW AND LEGISLATIVE DIGITAL LIBRARY**  
at the Maine State Law and Legislative Reference Library  
<http://legislature.maine.gov/lawlib>



Reproduced from scanned originals with text recognition applied  
(searchable text may contain some errors and/or omissions)

LP  
Shelf  
1979

STATE LAW LIBRARY  
ANGUSTA, MAINE

Agriculture  
Maine

# REPORT of the Maine Food & Farmland Study Commission



HD  
1775  
.M2  
M35  
1979  
c.1

to the GOVERNOR and the  
109th MAINE LEGISLATURE  
June 1979

## MEMBERS

Commission Chairman — Dr. Frederick Hutchinson  
Project Director — Tyler Libby

### *Entrance to Farming Committee*

Dean Kenneth Wing — University of Maine — Orono (Chairman)  
Edwin Bates — Director of CES — Orono  
Rep. George A. Carroll — Limerick  
Leroy Hunter — Dairy Farmer — Unity  
David J. Vail — Economist — Brunswick  
Chaitanya York — Maine Organic Farmers and Gardiners Assoc. — Hallowell

### *Finance Committee*

Maitland Richardson — Poultryman — Skowhegan (Chairman)  
David E. Rowe — Orchardist — Newport  
Joseph Williams — Commissioner of Agriculture — Augusta  
Rep. Frank Wood — Springvale  
Richard Wood, Jr. — Dairy Farmer — Brunswick

### *Marketing and Transportation Committee*

Allen Pease — Director of State Planning Office — Augusta (Chairman)  
Richard Barringer — Commissioner of Conservation — Augusta  
William Harris — Dairy Farmer — Biddeford  
Senator Walter W. Hichens — Eliot  
Senator Matthew Levine — Winslow  
Lewis. R. H. McGlaughlin — President of Maine Association of Conservation Districts

### *Land Preservation Committee*

John Dawson — Poultry Representative — Winslow (Chairman)  
Richard Derosier — Potato Grower — St. Agatha  
Lionel C. Ferland — ASCS Representative — Auburn  
Robert H. McDougal — Orchardist — Springvale  
George E. Newhouse — Egg Producer — Pittsfield  
Henry Warren — Commissioner of Environmental Protection — Augusta



# Maine Department of Agriculture



Stewart N. Smith, Commissioner

Maine Food and Farmland Study Commission  
Fred Hutchinson, Chairman  
John Dawson, Vice Chairman  
Tyler Libby, Project Director  
600 State Office Building  
Augusta, Maine 04333  
Telephone 207/289-3874

TO: Governor Joseph E. Brennan  
Mr. Joseph Sewall, President of the Senate  
Mr. John Martin, Speaker of the House

FROM: Frederick E. Hutchinson, Chairman  
Maine Food and Farmland Study Commission

The Maine Food and Farmland Study Commission was established by the 108th Legislature with specific instructions to study the problem of farmland conversion to other uses and to recommend actions which would strengthen Maine agriculture. The Commission membership included legislators, department commissioners, university administrators, farmers and agricultural businessmen.

Initially the Commission held twelve public hearings at which representatives of the various agricultural industries in the state expressed their views of the primary constraints to the economic viability of agriculture. Following these hearings, the Commission studied the comments and then structured subcommittees to study each of the four problem areas which emerged. These subcommittees were specifically instructed to study and make recommendations on land preservation, entrance to farming, marketing and transportation, and finance.

Early in the deliberations of the Commission there was considerable discussion concerning the feasibility of developing a food policy for Maine. The Commission members recognized the consumer interest in such a policy, but the majority did not feel it was feasible to undertake such a comprehensive study within the time and resources available to the project. Therefore there are no recommendations in this report relative to consumerism.

The reports submitted by the subcommittees were reviewed, modified and eventually combined by the whole Commission into a draft report which was released for public scrutiny. Public reaction was gathered at three hearings and the comments were reviewed by the Commission and incorporated into this final report which is submitted to you.

The recommendations are intended to be specific and practicable. The Commission feels strongly that the vitality of the family farm is essential to the future of Maine agriculture and this report is aimed to that end.

FH:TL/mmg

## Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

## Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee



## TABLE OF CONTENTS

### COMMISSION FINDINGS AND RECOMMENDATIONS

Introduction . . . . .	1
Farmlands . . . . .	3
Marketing . . . . .	5
Transportation . . . . .	7
Energy . . . . .	8
Finance . . . . .	9
Government . . . . .	10
Education . . . . .	11
Entrance to Farming . . . . .	12
Implementation . . . . .	13

### COMMITTEE REPORTS

* Farmland Preservation . . . . .	15
* Marketing and Transportation . . . . .	24
* Finance . . . . .	36
* Entrance to Farming . . . . .	42

### APPENDIX

* Maine Food and Farmland Study Commission Statute . . . . .	i
* Farmland Preservation Methods . . . . .	iii
* Study of Non-Point Agricultural Pollution - Excerpts and Summary . . . . .	xii
* Transportation in Maine . . . . .	xix
* Energy Use in Maine Agriculture - Agricultural Engineering Department - University of Maine at Orono . . . . .	xxv
* Marketing and Market Development . . . . .	lxix
* Farm Finance in Maine . . . . .	lxxxiii
* Agricultural Programs at the University of Maine at Orono . . . . .	ciii
* Vocational Agricultural Programs and Activities in Maine . . . . .	civ
* Maine Organic Farmers and Gardeners Assoc. Apprenticeship Programs . . . . .	cvi
* Agency Cover Letters . . . . .	cvi

\*Available on Request: Maine Food and Farmland Study Commission  
Department of Agriculture  
State Office Building  
Augusta, Maine 04333 Tel.: 289-3874

Cover Map: White depicts areas where more than 50% of land is cleared land in  
Agricultural use - State Planning Office.



COMMISSION  
FINDINGS AND RECOMMENDATIONS





## COMMISSION FINDINGS AND RECOMMENDATIONS\*

### INTRODUCTION

This report is the result of more than a year of study and deliberation by the Maine Food and Farmland Study Commission. This Commission, composed of 24 members from various agricultural industries and public agencies, was created in 1977 to address food and farmland issues in Maine and report to the 109th Legislature on policies and programs needed: to protect Maine's agricultural lands, to promote agricultural use of these lands, to increase self-sufficiency in food production, to improve direct marketing of native foods, and in other ways serve the interests of food producers and consumers in the state.

To meet this charge, the Commission held twelve public hearings throughout the state to take testimony on agricultural issues from farmers, agri-businessmen, bankers, consumers, and other interested persons. Four committees were then formed to further investigate issues in farm finance, marketing and transportation, land preservation and the special needs involved in entrance to farming. Committee members were assisted in their work by the Commission's project director, and by research undertaken by the Maine Department of Agriculture, the State Planning Office and other sources. The Commission's report represents a synthesis of many of the major recommendations of the four committee reports - with a number of modifications voted on by the full Commission. Individual committee reports are included in this report, for further reference. Several other important reference reports are also included in this report as appendices.

In early deliberations, the Commission decided to focus its efforts on farmland preservation and farm economic issues. Broader considerations such as rural development, quality of rural life, and consumer needs were only peripherally addressed. The Commission felt that it could best meet the Legislative mandate with the time and resources available, by so limiting the study. However, there are important links between the issues addressed by the report and the larger issues. For example, the Commission selected as a goal increased local production of food; this will not only require an expanded rural economy but will also provide a better supply of high quality foods for consumers.

It is important to note that while the Commission has made recommendations on a great variety of food and farmland issues, several problem areas in agriculture are considered to be of particularly high priority. These special problem areas are as follows: 1) the relatively unfavorable image of Maine potatoes in the market place; 2) the relatively high cost of transporting feed grains to Maine and the competitive disadvantage for poultry and dairy farming resulting from this situation; 3) the continuing decline of Maine's farmland base due to development pressures, abandonment and erosion; 4) the inadequacy and inefficiency of the marketing outlets and practices for smaller farmers in the state; and 5) the continuing difficulty in securing and utilizing labor for the crucial job of harvesting some of Maine's most valuable agricultural crops - especially apples.

This final report of the Maine Food and Farmland Study Commission addresses these important issues and many others in the interest of improving the long-term prosperity of agriculture in Maine. The recommendations proposed in this report



cannot resolve every issue raised by or before the Commission, nor can these recommendations be implemented without change within the farming community. It is felt, however, that these recommendations represent a realistic set of actions to be taken by government in order for Maine to realize a greater measure of agricultural prosperity.

---

\* The following 13 pages represent the views of the Commission. These are not always consistent with the committee reports or appendices.



## FARMLANDS

AGRICULTURE RELIES ON AN AVAILABLE FARMLAND RESERVE. FURTHER REVITALIZATION OF AGRICULTURE DEPENDS UPON FUTURE AVAILABILITY OF ADEQUATE FARMLANDS.

*I. Land Use: Only 1 million of Maine's 18 million acres of land are considered to be prime soils according to the USDA. Most non-farm development has not occurred in areas where the best farmlands exist.*

*Farming requires access to both marginal and highly productive croplands. Highly productive cropland is not only essential and scarce, but also irreplaceable. Conversely, marginal farmlands are less essential and relatively abundant.*

It is recommended that:

A. The Legislature create and fund agricultural districts as described herein. The program would be administered by and coterminous with existing soil and water conservation districts. In return for voluntarily restricting farmland development, farmers would receive property tax reduction, reduced nuisance law liability, conservation assistance priority, more protection from eminent domain, reduced inheritance tax liability, and investment tax advantages. The program would replace the existing Farm and Open Space Tax Law.

B. The state officially adopt a policy to encourage the preservation and conservation of agricultural lands, especially highly productive croplands.

C. The Maine Department of Agriculture be charged with the responsibility of defining an ongoing program to facilitate farmland conservation and preservation. This program needs to include studies of land use trends and soil erosion monitoring. Additionally, the Maine Department of Agriculture identify the most productive agricultural lands. These lands consist of existing highly productive cropland of 10 acres in size or larger. The Commissioner report the results of these studies at least biennially to the legislature and the Governor.

D. The State of Maine urge the Soil Conservation Service to accelerate publishing of prime soils maps in the Interstate 95 corridor.

*II. Soil Erosion: Maine's 303,000 acres of tilled cropland is losing an average of 6 tons of soil per acre per year. This is twice the USDA accepted rate. The most extensive erosion is in Aroostook County, while the highest rate of erosion is in the Knox-Lincoln County area.*

It is recommended that:

A. The State of Maine encourage the Agricultural Stabilization and Conservation Service to allocate conservation funds to farms with the greatest erosion problems first. Funding should be limited to bona fide farmers who are willing to enter into long-term arrangements to conserve their soil and water resources.

B. The State of Maine encourage the Agricultural Stabilization and Conservation Service and the Soil Conservation Service to increase service in those areas of the state with the greatest agricultural erosion and resulting water pollution problems.

*III. Federal Funding of Development: Federal agencies finance over 60% of all rural housing starts.*

It is recommended that:

A. The state encourage the Farmers Home Administration and other federal loan agencies to discontinue making loans for development on highly productive agricultural lands.





IV. Environmental Laws: In the face of market pressures, state environmental laws and local planning policies have not protected highly productive lands from development. Prime agricultural soils are often also the best soils for development.

It is recommended that:

A. The existing state, federal and local development review processes be strengthened to allow more consideration for farmlands preservation. Further, the Maine Department of Agriculture be charged with assuring that federal and state processes do not unduly cause the loss of highly productive farmlands. This role can best be done through existing A-95 and state agency review processes.

V. Soil Fertility: Maine soils are not naturally fertile. Due primarily to compaction and low soil organic matter levels, Maine's productivity increases have not kept up with the rest of the nation.

Aroostook County has 82% of Maine's tilled cropland, but only 6% of the state's livestock. Additionally, rotation crops in Aroostook are not being utilized. For these reasons, Aroostook has no readily available organic matter to improve soils.

It is recommended that:

A. The University of Maine at Orono expand research and extension activities in conservation. Priority programs would be those that would: develop viable rotation crops for Aroostook, reduce soil improving materials. Also it is recommended that the University develop a more comprehensive soil audit program.

VI. Economics: The facts do not support the premise that farming is declining primarily due to developmental pressures. Most farmland losses are not to more intensive, but less intensive uses (abandonment). Abandonment has occurred due to adverse economic conditions.

It is recommended that:

A. The programs found elsewhere in this report, which strengthen the economic viability of farming, be implemented.



## MARKETING

FEW ISSUES ARE AS DIVERSE, COMPLEX AND CRUCIAL TO THE PROSPERITY AND PROFITABILITY OF MAINE'S AGRICULTURAL ECONOMY AS MARKETING ISSUES.

*I. Market Coordination: The trend toward fewer, larger, more specialized farms has influenced the dynamics of our marketing system. To compete, smaller more diversified producers must also be able to provide a consistent volume of high quality products.*

*High capital requirements of farm production, compounded by the high risk factors, dictate that producers reduce marketing risks. Forward contracting, integrated production/marketing operations, marketing cooperatives and other arrangements will have to be increasingly relied upon.*

It is recommended that:

A. The Farmers Home Administration be requested to use its expanded authority to increase financing of small farm marketing and storage cooperatives. Also the Farmers Home Administration should be more sensitive to the needs of farmers attempting to produce new commodities and/or use innovative production and marketing techniques.

B. The Maine Cooperative Council be encouraged to support a staff which would offer technical assistance in developing production, storage, marketing and purchasing cooperatives in Maine.

C. The State of Maine support forward contracting of potatoes and trading of potatoes futures. The state support the study currently under way by the USDA to determine whether any modifications may be desirable to guard against possible price manipulation of commodity exchanges. The state then evaluate the effectiveness and desirability of the New York Mercantile Exchange and recommend retention, modification, elimination or substitution of this forward pricing mechanism as may be appropriate.

D. The state support the retention of the existing milk price regulatory structure administered by the Maine Milk Commission.

*II. Quality Control and Promotion: One of the most fundamental factors in food marketing is quality. Maine's products generally have an excellent quality image in the market place. Potatoes, however, suffer from an image of poor and inconsistent quality relative to products from competing areas. Largely as a result of this problem, Maine's share of the national potato market has declined significantly.*

It is recommended that:

A. Regulations be adopted by the Maine Department of Agriculture which require that potatoes shipped from Maine exceed the requirements of the U.S No. 1 grade.

B. The Maine Department of Agriculture develop an active "Buy Maine" program which would be tied to quality standards. Agricultural commodities should be exempted from the State Development Office's "Product of Maine" program which has no quality control provisions.

C. The Legislature enact legislation requiring the exclusive use of seed potatoes which meet certification standards in the planting of all commercial potato crops. All seed imported into Maine be inspected to ensure that Maine's standards are met.



D. The Legislature strengthen Maine branding laws in order to increase compliance by potato shippers.

*III. Local Market Development: Maine is now a net exporting state of agricultural products. Major expansion of Maine's agriculture will require penetration of New England and New York markets as well as local markets. Direct farmer to consumer marketing can, in a limited but significant way, increase the price received by the grower and expand local market volume. Due to rising energy costs, new opportunities will open to grow and locally market more new crops as well as crops already grown in Maine. Direct marketing also serves as a learning process to new and part-time farmers as they build up to full-time operations.*

*Trends toward more processed food continue. Increased domestic food processing can add great economic benefits to Maine.*

It is recommended that:

A. The Maine Department of Agriculture be funded and charged with implementing a comprehensive direct farmer to consumer marketing program. A direct marketing directory for Maine be published and made available to the public.

B. The Maine Department of Agriculture be charged to make public institutions aware of the advantage of buying locally produced goods. Pilot programs be implemented to determine feasibility of local institutional buying. If pilot programs prove the feasibility, public institutions should be required to purchase some or all of their needs locally. Support mechanisms may be needed.

C. The Maine Department of Agriculture be charged to study purchasing and pricing policies of large buyers of agricultural products, encourage them to buy locally, and discourage restrictive and discriminatory buying practices.

D. The University of Maine at Orono and the Maine Department of Agriculture be charged with identifying markets for alternative agricultural products.

E. The University of Maine at Orono and the Maine Department of Agriculture be charged with developing markets for undersized and off-grade produce--especially potatoes.

F. The Maine Department of Agriculture, with assistance of other state agencies and private groups be charged with studying the feasibility of revitalizing the local food processing industry.

*IV. Advisory Organizations: More effective coordinating mechanisms are needed to increase the effectiveness of various marketing activities by reducing uncertainties in pricing and improving market leverage.*

It is recommended that:

A. The Governor, by Executive Order, reactivate the Agricultural Advisory Council and that this group represent all sectors of Maine's agricultural industry and advise the Governor on agricultural issues.

B. The Commissioner of Agriculture create two new task forces, one for produce and one for livestock. Specifically these task forces investigate and make recommendations regarding the need of coordinating arrangements and mechanisms within their respective industries.



## TRANSPORTATION

MODERN AGRICULTURE IS HIGHLY DEPENDENT UPON A COMPLEX AND HIGHLY EFFICIENT TRANSPORTATION SYSTEM. MAINE, BECAUSE OF ITS RELATIVELY ISOLATED GEOGRAPHICAL LOCATION AND LOW DENSITY OF ECONOMIC ACTIVITY, TENDS TO BE MORE VULNERABLE TO TRANSPORTATION CRISES THAN MANY OTHER PARTS OF THE COUNTRY.

*I. Railroads: Maine's rail system is fragmented and one line is bankrupt; rail transportation of agricultural export products--especially potatoes--has dropped dramatically while the state's farmers are still dependent upon rail for bulk imports of fertilizers and feeds.*

It is recommended that:

A. Department of Transportation be charged with providing inputs to the federal process to precipitate the consolidation of Maine railroad lines into one system.

*II. Intermodal: Water transportation of most farm commodities or farm production materials has not proven feasible.*

*Transportation service in Maine might be made more efficient by initiating energy efficient intermodal services between truck, rail and possibly water transportation system.*

It is recommended that:

A. The State of Maine and specifically the Department of Transportation facilitate intermodal service by supporting the elimination of legal barriers to intermodal ownership, supporting improvement of cargo port facilities, and conducting an experimental "piggy back" transportation program.

B. The Maine Department of Agriculture and the Department of Transportation undertake research to determine ways in which deregulation proposals might affect Maine agriculture, and ways in which the Interstate Commerce Act might be amended to modernize and improve agricultural transportation in Maine.





## ENERGY

WHILE FOOD PRODUCTION USES ONLY 3% OF THE TOTAL ENERGY USED IN THE UNITED STATES, CHANGES IN THE AVAILABILITY AND/OR PRICE OF ENERGY CAN HAVE A MAJOR IMPACT ON FOOD PRODUCTION IN MAINE.

*I. Energy Shortages: Reductions in availability of energy to agriculture could severely restrict agricultural output.*

It is recommended that:

A. The Office of Energy Resources ensure that adequate provisions are made in the state energy plan to provide energy for food production, processing and transportation, in cases of energy shortages.

*II. Energy Costs: Maine agriculture is oil fueled, compared to the more abundant natural gas used by many competing agricultural areas.*

*High energy usage in Maine agriculture, compared to other areas include: high energy cost of importing feed and fertilizer; high heating costs; a relatively high use of gasoline rather than diesel fuel; comparatively greater usage of fertilizers, due to low natural soil fertility; relatively high energy requirements for usage of Maine's small scattered fields consisting of soils that generally suffer from poor workability.*

*In cases where Maine products compete in eastern markets with products from the west, Maine has an energy related transportation advantage. But the very low percentage of total energy used for food transportation compared to the great success of western producers penetrating eastern markets, suggests that this energy related advantage is not great.*

It is recommended that:

A. The Office of Energy Resources be charged to form an agricultural energy task force. It would be made up of representatives of the Maine Department of Agriculture, The University of Maine at Orono, the Office of Energy Resources and knowledgeable public members who would actively address energy conservation and development issues, sponsor research work, and initiate pilot demonstration projects. The University of Maine, as a part of the task force, initiate an active program of technical assistance, training and education regarding agricultural energy matters.



## FINANCE

CAPITAL AND CREDIT NEEDS IN AGRICULTURE HAVE CHANGED RAPIDLY IN RECENT YEARS. IN THE PAST 8 YEARS, CAPITAL AND CREDIT REQUIREMENTS FOR FARMING HAVE DOUBLED.

*I. Availability: An abundance of capital is now available to established farmers. This surplus of capital has stimulated a persistent oversupply of major commodities and has had a tendency to keep marginal farmers in business while making better farm businesses marginal.*

It is recommended that:

A. Public funding for agricultural production be aimed at financing only those who can demonstrate a market and have sound marketing plans.

*II. Low Equity Newcomers: Would be farmers who have the required skills to become successful, but have little collateral, often have not been able to enter farming. If the family farm is to be strengthened, new generations of would-be farmers must be able to enter farming.*

It is recommended that:

A. The legislature create a fund administered by the Maine Department of Agriculture, which would make low interest, deferrable payment loans available for land for would-be farmers. For administration, see recommendation #1 in the ENTRANCE TO FARMING section of this report.

B. Public funds be restricted to family farms that are ultimately intended to support at least one family and where the family retains a maximum amount of entrepreneurial control.

C. The Maine Department of Agriculture actively encourage banks to do more farm financing. Additionally, the Maine Department of Agriculture encourage the Farmers Home Administration to make more guaranteed loans and fewer direct loans so that banks can regain more farm financing.

D. The Maine Department of Agriculture be charged with providing input to the federal process in support of expanded national crop insurance.

*III. Farm Finance/Conservation Considerations: Often recipients of public farm financing abuse the soil and water resources of their farms.*

It is recommended that:

A. The Maine Department of Agriculture urge public lending agencies such as FmHA to include proper management of soil and water resources as a prerequisite to funding.



## GOVERNMENT

GOVERNMENT POLICIES, RULES, AND REGULATIONS HAVE A SIGNIFICANT IMPACT UPON AGRICULTURE. ALTHOUGH INDIVIDUAL GOVERNMENTAL REGULATIONS AND POLICIES MAY BE INSIGNIFICANT, THE COMBINED EFFECT MAY ADVERSELY AFFECT AGRICULTURE.

*I. Labor Laws: Liberal Workmen's Compensation Benefits require that Maine farmers pay higher rates than farmers in competing areas. These taxes, when combined with other labor taxes, make the cost of employment excessive.*

*Recent Child Labor Law changes essentially prevent children from participating in traditional employment such as potato harvest.*

*Regulations governing the import of alien agricultural workers into the United States have become difficult to adhere to. Apple industry spokesmen unanimously agreed that the inaccessibility of willing and efficient labor is their single most serious problem.*

It is recommended that:

A. The Maine Department of Agriculture and the Department of Labor encourage the federal government to empower the State of Maine to decide if alien labor is needed for harvest operations. It is further recommended that the Department periodically assess and make recommendations to the legislature regarding the impact of labor laws on agriculture.

B. The Maine Department of Labor encourage the federal government to modify labor laws to allow more appropriate use of children in harvesting Maine's agricultural crops.

*II. Health Laws: Future Occupational Safety and Health Administration regulations may impose a significant burden on agricultural enterprises. Hardest hit will be those diversified enterprises with a great deal of older equipment.*

*Many health rules and regulations require costly farm modernization and can be a barrier to would-be entrants to farming.*

It is recommended that:

A. The Maine Department of Agriculture periodically assess the impact of occupational safety and health laws on agriculture and recommend changes as necessary.

*III. Inflation: Inflation is particularly harmful to farmers who cannot easily pass higher production costs on to consumers. During times of high inflation non-farmers are attracted to invest in farm real estate using land as a hedge; thus escalating farmland values.*

*Some tax provisions encourage "tax loss" farming, create unfair competition, stimulate overproduction and increase competition for farmland.*

It is recommended that:

A. A capital gains tax penalty on short-term land investment be created by the legislature to reduce short-term land speculation.





## EDUCATION

SUCCESSFUL MODERN AGRICULTURE REQUIRES KNOWLEDGE OF SOPHISTICATED PRODUCTION, MANAGEMENT AND MARKETING METHODS.

*I. Education: Agricultural education programs need to be strengthened in order to provide levels which allow farmers to keep abreast of new technologies. Many would-be entrants to farming have a totally unrealistic idea of commercial farming and have little opportunity to gain needed pre-entry experience. Educational programs must be made available to allow people of non-farm backgrounds to gain both formal and informal technical education.*

It is recommended that:

A. The Maine Department of Education and Cultural Services adopt a policy for Maine agriculture and create educational programs for kindergarten through adult regarding agriculture and our food system.

B. The Cooperative Extension Service and the University of Maine's Experimental Station at Orono expand research and educational programs designed for family farms.

C. The University of Maine at Orono implement a comprehensive program which would combine an apprenticeship program with a formal associate degree program in Small Farm Management.

D. The Maine Department of Agriculture identify successful farmers willing to work as advisors and match them up with new farmers desiring assistance.

E. The University of Maine at Orono collect, analyze and adapt data from world wide sources on alternative technologies. A library of existing methods be maintained with more popular information published for easy access.

F. The Experiment Station's Small and Part-Time Farmer Advisory Committee be charged with recommending ways in which future implementation of the Commission's report can serve the interests of small and part-time farmers. Their recommendations will be submitted to the relevant agencies.

G. The Maine Department of Agriculture establish a speakers bureau as well as facilitate media coverage to educate Maine people regarding agriculture and the findings of the Commission.

H. The State Board of Education encourage local school boards to expand and upgrade the vocational agricultural programs. More vo-ag teachers need to be employed.



## ENTRANCE TO FARMING

IF THE FAMILY FARM IS TO SURVIVE, QUALIFIED NEW GENERATION FARMERS MUST BE ABLE TO ENTER FARMING. ENTRANCE TO FARMING REQUIRES A GOOD AGRICULTURAL CLIMATE AND THEREFORE MUST BE INTEGRATED WITH ALL SUBJECT AREAS.

*I. Economic Factors: Entrance to farming only makes sense if existing operations are profitable and if entrants have a reasonable chance of succeeding. Adequate financing and marketing mechanisms are needed to allow entrance of new people into farming.*

*Due to the state's topography and climate, large-scale crop farming is only possible in a few areas. If agriculture is to expand, the smaller family farm must become viable.*

*Existing entrance to farming services are scattered and not coordinated.*

It is recommended that:

A. The legislature create and fund a development mechanism within the Maine Department of Agriculture that would coordinate entrance to farming activities. Such a division would also coordinate activities aimed at establishing marketing and storage cooperatives and would administer the Farm Land Loan program recommended in the FINANCE section of this report.

*II. Land Availability: Land must be available for farming. Competition for land is especially strong in attractive areas such as the coast and mountain regions. Non-farm ownership of land often makes land inaccessible to Maine farmers.*

It is recommended that:

A. The Maine Department of Agriculture be charged with developing programs which encourage non-farm landowners to lease their land to farmers.

B. The Maine Department of Agriculture annually monitor intergenerational transfer taxes. These taxes need to facilitate the transfer of farms to efficient new generation farmers.



## IMPLEMENTATION

Implementation of all of the programs recommended in this report will require both significant efforts and capital commitments by the state and federal governments as well as the private sector. Solutions outlined in the report require redirection of federal programs, a significant expansion and redirection of state programs, an optimistic mood on the part of Maine business and the political support of Maine people.

This report recommends the state, for the first time, deal with non-regulatory agricultural functions. Increased coordination between federal and state programs will be essential to reduce conflicting goals and duplicative efforts.

### State and State Supported Agencies

Maine Department of Agriculture - The Maine Department of Agriculture will be most impacted by the Commission's recommendations. Traditionally, the department has been a regulatory agency. This report calls for expanding non-regulatory roles as well as strengthening existing regulatory functions. Substantial increases in funding and possibly some restructuring of the department will be required.

It is recommended that the Maine Department of Agriculture be charged with developing and carrying out an ongoing program to encourage farmland preservation and conservation. Specifically, the Department is requested to identify Maine's most highly productive lands and keep track of trends that affect them.

It is recommended that the Department's marketing activities be expanded to include increased control of commodity quality and to improve market identification, coordination, and promotions.

The legislature is asked to create a mechanism within the Department of Agriculture to coordinate entrance to farming activities.

The sixteen Soil and Water Conservation Districts are requested to administer an agricultural districts law, which would require funding as well as authorization. This program would offer farmers incentives to voluntarily restrict farmland development.

University of Maine at Orono - The University of Maine is requested to provide significantly expanded services to the agricultural community. Agricultural research and education needs to be increased to meet the demands of smaller and part-time farmers. The Cooperative Extension Service needs to increase its capability to serve a more diverse clientele.

Department of Transportation - The Department of Transportation is asked to study the effects of transportation regulations and/or deregulation on the health of Maine agriculture and to take actions to improve transportation efficiency.

Others - The Department of Manpower Affairs, Bureau of Labor, the Department of Education and Cultural Services and others are also asked to perform very important functions; however, it is not felt that added authorization or funding is needed for them to carry out those functions.



### Federal Agencies

Farmers Home Administration, Soil Conservation Service, and the Agricultural Stabilization and Conservation Service are all encouraged to modify their programs to better suit the unique needs of agriculture in Maine.

### Private Sector

It is recognized that government actions which influence private enterprise are only effective if the business community responds favorably to the various public sector programs.





## COMMITTEE REPORTS



FINAL REPORT  
OF THE  
COMMITTEE ON FARMLAND PRESERVATION

MAINE FOOD AND FARMLAND STUDY COMMISSION

John Dawson - Poultry Representative - Winslow (Chairman)  
Richard Derosier - Potato Grower - St. Agatha  
Lionel C. Ferland - ASCS Representative - Auburn  
Robert H. McDougal - Orchardist - Springvale  
George E. Newhouse - Egg Producer - Pittsfield  
Henry Warren - Commissioner of Environmental Protection - Augusta

## CONTENTS

1. Assignment to the Farmland Preservation Committee . . . . .	16
2. Introduction	
A. Farmland Preservation . . . . .	17
B. Farmland Conservation . . . . .	18
3. Findings and Recommendations . . . . .	19

### 1. ASSIGNMENT TO THE FARMLAND PRESERVATION COMMITTEE

The charge of this Committee was to investigate those issues that relate to the farmland availability and quality.

We were to determine what land, if any, was essential to agricultural revitalization and which methods would be required to preserve this land.

Soil quality issues such as erosion, organic matter levels, compaction and soil productivity were also to be addressed.

## 2. INTRODUCTION

### FARMLAND PRESERVATION

Nationally, each year, about 500,000 acres of our 400 million acres of cropland are converted to urban uses. About 1% of the 1950 U.S. cropland base was developed between 1950 and 1974.<sup>1</sup> This trend toward urbanization and suburbanization of land near urban centers is expected to continue well into the 1980's because demands for new housing remain strong. Incidentally, recent studies indicate that "the amount of cropland urbanized per person" averages .052 acres in the northeast.<sup>2</sup> In addition to urbanization, abandonment takes another 2.2 million acres annually. About 1.3 million acres of cropland are "created" each year so that a net cropland loss of 1.4 million acres is realized. According to a recent USDA report, the U.S. has an 111 million acre cropland reserve.<sup>3</sup> All this leads to the conclusion that national cropland conversion to irreversible uses is not occurring at an alarming rate.

Maine does not have an abundance of cropland. Only about 1 million of Maine's 19 million acres are considered to be prime farmland according to the Soil Conservation Service. Currently that agency (SCS) is preparing Prime Farmland maps for all counties with published soils surveys. These maps along with Geographical Survey maps, Land Use maps, and the recently published SNAP maps,<sup>4</sup> show us generally where Maine's best cropland is. Currently, according to the SCS SNAP study, 82% of all tilled cropland is in the northernmost county of Aroostook. Although these "SNAP Maps" do not show the location of prime soils or smaller plots of cropland, they do show generally where the most economical cropland is.

Federal and state policies have often conflicted with the goal of farmland preservation. Some of these include:

1. Federal Financing finances over 60% of the new housing starts in rural Maine.<sup>5</sup> This means that the federal government has a great influence on the development of rural areas. The federal government thus indirectly exerts a great pressure on cropland.

2. "Tax Loss Farming" exists due to federal tax laws. These laws lead to non-farm ownership of farmland which ultimately makes land more available for development. (See the Maine Food and Farmland Study Commission Report - "Tax Loss Farming".)

3. Inflation has been identified as a major cause of the farmland problem. Non-farmers are attracted to real estate during times of inflation using land values as a hedge. Once the land is removed from farm ownership, it is statistically much more likely to be developed.

---

1. USDA, "Issue Briefing Paper, Land Use", Office of Governmental and Public Affairs, Washington, 1978.

2. Zeimet, et. al.. "Dynamics of Land Use in Fast Growth Areas", ERS, USDA Agricultural Economics Report No. 325, Washington, April 1976.

3. Dideriksen, et. al., "Potential Cropland Study", SCS, USDA Statistical Bulletin No. 578, Washington, October 1977.

4. SCS, USDA, "Study of Non-Point Agricultural Pollution", Orono, 1978.

5. From State Planning Office estimates based upon data gathered in a study entitled "The Status of Housing in Maine".

4. State Environmental Laws often encourage housing to be located on better soils which often are also prime croplands.

5. Large Lot Zoning is often implemented because it "makes land too expensive to develop". Actually this type of zoning can cause increased urban sprawl.

6. Present Property Taxes penalize building in the urban areas and encourage people to build in the rural areas. Current taxes disproportionately place the tax burden on improvements. Additionally, rural taxes are usually too low to compensate to the real cost the new people impose upon the community. This encourages development out of the urban area because it makes it appear to be cheaper to live in those areas.

As previously stated, the greatest losses of cropland are not to more intensive, but less intensive uses (abandonment). This is true both nationally and locally. Abandonment takes place primarily in areas where agricultural economics are not favorable. New England is an area which has lost many agricultural advantages to other areas. If farmland preservation is to be meaningful, Maine agriculture must become profitable.

#### FARMLAND CONSERVATION

Maine's farmlands also suffer from misuse. Some existing cropland is being destroyed by soil erosion and much is becoming less fertile. This destruction of the soil resources must be reduced if land preservation is to be meaningful.

According to a recent SCS study, Maine's 303,000 acres of cropland is losing an estimated 6 tons of soil per acre per year. The most extensive erosion was found in the central Aroostook County area, while the highest rate of erosion was found in the Knox-Lincoln County area.<sup>1</sup> Six tons per acre is approximately equal to .04 inches of soil and is twice the rate acceptable by USDA criteria. "About 60% of the state's cropland needs conservation treatment to reduce soil loss to tolerable levels."<sup>2</sup>

Various factors are causing these excessive soil losses. The major factor is the steep grade of the slopes of Maine's crop fields. The factors are summarized by county in Table 3 of Appendix LAND 2. (See Appendix LAND 2 entitled Exerpts and Summary of the SCS USDA Study of Non-Point Agricultural Pollution.)

Soil fertility has been declining on much of Maine's cropland. Major decline has been evident in Aroostook County where potato yields have steadily declined for years. This reduction in productivity is largely due to the lack of soil organic matter and higher soil compaction.

The two easiest practices which increase soil organic matter are crop rotation and manure waste management. Aroostook County has 82% of the tilled cropland, but only 6% of the state's livestock. Add to this the fact that rotation crops in Aroostook County generally are not profitable, and the reason Aroostook hasn't enough

---

1. SCS USDA, "Study of Non-Point Agricultural Pollution.

2. Ibid.

organic matter in their soils is obvious.

### 3. FINDINGS AND RECOMMENDATIONS

Findings: We are not currently in a crisis situation regarding America's cropland supply. Maine has been fortunate that most of the rapid urban growth has not occurred in areas where our best farmlands exist, thereby leaving these areas available for agricultural production. Much of the sentiment for preservation of farmlands is an expression of a desire for the maintenance of open space and the traditions of rural Maine. This Committee decided that the focus of attention should be on those lands best suited for the production of food and fiber. This is not in conflict with the open space sentiment, but merely stresses the importance of highly productive open space.

Future viability of agriculture depends largely upon the availability of adequate farmlands. Farming requires access to both marginal and prime cropland. Prime Maine cropland is not only essential and scarce but it is also irreplaceable. Conversely, marginal farmland soils are less essential and relatively abundant. It therefore behooves us to preserve this prime land which may become the limiting factor to the revitalization of Maine agriculture.

#### Recommendations:

- A comprehensive combination of actions will be required to insure that the prime productive lands are preserved for future users. Our objectives are best served when programs are voluntary, do not appear to usurp individual property rights, and enhance the economic viability of farms. The following recommendations will provide for an optimum level of protection to farmlands as well as allowing for needed land use flexibility.

- The legislature should enact legislation to voluntarily restrict development of agricultural lands through the use of certain incentives which should be established through state enabling legislation. The program would be administered by and coterminous with Soil and Water Conservation Districts.

Criteria for qualification for the program would have to be defined and should include: (a) A minimum acreage in crop production, (b) a residency requirement, (c) evidence that the farmer is making a reasonable effort to correct any serious soil erosion problems or animal waste disposal problems.

Restrictions imposed on the farmers should include an agreement to avoid conversion to a non-farm irreversible use for a period of ten years, under penalty of full repayment of tax benefits derived for the program, plus interest.

Benefits offered to the farmer should include: (a) Current use taxation on all qualifying lands, except those fields identified above, would qualify for  $\frac{1}{2}$  current use valuation, and except those areas which compose a contiguous block of fields of 500 acres or more may be designated as a Preservation District and would qualify for  $\frac{2}{3}$  current assessment, (b) farmers enrolled in the program would be exempted for nuisance laws and ordinances. Normal farm operations such as spreading manure and operating machinery in evening hours could not be restricted, (c) special review procedures would be set up to restrict the use of eminent domain by state and local agencies, (d) the power of special districts to impose benefit assessments or special ad valorem levels on farmland in the program for sewer, water, lighting on non-farm drainage would be limited, (e) inheritance tax would be based on current use, and not market value, (f) a 5 year tax exemption on new farm investments, (g) high priority status for conservation funds and services.

Loss of local tax revenues resulting from the program should be partially compensated for by the state.



Funds to allow addition of professional staff members to local Soil and Water Conservation Districts to administer the program would be necessary. The repeal of the current farm and open space tax law, compounded with enforcement of "highest and best use" assessments of farmland would become the catalyst required to make districts attractive.

- The state should officially adopt a policy encouraging the preservation of important agricultural lands. This policy statement should be included in any future efforts to define an overall growth management policy for the State of Maine. This policy statement should specifically acknowledge:

- A. The need for predictable growth patterns which will allow farmers to continue investments in the farm without the fear that escalating real estate taxes, increased regulations and loss of support services will ultimately drive them out of business;
- B. the need to maintain the viability of whole farm regions so as to ensure a "critical mass" needed to support an infrastructure of agricultural suppliers and services;
- C. the need to prevent speculative development pressures from causing excessive real estate taxes which could force farmers to sell off small parcels of land or ultimately the entire farm; and
- D. the public benefits which accrue from farmland preservation such as reduced costs to communities which might arise from urban sprawl, preserving the local economic base, and maintaining a rural lifestyle.

- The state legislature should amend income tax laws to reduce land speculation.

- A capital gains tax penalty on short term land investment should be initiated. Such a tax would impose severe tax penalties for short-term capital gains on land and no penalty for long-term capital gains. A clause to exempt residential properties should be included.

-The state legislature should amend the Site Location Act (MRSA Title 38 Section 484) and the Municipal Subdivision Review legislation (MRSA Title 30 Section 4956) to specifically allow for considering farmland preservation as a factor in permitting major developments. Municipal Planning Boards could use similar considerations to protect important farmlands without a comprehensive plan or zoning. Prior to enacting such legislation, the land to be protected should be identified.

- The State Planning Office and the Regional Planning Commissions should be charged with encouraging communities to use positive approaches which will reduce land development pressures on farmland. These positive approaches are recommended strongly over restrictive methods. Additionally, these methods recognize and address the other serious problem of shortages of low-cost housing. Recommended actions include:

- A. Providing municipal rewards for developing cluster developments.
- B. Instituting a site value tax on land that should be developed by municipalities to penalize the under utilization of prime development lands.
- C. Streamlining government permit systems in areas that should be developed. Areas chosen for development could have most of the permit requirements "on the shelf". This would reduce the time and money required to acquire permits and could be a real incentive to develop these lands.

- The Regional Planning Commissions should be charged to increase aid to communities in developing other alternatives to land preservation. Although not applicable for state-wide use, the following may be of beneficial use to some isolated communities.

- A. MRSA Title 33 Sections 667-668, enables communities and certain other groups to accept of purchase conservation restrictions/easements on land. This essentially allow communities to initiate public development rights programs. Development rights programs are only applicable to areas when the speculative land value is significantly higher than the use value of the land. Such programs are usually extremely expensive and require public commitment.
- B. Transfer of development rights may be useful in isolated cases, where appropriate, communities should be encouraged to initiate this comprehensive method of preservation.

Finding: More than 60% of all rural housing starts are federally financed. Often these homes are located on prime agricultural lands. Many federal and state actions directly or indirectly affect the use of farmlands.

Recommendations:

- The Maine Department of Agriculture should be charged with the responsibility of insuring that federal actions do not unduly cause the loss of prime farmlands. This watch dog role can best be done by the existing A-95 and state agency review processes which require that all federal and state projects be reviewed by various agencies.
- The Governor should be requested to encourage Farmers Home Administration to develop policies which would prohibit public funding of developments on important farmlands. The Soil and Water Conservation Districts with help from the Regional Planning Commission, should prepare maps for the FmHA to define important farmlands worthy of protection from development.

Finding: The State of Maine is a large state with a small population. To simply try to preserve all farmlands, prime soils or open space, would require a tremendous public commitment and would not be politically or economically feasible.

However, there are certain areas which are uniquely suited to agricultural practices and should be preserved at all costs for this use. These areas consist of prime or unique soils, which allow for energy efficient use, and are economically well suited for the production of crops. Examples of such prime areas would be the large fields of moderately sloping Caribou soils in Aroostook County and the River Bottom Soils of the Fryeburg area. These fields are now poorly defined and little is known about them.

The condition and accessibility of Maine's cropland soils is constantly changing.

Recommendations:

- The Department of Agriculture should be charged with the responsibility of defining an ongoing program to facilitate farmland conservation and preservation. Specifically:
  - A. The Department should undertake a study to determine:
    - 1. Farmland ownership patterns and trends; including resident and non-resident ownership, farmland and non-farm use, corporate and individual ownership, age classes, etc.
    - 2. Land assessment and taxation practices for farmland.
    - 3. Trends in farmland acreage brought into new production, lost from production by abandonment, and lost from production by conversion into non-farm use.
    - 4. Prime soils lost to non-farm uses in the recent past.

B. The Commissioner should report the results of the study to the legislature and the Governor and should thereafter report bianually the following information:

1. Trends in production, ownership, taxation, amount and type of land in production, and conversion of farmland.
2. Progress in farmland preservation and conservation.
3. New actions recommended as necessary to implement state agriculture policy.

- The Soil Conservation Service should be encouraged to accelerate the publishing of prime lands maps in the I-95 corridor. Local Soil and Water Conservation Districts should further modify these reports to make them more meaningful to community planning groups. In other words, the maps should be expanded to include topographic, land use, development pressures zones, and other information.

- The Maine Department of Agriculture and the Soil and Water Conservation Districts should define and map the best farmlands. These lands would include only the areas that consist of "prime or unique soils which allow for energy efficient use, and are economically well suited for the production of crops." The Maine Department of Agriculture should be funded by the legislature for such mapping.

Finding: Community leaders and the public in general, are not knowledgable about farmland preservation issues. If legislation is to be effective, the public must have a more complete understanding of these issues.

Recommendation:

- The Cooperative Extension Service should be encouraged to increase public awareness of farmland preservation issues. Workshops, courses, public debates, and other tools should be used to educate the public.

Finding: Existing USDA and state programs have not accomplished the goal of reduced soil erosion and increased soil productivity. Existing mechanisms are weak and have not been able to reverse the trend of increased soil erosion and decreased soil fertility.

Recommendations:

- The Maine Department of Agriculture should encourage Agricultural Stabilization Conservation Service to direct conservation funds to projects on a "worst first" basis. Funding should be limited to bona fide farmers who are willing to enter into long-term conservation arrangements. Funds should only be available for practices which are conservation oriented and not normal production practices.

- The Maine Department of Agriculture should encourage USDA to carry out conservation on a "worst first" basis. USDA's study of Non-Point Agricultural Pollution should be used to identify lands which should be funded at higher levels with state and federal funds. All agencies should more aggressively "sell" their programs to farm participants. Agencies should redirect existing funds and services to those areas that suffer the worst erosion problems.

- The Maine Department of Agriculture and the Governor should encourage FmHA to only make farm loans when adequate conservation plans have been made by the farmer.

- The University of Maine should expand research and extension activities in conservation. Emphasis should be put on programs which will:
  - A. Help establish economically viable rotation crops for Aroostook County.
  - B. Encourage less soil compaction.
  - C. Encourage the development of local sources of soil improving materials such as manure, bark, industrial sludge, sea weed and rock materials.
- The University of Maine should develop and provide to farmers a more comprehensive soil audit program.

Finding: We found no facts that indicate that the farm community is dying due to development pressures. The decay of the Maine farming industry has been due instead to decreased viability of agriculture in Maine.

Recommendation:

- The Maine Department of Agriculture should seek out and develop better markets for Maine farmers. Special emphasis should be placed upon developing markets for alternative crops for Aroostook County.

FINAL REPORT  
OF THE  
COMMITTEE ON MARKETING AND TRANSPORTATION

MAINE FOOD AND FARMLAND STUDY COMMISSION

Alan Pease - Director of State Planning Office - Augusta (Chairman)  
Richard Barringer - Commissioner of Conservation - Augusta  
William Harris - Dairy Farmer - Biddeford  
Senator Walter W. Hichens - Eliot  
Senator Matthew Levine - Winslow  
Lewis R. H. McGlaughlin - President of Maine Association of Conservation Districts

## CONTENTS

1. Assignment to the Committee on Marketing and Transportation . . . . .	25
2. Introduction . . . . .	26
3. Findings and Recommendations	
A. Marketing . . . . .	28
B. Energy . . . . .	31
C. Transportation . . . . .	34

### 1. ASSIGNMENT TO THE COMMITTEE ON MARKETING AND TRANSPORTATION

This committee was charged with investigating existing, as well as alternate marketing and transportation systems and making recommendations for improving these systems.

Issues specifically mentioned included: quality control, direct farmer to consumer marketing, institutional buying of locally grown products, expansion of existing markets, and transportation.

## 2. INTRODUCTION

Few issues are as diverse, complex and crucial to the prosperity and profitability of Maine's agricultural economy as those issues which may be addressed under the general heading of marketing. In a very broad sense, agricultural marketing issues involve everything from the identification and even manipulation of consumer needs to the production and distribution of products to satisfy those needs. As such, marketing considerations play a very important role in every aspect of agriculture and surface as issues and problems in a great variety of forms ranging from milk price regulation and potato quality control, to the development of farmers markets and the distribution of livestock to various market outlets.

Many agricultural marketing issues and problems are centuries old. Problems of market access, lack of buyer competition, inadequate market information, distribution difficulties, lack of coordination among growers and other agribusiness entities, extreme price fluctuations, and other marketing issues have never been totally absent in our agricultural economy. It would be naive to under estimate the deep seated nature of many of these issues or to expect to find solutions to all such issues through public sector actions. It is important, however, to periodically re-examine agricultural marketing problems in Maine in the light of changing agricultural circumstances to see what opportunities may exist for improving strategic aspects of our agricultural marketing system.

A number of recent trends and changing circumstances should be considered in addressing current agricultural marketing issues in Maine. The decreasing number and increasing size and specialization of farm units is a particularly important influence on the dynamics of our marketing systems. In many cases larger size eliminates much of the need for intermediate handlers, assemblers, and shippers in agriculture. Furthermore, larger size and specialization often goes hand in hand with increased expertise in technical production matters and with increased interest and leverage in marketing. These factors also tend to increase market risk and sensitivity to price swings.

Another important factor is the increasing importance of integration and coordination in most of our important commodity systems. Decision making in poultry, dairy, potatoes, apples, blueberries and other commodity systems in Maine is becoming increasingly concentrated, with fewer producers, processors, and marketing entities controlling more products than ever before. Contract growing, integrated production/marketing operations, large centralized retailing systems, production and marketing cooperatives, agribusiness trade associations, and other arrangements are providing greater coordination in all aspects of agriculture and altering the economic structure of the industry.

In some products, agricultural handlers and processors have developed such extensive product acquisition and marketing systems that the managerial role of farmers has been sharply curtailed. Poultry farming is an extreme example of this in Maine. While such coordination may optimize the efficiency of food production and marketing, it is taking a toll on small, independent farm operations in Maine and elsewhere.

Cooperatives have provided many farmers across the country with a mechanism for remaining independent while gaining market influence and the benefits of integration

into other agribusiness activities. While cooperatives are a powerful agricultural marketing force across the country they have not, with the exception of the dairy industry and several other instances, realized their potential in agricultural marketing in Maine.

Still another important trend has been toward greater processing of food and increasing consumption of convenience foods. Tremendous consumer demand for processed foods has made processing the great growth area in agriculture in recent years. Because of the substantial investments and economies of scale involved in processing and marketing processed food, this industry both in Maine and elsewhere is increasingly dominated by large corporations. The importance of large processors in the food system is apparent in nearly all of Maine's important agricultural commodities including potatoes, blueberries, poultry, dairy, dry beans, and other vegetables. Just a half dozen or so potato processing firms have utilized as much as 30-40% of Maine's potato crop in recent years. Well over half of potato consumption in the U.S. is in the form of processed products and the trend towards greater consumption of processed potato products rather than fresh potatoes is increasing. Virtually all of Maine's blueberries and poultry products are handled and marketed by processors. In both cases processing and marketing is concentrated in the hands of a very few firms. The dairy industry represents another instance of the great importance of processing in the marketing system.

Clearly, the trend is toward increased use of agricultural products for processed foods. This has provided greater stability and value-added activities to Maine's agricultural economy and, for better or worse, has meant greater concentration, integration, and coordination in our food system.

The changing role of government on the agricultural system is another factor of great importance in shaping today's agricultural marketing environment. In general, government involvement in agriculture has increased in recent years. Government technical assistance provided through the Cooperative Extension Service and Agricultural Experiment Stations has played a vital role in the development of the modern farm complex. Health and safety regulations have had a significant impact on many aspects of food production and marketing. The revolution in dairy production and processing techniques and equipment over the past two decades is a clear example of this trend. Government's role in agricultural employment matters has also increased. Regulations regarding minimum wages, employment security, importation of harvest labor, and related matters has had a significant impact on many aspects of our agricultural marketing system.

Government participation in farm financing has had a dramatic impact on Maine agriculture. More than 50% of farm real estate debt in this state is financed by the Farmers Home Administration (FmHA). Emergency financing to potato farmers in 1978 crop year was responsible for the planting more than 20,000 acres of the total 120,000 acres planted. Government price supports through the Commodity Credit Corporation, while not especially important to Maine except in the case of dairy products, have played an important role in agricultural marketing in recent years.

Government programs aimed at the preservation of prime agricultural lands from both development and poor soils management will undoubtedly play an increasingly important role in the agricultural economy. Other government programs related to agricultural research, promotion, quality control, and other areas combine to make governmental factors crucial in the agricultural marketing picture.



The preceeding trends and circumstances, together with a great number of other factors, provide an important context for the following specific findings and recommendations by the Marketing Committee. These findings and recommendations are presented in the following categories:

1. Markets and Marketing
  - a. quality control
  - b. promotion
  - c. direct marketing
  - d. coordinating arrangements and mechanisms
2. Transportation
3. Energy

The Committee's recommendations should not be viewed as addressing every important marketing issue or even every such issue brought before the full Commission. In many cases the entrepreneurial nature of marketing makes direct government assistance inappropriate or ineffective. Other marketing-related issues may not be addressed if a clear set of public sector actions were not apparent. The following findings and recommendations should therefore be viewed as reflecting those issues and areas where the Committee feels that a clear set of public sector actions are apparent, potentially affective, and politically realistic.

### 3. FINDINGS AND RECOMMENDATIONS

#### Marketing

Findings: One of the most fundamental factors involved in food marketing is quality. American consumers have high standards of food quality - particularly in regards to fresh produce. They expect high quality produce and respond positively to produce promotion based on quality. Conversely, American consumers tend to respond very negatively to poor quality food and poor food values. The Subcommittee therefore recommends that high quality standards be considered the central theme and prerequisite of any public sector marketing support activities.

The major quality control problems on Maine agriculture involve Maine potatoes. Other commodities appear to have relatively high standards and adequate control mechanisms. However, the Subcommittee finds that existing potato tablestock quality standards, based on U.S. NO. 1 specifications, are inadequate in controlling the quality of Maine potatoes sold in the fresh marketplace. Although most potato packs shipped from Maine are of high quality and exceed minimum U.S. NO. 1 standards, the proportion of poor and inconsistent quality packs is significant enough to give Maine potatoes a generally poor image and often a price discount in the marketplace. The high and consistent quality standards and generally high image of potatoes marketed from competing areas such as Idaho, Oregon, and California are important factors in the erosion of traditional markets for Maine potatoes - most dramatically, the New York market. The production of poor quality potatoes is a result of both climatic and cultural factors. Once poor quality potatoes have been produced, the marketing of such potatoes is an important economic matter to individual growers and shippers. Low prices in the processing market for potatoes acts as an incentive to put a maximum volume of potatoes into the fresh market. The improvement of potato quality in Maine involves an improvement in cultural and production practices as well as improvement in marketing practices.

Recommendations:

- The Committee recommends that legislation be adopted to require the exclusive use of certified seed or seed meeting certification standards in the planting of all commercial potato crops (one or more acres) in Maine.
- The Committee recommends that legislation be adopted which requires that all potato seed imported into Maine be inspected to ensure that Maine certification standards are met.
- The Committee recommends that regulations be adopted which: a) increase the minimum size of Maine tablestock potatoes to 2½ inches; b) permit a maximum of size range of 1½ inches for potatoes in any one package; and c) permit a maximum of 2% off-grade potatoes per pack. All of these specifications should be subject to reasonable tolerance variations specified by the Commissioner of Agriculture. It is estimated that 8 - 12% of Maine's normal potato crop may be affected by such improved standards.
- The Committee does not recommend compulsory inspection of all potato tablestock shipments but does recommend that quality control provisions and penalties of Branding Law and shipping point regulations be rigorously enforced.
- The Committee recommends that the University of Maine in cooperation with the Maine Department of Agriculture, industry representatives, and various sources of farm financing (including FmHA) adopt and administer strong policies and programs to improve cultural and management practices in the Maine potato industry and thereby improve potato quality on farms where quality is consistently poor or marginal. It is particularly important that public and private farm financial assistance be predicated on the utilization of good management and cultural practices.
- The Committee recommends that efforts be expanded at the University of Maine, Department of Agriculture, and other agencies to develop and expand viable markets for undersize and off-grade potatoes.

Finding: Many sectors of Maine's agricultural economy have very successful promotional programs. There appears to be little need for additional public sector promotional programs in the more highly concentrated agricultural industries in Maine such as blueberries, broilers, eggs, and dairy. Other commodity sectors, however, have not developed product or commodity promotional programs as successfully.

Recommendations:

- The Committee recommends that the Maine Department of Agriculture develop a very active "Buy Maine" program to promote quality native produce. This program should include point of purchase displays and media promotion. A prerequisite of such a program should be the development and enforcement of high quality standards for all Maine produce. A component of this program should be designed to address specific needs and opportunities for native organic produce.
- The Committee recommends that the Department of Agriculture continue to use and promote the red, white, and blue logo as part of its existing "Product of Maine" program. This program would apply to any food products, including processed products and meats, produced in Maine and would include rigorous quality control standards. The program would be distinct from the "Buy Maine" program oriented toward promoting fresh Maine produce. This program is also distinct from "Product of Maine" program being developed by the State Development Office, and the Committee recommends that agricultural products be excluded from that program.
- The Committee recommends that Maine potatoes be promoted as "Maine Potatoes" only if stricter quality control measures as recommended earlier are instituted and enforced. The promotion of Maine potatoes without stricter quality control can be counter-productive. If stricter quality control measures are not forthcoming, it is recommended that a promotional program be developed for a high quality subset of Maine tablestock potatoes such as the now-defunct Super-spud grade.

- The Committee recommends that potato promotional efforts be concentrated in the New England and Greater New York marketplace to get maximum benefits from promotional expenditures and make best use of natural advantages for Maine in these markets. The gradual erosion of the Greater New York marketplace to competitors poses a serious threat to Maine's potato industry.

- The Committee finds that the trading of potato commodity futures provides a very important mechanism for improving coordination in Maine's potato industry. It is recommended, however, that the State support a study currently underway at the USDA to determine whether any modifications may be desirable to guard against possible price manipulation on the Mercantile due to low contract volume, inadequate regulation, or other reasons.

Finding: Direct marketing arrangements offer the potential for supplying fresh and reasonably priced food to consumers while providing good returns to farmers. For this reason, many states have recently initiated a variety of direct marketing support programs. To the extent that such programs encourage greater consumption of native products, they benefit the state's economy through the generation of economic activity which might otherwise take place in the major produce and meat exporting states.

Recommendations:

- The Maine Department of Agriculture should designate specific responsibilities for the coordination, liaison, and training regarding direct marketing activities in Maine. Immediate efforts should be made to fund this position through state or federal sources.

- The Maine Department of Agriculture should prepare a direct marketing directory for Maine which will include a list of direct produce and livestock outlets such as farmers, roadside stands, farmers' markets, pick-your-own operations, and processors. The directory should be available to consumers, wholesalers, retailers, and other interested parties as a guide to direct food purchasing in Maine.

- A public commitment and concerted effort should be made by the State of Maine to utilize a maximum amount of local produce and livestock products in public institutions provided that these products are competitive in terms of price and quality.

Finding: A great variety of coordinating arrangements and mechanisms may be developed to improve the efficiency and effectiveness of various agricultural marketing activities by reducing uncertainties in pricing, improving market leverage, pooling financial and technical resources, or other means. The following recommendations address a diversity of issues in this area.

Recommendations:

- The Committee recommends the establishment of a Maine Produce Commission to act as a publicly sanctioned trade association for both growers and agribusinesses involved in various aspects of Maine's produce economy. The Commission would consist of two bodies; a growers council, and an agribusiness council with representatives from wholesaling operations, processors, and related industries. The purpose of the Commission would be to improve coordination in various aspects of produce production, marketing and processing in Maine; and to make recommendations for public policies and programs effecting this sector of the agricultural economy including quality control, direct marketing, promotional activities, storage facilities and strategies, extension and other sources of technical assistance, and related matters. Although no funding scheme is recommended at this time for the Commission, it is anticipated that funding may eventually be desirable through a small tax on growers and agribusiness operations, or through other public or private sources.

- The Committee recommends the establishment of a Maine Livestock Commission to act as a continuing force for the development of various livestock industries in Maine and the promotion of policies and practices which will then improve production of livestock in Maine and the marketing, processing and consumption of Maine livestock products. As in the case of the proposed Produce Council, the Livestock Council would consist of a growers council and agribusiness council. It is expected that such a commission could be instrumental in expanding livestock agriculture in Maine by providing a mechanism for surfacing and exploring development opportunities and problems in regard to beef, sheep, hogs, or other red meat livestock raised for meat. Potential matters for investigation and discussion include: inspection and grading regulations; feed and nutrition needs; marketing opportunities including auctions, direct marketing, and wholesaling; processing opportunities and grower-processor coordinating arrangements; production and market information needs; and related matters. Although no funding scheme is recommended at this time, it is anticipated that funding may be desirable through a small tax on livestock operations, or through other public or private sources.

- The Committee recommends reactivation of the Maine Agricultural Advisory Council which, although currently defunct, has served an important policy development and review function to the Department of Agriculture in the past. The Council should consist of representatives of production, marketing, processing, finance, and related agricultural areas for important commodity systems in Maine. Membership might be based largely on representation from existing agricultural organizations in Maine. Reactivation of the Council should be accomplished by Executive Order.

- The Committee recommends that the development of cooperatives be considered a matter of highest priority in Maine agriculture and that funding be secured to provide staff support to the Maine Cooperative Council, an existing association of cooperatives in Maine. The purpose of this funding support would be to improve the ability of the Council to conduct training programs, technical assistance programs, and other activities directed toward assisting the development of production, marketing, and purchasing cooperatives in Maine. The Committee further recommends that the State support efforts to resist changes in the Capper-Volstead Act which provides incentives to the development and operation of agricultural cooperatives.

- The Committee supports the retention of the existing milk price regulatory structure administered by the Maine Milk Commission. This structure provides good food values to Maine milk consumers in both urban and rural areas, and provides support and stability to Maine's large dairy industry. The Committee further recommends that, in the case that milk retail price regulations are eliminated, that the Milk Commission and all related powers and regulations be abolished entirely. It is recommended that the Milk Commission not be retained as a mechanism for regulating producer prices in the absence of retail price regulations. Rather, it is recommended that the State take immediate actions, upon any elimination of retail price regulations, to extend the New England Federal Milk Marketing Order into Maine.

### Energy

Finding: U.S. agriculture is energy intensive. Food production on the nearly 400 million acres of farmland in this country consumes 3% of the total energy used in the U.S. By the time food reaches the consumer's table it has cost approximately 16.5% of the energy used in the U.S. Energy consumption in various stages of our food cycle breaks down as follows:

<u>Function</u>	<u>% of Food Cycle Energy Use</u>
Agricultural Production	18
Food Processing	33
Transportation	3
Wholesale and Retail Handling	16
Preparation and Cooking	30
	<hr/> 100%

Over the years, the energy intensity of agriculture in the country has increased considerably. The production of a bushel of corn today, for instance, requires almost four times the energy required a century ago. Much of the increase in energy intensity is due to fertilizer production and utilization. Nearly one-third of the energy input to agriculture production is in the form of natural gas used primarily for fertilizer production. Increased irrigation has also increased energy usage, but as in the case of fertilizer, has also greatly increased productivity. Other factors contributing to increased energy consumption are the high level of energy intensive meat production, increased mechanization in farming, more food processing, and greater usage of energy intensive transportation modes - namely trucks. Despite such increases in energy consumption, agriculture is a tremendous net producer of energy and there is little evidence to show that energy balance considerations are the driving force in the food cycle today nor except in special circumstances, are they likely to be in the near future.

There are, however, a number of considerations worth noting about energy consumption in Maine agriculture. Maine agriculture is oil fueled compared to the natural gas and electrical based farm economies of many competing agricultural areas. While electricity is significantly more expensive than oil, natural gas is significantly cheaper and provides a cost advantage to growers in many other parts of the country. Even in the case of electricity, Maine agriculture is at a disadvantage compared to the competitor, especially potato competitors, in the western part of the country where federal hydro-power projects have resulted in relatively inexpensive electricity which is particularly important to food processors. However, climatic and other factors are undoubtedly more important factors in competitive ability than energy costs. Several livestock industries in Maine, especially the poultry industry, incur extraordinary energy/transportation related costs due to the need to import feed grains from the midwest. Energy/transportation considerations in shipping agricultural products out of Maine are also important due to the sometimes great distances to markets. In cases where Maine products compete in eastern markets with agricultural products from the west, Maine has an energy related advantage. The very low percentage of retail food prices attributable to transportation cost differentials and the great success of western producers in penetrating eastern markets suggest that this energy related cost advantage is not great. Several additional instances of high energy usage in Maine agriculture relative to other areas include: high cost in the heating of poultry houses, a relatively high usage of gasoline rather than diesel fuel, relatively greater usage of synthetic fertilizers in some cases due to mediocre soils or poor soils management, a high usage of oil in the annual burning of barrens for blueberry production.

The relatively great importance of energy as a cost input in agriculture suggests that Maine agriculture would benefit from both public and private efforts

to: 1) conserve present fuels through improved efficiency and agricultural practices, and 2) develop alternate sources of energy which may offer lower costs to agricultural users and lessen our dependence on conventional sources as supplies become more scarce. Improved energy practices in Maine agriculture may include such matters as:

- The development of minimum tillage farming
- The increased use of animal manures both as a substitute for commercial fertilizers and for direct or indirect energy production
- The substitution of present crops by less energy-consuming crops (such as nitrogen fixing leguminous crops) where this is economically feasible
- The increased use of diesel rather than gasoline engines
- The development and increased commercial usage of solar energy systems for space heating, water heating, crop drying, etc.
- The increased usage of other energy production systems such as wind energy, hydro-power, energy from biomass combustion, usage of waste heat, and so on.

Recommendations:

- The Committee recommends that the Department of Agriculture enlist the cooperation and support of the Office of Energy Resources and the University of Maine in the establishment of a joint task force and program to actively address energy conservation and development issues in Maine agriculture.

- The Committee recommends that the Task Force and program recommended above serve as a mechanism for undertaking and coordinating agricultural energy planning efforts including the collection of better data on agricultural energy consumption, the identification of specific areas of problems and opportunities, and the coordination of policies, research, and expenditures in the public sector. Consideration should be given in this program to planning and development policies and efforts which would result in more self-contained regional agricultural systems, e.g. live-stock industry expansion in areas where adjacent farmland would benefit from livestock wastes as fertilizer, and livestock would benefit from local feed production.

- The Committee recommends that agencies in the task force recommended above seek to jointly solicit public and private funds to undertake research work and initiate pilot demonstration projects involving the conservation of energy in agriculture, or the development of local energy resources. Based on current technology and information, these demonstration projects might include: solar assisted heat pumps; solar crop drying systems; the development of improvement of local food processing and storage systems; the development of indigenous fertilizers; and a variety of other energy production or conservation systems utilizing farm, forest, and other wastes.

- The Committee recommends that the University, as part of the task force programs proposed above, initiate an active program of technical assistance, training, and education regarding energy matters to assist the farm community in understanding energy issues and maximizing their position in view of increasing energy costs.

- The Committee recommends that the Office of Energy Resources ensure that adequate provision is made in the State's Energy Plan to provide energy for food production in Maine in cases of energy shortages.

## Transportation

Finding: Although local food self-sufficiency was common many years ago, most agricultural products today are handled by extensive transportation systems in order to meet distributional demands between production and consumption. All of the best efforts in food production can be lost if this transportation system breaks down or is given too little public policy consideration.

Maine, because of its relatively isolated geographical location and low-density of economic activity, tends to be more vulnerable to transportation crises than many other parts of the country. Our state highway system, relative to many states is limited and makes efficient truck transportation difficult in many areas - particularly rural areas where agriculture is most important. Our rail system is fragmented and one line is bankrupt. Rail transportation of agricultural products - especially potatoes - has dropped dramatically in recent years. Inland waterways are not accessible and ocean transportation of farm commodities has not proven feasible.

Many of the issues involved in the transportation of agricultural products are complex, often due to the "public utility" nature of transport service. Remedies to many transportation problems, because of high capital costs in developing transportation infrastructure, tend to be very costly. However, the Committee feels that a number of transportation issues need to be addressed at this time, and offers the following recommendations.

### Recommendations:

- There appear to be certain overall benefits to Maine agriculture in the short term in the total deregulation of motor carriers. These benefits would apply particularly to potato transportation and would not necessarily benefit Maine's economy as a whole. A disadvantage of truck deregulation would probably be the further loss of current rail traffic to trucks - causing a further erosion of railroad activities in Maine. Railroad deregulation would probably have an adverse effect on Maine agriculture, particularly in the case of grain transportation which is crucial to Maine livestock industries and accounts for the bulk of incoming agriculture traffic by Maine railroads. In view of these circumstances, the Committee recommends against total deregulation of both trucking and railroads at this time.

- The Committee recommends that research be undertaken by the Department of Agriculture and the Department of Transportation to determine ways in which deregulation proposals might affect Maine agriculture, and ways in which the Interstate Commerce Act might be amended and modernized to improve agricultural transportation circumstances in Maine.

- The Committee recommends that the Food and Farmland Study Commission support the consolidation of rail systems in Maine into one system. It is expected that such a consolidation would result in improved efficiency and effectiveness in service not only to Maine agriculture but to other current or potential rail users in Maine as well.

- In order to facilitate improved transportation service to agriculture and other sectors of Maine's economy, the Committee recommends the following actions regarding inter-modal service:

- a. the State should support the elimination of legal barriers to inter-modal ownership;

- b. the Commissioner of Agriculture, on behalf of diverse agricultural interests in Maine, should support the improvement of cargo port facilities in one or more Maine ports;
- c. the Department of Transportation, in cooperation with the Department of Agriculture and potato industry representatives, should solicit federal funds to conduct an experimental "piggy back" transportation program for potatoes.

- As a result of recent federal legislation, the extension of the interstate highway system north of Houlton seems remote. The Committee recommends, however, that a modern rural highway system be built from Houlton to Fort Kent in order to improve on the relatively poor transportation conditions existing in Maine's most concentrated agricultural area.



FINAL REPORT  
OF THE  
COMMITTEE ON FINANCE

MAINE FOOD AND FARMLAND STUDY COMMISSION

Maitland Richardson - Poultryman - Skowhegan (Chairman)  
David E. Rowe - Orchardist - Newport  
Joseph Williams - Commissioner of Agriculture - Augusta  
Rep. Frank Wood - Springvale  
Richard Wood, Jr. - Dairy Farmer - Brunswick

## CONTENTS

1. Assignment to the Committee on Finance . . . . .	37
2. Introduction . . . . .	38
3. Findings and Recommendations . . . . .	39

### 1. ASSIGNMENT TO THE COMMITTEE ON FINANCE

This Committee was charged to investigate the issues related to agricultural financing. Specifically, the availability of adequate capital to the family farm and new-generation farmers was to be addressed. Special emphasis was to be placed on funding mechanisms.

## 2. INTRODUCTION

The financing needs of today's farmers, especially new farmers, are usually great, due to the spiraling costs of farm inputs. Not only must adequate amounts of capital be available, but sound financial advice must accompany the capital. This report outlines changes in policy and recommends specific program changes required to improve the farm finance situation.

Existing farm financing is being provided for by the following:

1. Farmers Home Administration (FmHA) provides the bulk of Maine's agricultural finance (44% of total). FmHA finances a higher proportion of agriculture in Maine than any other state in the U.S. This disproportionate volume of FmHA funds is felt to be increased FmHA funding rather than decreased participation by other lending institutions. This agency can make direct loans or guarantee conventional loans. Special loans can be made to "limited resource" persons. These loans can be made without down payment, with 3% - 5% interest rates, for 40 years, and with deferrable initial payments.

2. Farm Credit Service is the second largest farmer's credit source. This cooperative offers a full farm financing service and is highly regarded by most farmers whom we talked. In Maine, the Farm Credit Service finances a smaller percentage of agricultural finance than in other states (25% of farm real estate loans and 32% of farm operating debt).

3. Commercial banks have historically provided most of farm financing. Since the advent of Federal institutions and federally-sponsored cooperatives, the banks have almost totally left the field of farm finance. Most banks that do finance agriculture, finance the "family" and not really the farm operations. Since they don't make a lot of farm loans, most banks have lost the expertise required to properly service farmers. Banks finance 7% of the farm real estate loans and 22% of the farm operating debts.

4. Savings institutions have and do make a number of real estate loans. In Maine, this represents very little of the farm mortgage loans.

5. Individuals are increasingly financing farmers. Due to tax advantages and, in some rural areas, low demand, sellers are providing more financing. Individuals finance nearly 15% of the farm debt.

6. Trade or dealer credit is substantial in Maine. The USDA estimates that there is more than \$35 million of this kind of credit in Maine. This credit is made by the farm suppliers on farm inputs.

7. Small Business Administration has recently entered farm financing. The SBA guarantees loans to banks who must follow their guidelines. A 10% interest limit is placed on the banks. In 1977, the SBA made 18 farm loans which averaged \$180,000 each. Like FmHA, the SBA can only finance farmers who have been refused conventional credit.

8. Other government institutions like the Maine Guarantee Authority, the Maine Development Foundation, and the Maine Capital Corporation are potential sources of farm finance.

### 3. FINDINGS AND RECOMMENDATIONS

Finding: An abundance of capital is now available to established farmers. This surplus of capital has stimulated a persistent oversupply of major commodities and has had a tendency to keep marginal farmers in business while making better farm businesses marginal. Although there is a persistent oversupply of credit, this credit is often not accompanied by adequate financial advice.

Recommendation:

- Public funding for agricultural production should be aimed at financing only those that can demonstrate a market and have sound marketing plans. Specifically, the Maine Department of Agriculture should be charged with encouraging federal lending institutions to adopt such policies.

Finding: Beginning farmers who have the required skills to become successful but have little collateral, often have been unable to enter farming. If the family farm is to be strengthened, new generations of farmers must be able to enter farming.

Recommendation:

- The legislature should create and fund a division within the Department of Agriculture that would coordinate all entrance to farming activities. The division could help guide would-be entrants to appropriate financing, farm availability, etc.

This division would assist participants in securing adequate financing whether it be public or private funds. This division would:

1. Seek funding for new crops and technologies to help overcome land and climate limitations.
2. Help coordinate and establish marketing and storage cooperatives.
3. Administer a program similar to the Minnesota Family Farm Security Act. This program would offer low land mortgages and could be used to reduce the significance of increasing land values to entrance to farming. Such a program would also be used to support long-term loans for farm operations that require a long time between the initial investment and the first income off the land (i.e. orchards, abandoned farm reclamation).

Finding: Family farms are socially and economically more desirable than part-time or larger corporate farms. Farms that should be supported are those that can at least support one family and where the family retains a maximum amount of entrepreneurial control. This size limit is difficult to define because of varying farm efficiencies and the varying acceptable living standards. Generally, these are producers who yield enough to be recognized by the community as farmers and not rural residents.

Recommendation:

- Farmers Home Administration (FmHA) should be encouraged to use its expanded authority to increase financing of small farm marketing and storage cooperatives. Such mechanisms are necessary if Maine's smaller family farmers are to compete on large volume markets.

Finding: Commercial banks have lost most of agricultural financing to federally initiated cooperative lending institutions and federal agencies. Agricultural

finance expertise has been lost by banks due to their low volume of agricultural loans.

Recommendations:

- The Maine Department of Agriculture should actively encourage banks to do more farm financing. Significant bank farm financing would require that banks hire farm loan specialists and regain the expertise required to supervise farm loans. Maine banks appear interested in regaining expertise in farm financing.

- The Maine Department of Agriculture should encourage public lending institutions to make more guaranteed loans and fewer direct loans.

- The Maine Department of Agriculture should be charged with providing input to the federal process in support of expanded national crop insurance. Such insurance would reduce farm risk and make family farmers relatively more creditable. Federal disaster programs could be replaced by the insurance. It should be noted that production risk is the biggest deterrent to bank financing of agriculture.

Finding: New markets and commodities are needed in Maine if long-term economic benefits are to be realized.

Recommendation:

- FmHA should be more sensitive to the needs of farmers trying to produce new commodities and/or use new innovative production or marketing techniques.

Finding: Often publicly financed farmers abuse their soil and water resources.

Recommendation:

- The Maine Department of Agriculture should encourage public lending institutions to require participants to properly manage their soil and water resources. When conditions warrant, farmers should be required to follow approved soil and water conservation plans.

MAINE FOOD AND FARMLAND STUDY COMMISSION

FINAL REPORT  
OF THE  
COMMITTEE ON ENTRANCE TO FARMING

Kenneth Wing - Dean, College of Life Sciences and Agriculture - Orono (Chairman)  
Edwin Bates - Director, Cooperative Extension Service - Orono  
Rep. George A. Carroll - Limerick  
Leroy Hunter - Dairy Farmer - Unity  
David Vail - Economist - Bowdoin College, Brunswick  
Chaitanya York - Director, Maine Organic Farmers and Gardener's Assoc. - Hallowell

## CONTENTS

	<u>PAGE</u>
1. Assignment of the Entrance to Farming Committee . . . . .	43
2. Introduction . . . . .	43
3. Barriers to Entrance to Farming . . . . .	45
A. Competing Uses for Land . . . . .	45
B. Public Education and Awareness . . . . .	45
C. Agricultural Education . . . . .	45
D. Availability and Quality of Financial Assistance . . . . .	46
E. Effects of Government Regulations and Policies . . . . .	46
F. Effect of Excess Production Created by Entrance into Farming . .	48
4. Examples of Current Entrants to Farming . . . . .	49
5. Findings and Recommendations . . . . .	49

## 1. ASSIGNMENT OF THE COMMITTEE ON ENTRANCE TO FARMING

The charge of this Committee was to determine factors which encourage or act as barriers to entrance to farming in Maine. The Committee studied information gathered during the several hearings held by the Commission, information obtained from many secondary sources, and information provided by current farmers, or those people who work closely with potential or actual entrants to farming in Maine.

The Committee has prepared this report in summary form. All supporting documentation and reference materials are on file and are available from the Maine Food and Farmland Study Commission. This report presents background information on several aspects of getting started in farming. It concludes with recommendations to be considered by the Food and Farmland Study Commission.

## 2. INTRODUCTION

Farming is today as it was yesterday, both a way of life and a way of making a living. It is assumed that these characteristics will also hold true in the future. This Committee recognizes the positive factors of Maine's natural resources and its people which encourage entrance to farming, as well as those factors which act as barriers to entrance into this profession.

Maine's climate is well suited for the production of crops which thrive in moderate or cool temperatures. Maine produces high quality fruit, especially apples and blueberries, and most vegetables can be grown successfully. Our average rainfall is adequate and our seasonal temperatures make for good working conditions. New varieties of corn are available that can be harvested either for grain or silage, which increases the profit potential for poultry and dairy farming. Poultry manure is available as an economical source of fertilizer for corn and grass farming. Our summers are cool enough to allow production of high quality broilers and our proximity to the large Northeastern markets gives us a transportation cost advantage.

Most Maine people respect and support farm people, making for a good social climate for farmers. Sportsmen realize that farmers maintain open space which can be available for them to use. A tremendous amount of information is available from older, experienced farmers, who are more than willing to share this with anyone who asks.

Throughout history, most farms have been operated as family units. Very few large corporations are involved in farming, although many farm families have formed partnerships or corporations for tax and property transfer advantages. There are many cooperatives that family farms may use to buy supplies from, and to sell their products through, which give them similar advantages to those gained by forming a corporation. Recent estate tax changes have made it less difficult to keep family farms operating through transfer, at the death of a family member. The IRS ruling that the spouse can be considered as part owner of property is very important.

The U. S. Department of Agriculture and other government agencies have encouraged family farms. Farm youth organizations, such as FFA, 4-H, and Young Farmer groups, help build future farm leadership. Many consider the farm most valuable as a place to raise a family. It teaches responsibility, the rewards of hard work, and cooperation. It develops good character and high moral values.



These positive points must be kept in mind when considering some of the barriers to entrance into farming, which include the competing uses for land, educational opportunities, and availability of appropriate financial assistance. Availability of good land, at reasonable prices and access to dependable markets are also of concern, but these aspects are the primary responsibility of other committees of the Food and Farmland Study Commission.

There appears to be a lack of appreciation by the general public of the intricate production system that supplies them with food and related services. The public also lacks an understanding of the interconnection of basic issues, such as land use, farming, marketing, and the social and economic well-being of the rural community. They are little aware of their dependency on a system that supplies 80 percent of their food from sources often hundreds of miles from Maine, and that this system may prove fragile in an age of energy shortages.

There are two central reasons for reshaping public policy to enhance the entry to farming. The first is to ensure the continuation of profitable production on existing commercial farms, by facilitating the transfer of farms from existing operators to a new generation of well qualified farm managers. The second reason is to revitalize the agricultural economy as one part of a major effort at social and economic rebuilding of rural Maine. Rural Maine has a very high incidence of poverty, unemployment, and emigration of many of its young people. Commercial activity in many small towns has dwindled; many churches, town newspapers and social organizations have closed their doors. It would be wrong to argue that social and economic deterioration in rural Maine is entirely due to the decline of agriculture. Agricultural revitalization, by itself, will certainly not turn the situation around. Strengthening the agricultural base by creating conditions in which more farmers can make a full or partial living from the land should take high priority.

Our Committee takes as its task three connected kinds of support for farmers:

1. Policies to help new farmers get started.
2. Policies to help new farmers achieve efficiency.
3. Policies to ensure that the benefits of efficiency are retained by the farmer.

In addition, the case for public policy support for small and part-time farmers needs to be made. Small and part-time farmers preserve farmland far out of proportion to their economic significance. The presence of a nucleus of small, part-time farmers in an area strengthens the farm supply and farm equipment repair businesses for the larger commercial farms. Part-time farming is a training ground and a proving ground. Many younger people who aspire to be full-time farmers master the technical and managerial skills at this level. Others learn, at a low cost to themselves and society, that they are not cut out for commercial farming. Thus, we should view part-time farming as a crucial part of farm training in an era when few people have farming experience in their backgrounds. A sizable number of rural Maine families can piece together a decent living by producing farm products, along with cutting wood, plowing snow or doing other jobs.

In summary, we believe that there is an advantage to society in having a successful farming enterprise in Maine. We feel that the natural resources of Maine can support a viable agricultural enterprise and suggest in the following sections, policies which will encourage this activity.

### 3. BARRIERS TO ENTRANCE TO FARMING

#### A. Competing Uses for Land

Increasing land prices create a barrier for young farmers, particularly in geographically attractive areas along the coast, in the mountains, and near lakes. Planners, particularly at the local level, often represent an impediment to farming when they propose development on prime agricultural land because the land, besides being aesthetically attractive, is well-drained soil and therefore, most suitable for development of housing, etc. Officials who set drainage and other regulations that promote the use of the best-drained soils contribute to the use of the best agricultural land for purposes other than farming. The land becomes more expensive and, thereby, less accessible to new farmers. Little, if any, consideration is given to long-term agricultural planning and the social, economic, and ecological benefits to the community of keeping the best land in agriculture.

Members of the community sometimes complain about the agricultural practices of farmers in the area--particularly the use of manure which is sometimes "smelly" for a few days. Often their unwillingness to accept this develops into another reason to exclude farmers from their area by whatever means available, such as property sales for development and zoning for residential dwellings, rather than for agricultural use.

#### B. Public Education and Awareness

The lack of education of the general public regarding the complexity of our present agricultural system and its effect upon their lives, has been identified as a barrier to acceptance of policies that will support an economically-efficient agriculture. General education in agriculture is important at all levels from kindergarten through adult. The food system needs to be explained thoroughly so it is understood by the general public.

#### C. Agricultural Education

Agricultural sciences are taught to those people preparing to enter support industries, such as marketing services, research institutions, and farm supplies companies, as well as to those entering farming. There is a definite need for more practical education for small farmers in management, agricultural skills, and appropriate technology. Many young farmers are less interested in specialization or in four-year courses and would find two-year courses in general farm management and diversified farming more helpful. Extension courses and workshops in management, production and local marketing, can help remove this barrier for small and part-time farmers.

Numerous educational opportunities for potential or current farmers in Maine are offered by the College of Life Sciences and Agriculture at the University of Maine at Orono. Programs of study currently available are described in Appendix ENT 1.

Vocational agriculture programs are offered at several schools throughout several regions of the state. A list of programs and a description of the current activities to expand these offerings appears in Appendix ENT 2 of this report.

Finally, the best education for potential new farmers is to have grown up on a successful farm. Many who seek to enter farming have not had this experience and this is a definite barrier. Apprenticeship programs or other methods of uniting experienced farmers with prospective farmers can help meet the need for preparation of new farmers for farming. One example of an apprenticeship program currently operating in Maine appears in Appendix ENT 3. Many informal apprenticeship arrangements exist in Maine, and these make a positive contribution to educating the future generation of farmers.

#### D. Availabilitiy and Quality of Financial Assistance

Adequate credit is available from many sources for purchasing, equipping and operating conventional farms. In some cases, excess credit is available. In other cases, no credit is available to assist entrance into farming.

Among sources of credit are commercial banks, Production Credit Associations, Farmers Home Administration, credit unions, farm supply businesses, and private individuals. The Small Business Administration has guaranteed farm loans from banks. The amount of credit and the rate of interest are determined by the lender, based on several factors; including the ability to repay the loan, collateral, previous credit history, management ability, market for products, and projected costs and returns of the farming operation. Prospective borrowers find it advantageous to shop around when seeking credit. Generally, FmHA, PCA, FLB, and SBA loans are made at slightly lower interest rates than most commercial bank loans.

Financial management assistance, advice and supervision provided by the lender varies from adequate to virtually none. Most lending institutions require or at least expect the borrower to have or assume the initiative to seek out and utilize sound management assistance. Basic management principles, methods, and procedures, as well as highly sophisticated electronic farm accounting systems, are available. The less sophisticated assistance is usually available at no or low cost (as from CES, for example); the more complex systems are available at modest cost (ELFAC, DHIA, Agrifax, Profile, and others, are examples).

Perhaps the most critical need is start-up capital for persons desiring to start farming. One possible solution is for the present farm owner to participate in a financial plan with the prospective buyer on an installment plan. Another possibility is the use of the Maine Loan Guarantee Authority or similar state agency.

In summary, there is adequate credit and financial management assistance available for persons desiring to enter farming. The judicious and disciplined use of both by lender and borrower is necessary to assure productive, efficient farm enterprises in Maine.

"No matter how good your government is, and no matter how good your loan companies are, you cannot borrow yourself out of debt. And there ain't no way anybody will loan you a profit." (remark from a Small Farmer Conference, 1978)

#### E. Effects of Government Regulations and Policies

Government regulations and policies were frequently cited as problems at the Maine Food and Farmland Study Commission hearings.

This section is an overview of the effects of regulations on agriculture and strives to identify some areas where government actions restrict the entrance to farming by interested entrepreneurs.

1. Unemployment and Workmen's Compensation. These laws presently do not affect small farmers, since most are not covered by either. For entrepreneurs who wish to start labor-intensive operations, the cost of labor laws may be prohibitive. These taxes, when combined with FICA taxes and income tax withholding, account for 35 to 40 percent of the minimum wage salary.
2. The Child Labor and Minimum Wage Provisions of the Fair Labor Standards Act only apply to farmers who have 500 days of employment in any quarter of the preceding year. Assuming new farmers to be less labor-intensive than this, the standards would not restrict entrance into farming.
3. The procedures required to import Alien Agricultural Workers into the United States significantly restrict the use of foreign workers. The regulations governing the import of foreign labor have been questioned even by the agencies in charge of the regulations. In labor-intensive farming (apples, blueberries, and to a lesser degree, potatoes), these regulations may reduce the number of people willing to invest in the industry.
4. The Income Tax Law has numerous provisions which are aimed at helping farmers reduce their tax liability. These provisions can be of value to family farmers even though their tax liability is usually low. Regardless of the accounting method used, the record keeping requirements for income taxes are often seen as excessive by the small farmer. As in most businesses, today's farmers, must have bookkeeping skills and spend extensive time keeping records for the IRS.
5. Estate, Inheritance and Gift Taxes have traditionally impeded inter-generational transfers of family farms. The 1976 Federal Tax Reform Act significantly reduced the adverse effects of estate and gift taxes. This was done by raising the estate exemption and by offering a large tax credit. The state inheritance tax may still restrict entrance to farming in a few cases.
6. Pesticide Control Laws require that pesticide applicators be certified and that pesticides be registered. Applicators must pass a test and/or take special training courses to become certified. This may help discourage a few from entering farming, but is not felt to be significant.
7. Transportation Regulations apparently are not selectively adverse to small or new farmers and probably do not restrict entrance to farming.
8. Occupational Safety and Helath Administration (OSHA) regulations are new to agriculture. When enforced, these standards could make it difficult for new farmers to get started. Those enterprises with a great deal of diversification or having old equipment would be hardest hit. Although agriculture is largely exempted now, OSHA standards could have adverse economic impacts on agriculture in the future

9. Social Security Taxes (FICA) are escalating rapidly. The combined rate is now at 12.19% and is scheduled to go up to 15.35%. Self employment taxes are now set at 8.1%. These taxes both complicate and increase the cost of doing business. This tax applies to all farmers, and all must keep the required records and pay the taxes.
10. Health Rules and Regulations may have an impact upon entrance to farming. For example the combined effect of the Interstate Milk Shippers Certification and the Maine Milk Regulations and Standards can dictate costly revisions of milk productions and storage facilities. These are the rules which required the replacement of milk cans with bulk milk coolers. While these have had a positive effect on the quality of milk, the cost of implementation can be a barrier.
11. Environmental laws and concerns often restrict farm enterprises, concern and the threat of future laws appears to be more restrictive than actual laws. New provisions such as Section 208 and Section 404 of the Clean Water Act may have a significant impact but are too new to be evaluated.

The possibility and desirability of entering farming may be affected by the totality of regulations in several ways. Some regulations impose additional capital costs; others add to recurrent costs without compensating increases in farm revenue. The complexity of farm management may be significantly increased, deterring some capable people from entering and adding problems for those who do enter. Finally, the requirements imposed by new regulations add another uncertainty to the many that already beset farm operators as they try to plan rationally for the future.

#### F. Effect of Excess Production Created by Entrance into Farming

For years people have recognized that efforts of the government to help the agricultural community have continually kept the supply of commodities artificially high. This "cheap food policy" has, in fact, kept the prices received by producers relatively low. The cause of oversupply most often cited is the availability of low interest Federal funds to purchase and operate farms. This assistance usually comes from FmHA. Further, FmHA has been charged with not requiring good management on the part of their borrowers. FmHA recently has made available 5 percent real estate loans and 3 percent emergency loans. Farmers who must secure conventional loans are placed at the disadvantage of having to pay much higher finance rates. This results in the successful farmers being penalized and made marginal, while the less successful farmers are secured by the Federal funds. It should be noted that FmHA loans only to people who cannot secure financing from private sources. The resulting attitude from all of this, particularly with successful farmers, is that we do not have to have more farmers and that poorly managed farms should be allowed to fail. In other words, if we get marginal producers into production and further increase supplies in an excess market, what will we do with the excess production which drives down the price and harms all producers?

It is felt that government actions which encourage new farmers to enter farming are now politically feasible. The problem is that if the programs are successful and a great number do get into farming, then resistance will surely occur because of the potential oversupply situation. To avoid this resistance, statewide programs aimed at helping people enter farming should only be available to people who will produce products which are not excess in supply or are not grown in the state. This resistance to entry to farming should be considered prior to the proposal of any laws which will use low cost, government funds to aid people to enter farming.

Marketing problems will be experienced when new products are produced in Maine. These problems must be anticipated as part of the educational and financing processes. In addition, smaller producers of conventional agricultural products may have difficulty in identifying or attaining access to appropriate market channels. The importance of the marketing function cannot be ignored when entrance to farming is contemplated.

#### 4. EXAMPLES OF CURRENT ENTRANTS TO FARMING

Information regarding actual experiences of those seeking to enter farming or who have entered farming were obtained from these sources:

- a. Vocational agriculture teachers in Maine
- b. FmHA offices in Maine
- c. County CES offices in Maine
- d. Members of the Experiment Station's Small and Part-Time Farmer Advisory Committee
- e. Farmers known to Entrance to Farming Committee members.

A summary of the results of these surveys is attached to this report as Appendix ENT 4. It is clear from reviewing the original documents that a great variety of experiences are evident in Maine.

Successful entry into farming seemed to be associated with personal determination, adequate training, appropriate financing, and good managerial ability. Barriers to entry appeared to be lack of education, lack of determination, lack of ability or inclination to be a farmer, and poor financing. A summary of the experiences of recent entrants to farming is presented in Appendix ENT 4.

#### 5. FINDINGS AND RECOMMENDATIONS

IF THE FAMILY FARM IS TO SURVIVE, A QUALIFIED NEW GENERATION OF FARMERS MUST BE ABLE TO ENTER FARMING. DUE TO MAINE'S TOPOGRAPHY AND CLIMATE LARGE SCALE FARMING IS POSSIBLE IN ONLY A FEW AREAS OF THE STATE. IF MAINE'S AGRICULTURE IS TO EXPAND, WE MUST ENCOURAGE FAMILY FARMS, INCLUDING SMALL AND PART-TIME OPERATIONS.

Finding: Adequate land resources must be available to entrepreneurs wishing to enter farming. Preservation of Maine's best agricultural land is essential. Barriers to the intergenerational transfer of farms must not be too great and must encourage the transfer of farms to the most efficient users.

Recommendations:

- The recommendations of the Farmland Preservation Committee should be implemented. Additionally, the Maine Department of Agriculture should be charged with developing programs which would encourage non-farm land-owners to lease their land to farmers.

- The Legislature should amend inheritance tax laws to increase exemptions to federal levels.

Finding: Available markets are of fundamental importance to entrance to farming. Major commodity markets have evolved into very sophisticated and efficient systems. Small and part-time producers often have difficulty in satisfying the quality and quantity demands of conventional markets.

Recommendations:

- The legislature should fund the Direct Marketing Act which specifies activities required to expand direct farmer to consumer marketing. This act (Chapter 505 of the 108th Legislature) assigns major responsibilities to the Maine Department of Agriculture.
- The Maine Department of Agriculture should facilitate the creation of producer, marketing, and storage cooperatives.
- The Maine Department of Agriculture should study purchasing and pricing policies of large buyers of fruits and vegetables and encourage them to buy locally and should assist small Maine growers to organize both their production and marketing more effectively to meet the legitimate needs of buyers.
- The Maine Department of Agriculture and the Cooperative Extension Service should expand their information programs about existing market outlets.
- The State should study the feasibility of revitalizing the local food processing industry. This should include an evaluation of current activities in the state.
- The Maine Department of Agriculture should be charged with making Maine's public institutions aware of the advantages of buying locally produced goods. Pilot programs should be implemented to determine the feasibility of local institutional buying. If pilot programs prove the feasibility, public institutions should be required to purchase some or all of their needs locally. Support mechanisms may be needed.

Finding: Modern agriculture requires extensive knowledge of sophisticated production, management, and marketing methods. Compounding this problem, many of today's entrants do not have a farm background. Methods used by many of the smaller new farmers require skills that are not used by neighbors and have nearly been lost from the farm community. Educational needs fall into four categories:

1. Conveying to young people a realistic idea of what commercial farming is about;
2. Creating opportunities to acquire some years of hands-on experience before making a commitment to farming;
3. Formal training opportunities in technical skills - welding, equipment operations, animal care, management techniques, financial planning, marketing and sciences (soils, crops, and engineering);
4. Continuing improvement and updating the skills of active farm managers.

Recommendations:

- The Department of Education and Cultural Services should be encouraged to expand vocational agricultural programs, upgrade vo-ag courses, and add more vocational agricultural teachers. Training curriculums should include alternate marketing methods, financing mechanisms, how to select a farm, agricultural economics, farm management, and use of appropriate technologies.
- The Maine Department of Agriculture should be charged with encouraging apprenticeship programs. Traditionally, most apprenticeship programs have been farmer/employee relationships. More formalized arrangements should be made through work-experience programs.

- The Maine Department of Agriculture, in cooperation with the Cooperative Extension Service, should identify successful farmers and get them together with would-be entrants who need help or who would like to enter into apprenticeship programs. (Other states have had successful experiences with this type of program.)

- The University of Maine and the Cooperative Extension Service should be charged with expanding educational and research programs especially designed for small family farms, in terms of biological and conventional farming methods.

- The University of Maine at Orono should be charged to design and implement a program which would combine apprenticeship with formal educational programs. This would be an associate degree program in Small Farm Management.

Finding: Rapidly increasing farm input costs have driven the cost of entry into farming to prohibitive levels. Traditional financing mechanisms appear to be deficient in dealing with the low-equity, high risk venture of today's new farmers. New financing approaches may be required if non-wealthy entrepreneurs are to get into farming.

Recommendations:

- The Maine Department of Agriculture should be charged with aiding carefully screened entrepreneurs in securing venture capital for agricultural projects. Projects could range from new marketing methods to new commodities to new production technologies. Screening should be done by a committee established by the Maine Department of Agriculture.

- A land mortgage fund similar to the Minnesota Farm Security Act should be enacted by the legislature. This fund would be administered by the Maine Department of Agriculture.

Finding: If smaller farms are to be economically viable, they must increase their relative efficiency. Economics of scale of larger producers must be approximated by using optimum combinations of appropriate management, production, and organizational technologies. A substantially different set of start-up problems exists for the small farmer. These farmers, however, play a significant role in preserving farmland and supporting the agricultural business community.

Recommendations:

- The University of Maine and the Cooperative Extension Service should be charged to expand work in alternative technologies. Reallocations of existing resources should be made if additional resources are not obtained. Such areas should include appropriate equipment, biological soil management methods, integrated pest management, and minor crop production.

- The University of Maine should collect, analyze and adapt data from world-wide sources on alternative technologies. A library of existing methods should be maintained, with more popular information published for easy access.

- The Experiment Station's Small and Part-Time Farmer Advisory Committee should be charged with the task of assessing the Commission's report and recommending ways in which future implementation of the report can serve the interests of small and part-time farmers. Their recommendations will be submitted to the relevant agencies.





## APPENDIX



## Maine Food and Farmland Study Commission

(Chapter 65, Private and Special Laws 1977, as revised by  
Chapter 89, Private and Special Laws 1977.)

Sec. 1. Maine Food and Farmland Study Commission. In order to protect the food production capability of the State, to provide consumers with ready access to wholesome, locally-produced food products and to encourage greater food and agricultural self-sufficiency, there is hereby created, within the Department of Agriculture, the Maine Food and Farmland Study Commission to study the problem of conversion of farmland to other uses. The commission shall recommend to the Governor and to the 109th Legislature policies and programs to protect agricultural lands from urban encroachment and residential development by:

1. Agricultural use of land. Encouraging the agricultural use of land, thus contributing to the income and employment of many citizens of the State and to the Maine economy in general;

2. Continuity of agricultural open space. Encouraging the continuity of agricultural open space with its environmental benefits, including rural aesthetics and enhanced air and water quality; and

3. Field of agriculture. Encouraging and enabling successive generations of Maine citizens to enter the field of agriculture.

Sec. 2. Commission; duties. The commission shall also prepare any other recommendations it deems necessary to maintain an agricultural economy in the State. Toward these ends, the commission shall:

1. Compile information. Compile existing information on prime and unique agricultural land, including that which is currently in use or which has the potential to be used, with particular emphasis on lands subject to urban pressures of development;

2. Review. Review efforts made in other states and the Province of Canada to protect agricultural land and develop recommendations as necessary to protect Maine's agricultural land;

3. Develop recommendations. Develop specific recommendations toward greater state self-sufficiency in the production of food, indigenous fertilizers and soil-improving materials;

4. Examine federal and state policies. Examine existing federal and state policies and programs which may be contributing to the conversion of prime agricultural land or which may be unnecessarily restricting Maine agricultural enterprise and make recommendations for change;

5. Make determinations. Determine the feasibility of diversifying agricultural production for the benefit of both producers and consumers;

6. Make recommendations. Recommend ways by which statewide agricultural resource planning may be coordinated in the state; and

7. Study and recommend methods. Study present successes in direct marketing of food in Maine and recommend methods for increasing the scope and effectiveness of direct marketing.

Sec. 3. Membership. The Maine Food and Farmland Study Commission shall be composed of 21 members. After consultation with farming interests in the State, the Governor shall appoint 11 public members who shall be broadly representative of Maine's agricultural interest, including, but not limited to, the dairy, the poultry and the potato industries and commercial, small-scale and organic farming interests, as well of those of food consumers. The 11 public members shall be appointed from a list of 22 names, 11 submitted by the Speaker of the House of Representatives and 11 submitted by the President of the Senate. The remaining 10 members shall include the Commissioner of Agriculture, the Commissioner of Conservation, Director of the State Planning Office, the Commissioner of Environmental Protection, the Vice-president for Research and Public Services at the University of Maine, the Dean of the College of Life Sciences and Agriculture of the University of Maine, the Director of the Cooperative Extension Service, the President of the Maine Association of Conservation Districts, or their respective designees, one member of the House of Representatives and one member of the Senate.

Sec. 4. Termination; officers; expenses. The commission shall terminate on June 30, 1979, and all appointed members shall serve terms to expire on that date. The commission shall elect from its own membership a chairman and such other officers as it deems necessary. Meetings shall be held at the call of the chairman or at the call of more than half of the membership.

Sec. 5. Assistance. The commission shall have the authority to request assistance of state agencies, departments, legislative committees or other instrumentalities of the State, which shall be provided to the extent possible within the limits of existing resources.

Sec. 6. Sources of funding. The commission may request and receive funds to carry out the purposes of this Act from any governmental or private source.

LAND-1

## FARMLAND PRESERVATION METHODS

*This paper describes various farmland preservation methods. Much of the information is from a survey of all 50 State Departments of Agriculture. The Report was prepared for the Committee on Farmland Preservation of the Maine Food and Farmland Study Commission.*

By Tyler Libby  
2/8/79

- Contents -

- A. Differential Assessment
  - 1. Preferential Assessment
  - 2. Deferred Taxation
  - 3. Restrictive Agreements
  - 4. Agriculture Districts
- B. Development Rights
  - 1. Public Development Rights
  - 2. Transfer Development Rights
- C. Fee Simple Purchase/Transfer
  - 1. State/Federal
  - 2. Private Trusts
- D. Land Trade
- E. Zoning
- F. Positive Urban Approaches
- G. Tax Manipulations
  - 1. Inheritance
  - 2. Capital Gains Tax
  - 3. "Circuitbreakers"
  - 4. Other
- H. Land Use and Development Review
- I. European Methods.

A. Differential Assessment. Forty-two states, including Maine, have one form or another of differential farmland tax treatment laws. These laws enable government officials to tax certain properties based on values other than the traditional "highest and best use" value. Farmland is usually assessed for its "farm use" value and not its speculative value. This usually results in reduced property tax liabilities for farmers.

1. Preferential Assessment. This, in its pure form, is simply taxing active agricultural land at its farmland value. Eleven states have this form of assessment law. Example states are Arizona, Idaho, and Iowa. This form of differential assessment has encouraged non-farm ownership of farms by making it cheaper for non-farm owners to hold land. In Maryland, home of the nation's oldest such law, it is reported that "developers, rather than working farmers, are getting the major benefits from the program". /1

Because of these negative impacts, no further consideration is made here.

2. Deferred Taxation. These laws force assessing at current use values with "roll back" taxes to be paid upon the conversion of land use. Most states have a three-year roll back, while others have a total roll back. Twenty-five states, including Maine, have this type of tax assessment law. Examples are Montana, Hawaii, New Hampshire, Connecticut. (See "The Farm and Open Space Tax Law - A Brief Analysis".)

Advantages:

- Effectively shifts property tax to non-farm sector.
- Legalizes past assessor's procedures which helped farmers informally.
- Is voluntary and easier to administer than police power types of programs.
- Can be administered by established agencies.
- Program costs are easily and clearly assessed.
- Is politically palatable because it accommodates a group of taxpayers and does not confront the group which pays for the program.

Disadvantages:

- Has not been effective in most of the areas in which it has been tried. Often used by speculators in development areas.
- If the penalty is high, very few participate; and if used, it poses a problem of being too rigid.
- If the penalty is too low, the program is not effective.
- Reduces the attractiveness of other, more effective and comprehensive, programs such as zoning and agricultural districts. This is because these programs use "farm use" assessment as the major incentive for farmer support.

3. Restrictive Agreements. System basically requires land owners to sign agreements with communities to keep land in agriculture in order to get deferred assessment of their lands. Penalties are usually stiff for breaking agreement and in some instances the planning body has to approve the change. Eleven states have some sort of restrictive agreement program.

Example: California's Land Conservation Act was passed in 1956. It provides for a ten-year renewable restrictive agreement with severe penalty. The penalty is 12.5% of the market value of the land when the agreement is broken. To get participation, the state pays the towns a "subvention" payment to offset revenue losses. Due to ineffectiveness of the law in developing areas, efforts are being made to make participation mandatory.

---

/1 Belden, et. al., New Directions in Farm, Land and Food Policies, the Conference on Alternative State and Local Policies, Washington, 1978



Advantages:

- Relatively permanent, once approved.
- Effectively shifts property tax burden to non-farm sector.
- Legalizes past assessor's procedures which helped farmers informally.
- Is voluntary and easier to administer than police power types of programs.
- Can be administered by established agencies.
- Program costs are easily and clearly assessed.
- Is politically palatable because they accommodate a group of taxpayers and do not confront the group which pays for the program.

Disadvantages:

- Loss of tax revenue can make the program locally unpopular unless some kind of "subvention" payment is available.
- Is hard to define eligible land and hard to establish fair farmland values.
- Generally has been used heavily by corporations and has failed to work on urban fringes.

4. Agricultural Districts. This concept was first applied in New York State in 1971. It offers Differential Taxation and other benefits in return for the creation of blocks of restricted agricultural land.

Example: New York's agricultural district law requires a minimum-sized block of five hundred acres. To be eligible, owners must own a minimum of ten acres and show gross sales of over \$10,000 per year. Once the land is under the eight-year restrictive agreement, a penalty equal to five years' roll back taxes is imposed if the land use changes. Other features have been added to make districting attractive, such as: exemption from public nuisance laws for normal farming practices, eminent domain rights for non-farm developments are severely restricted, the power of government to tax on a foot-frontage basis for utilities is restricted.

Advantages:

- Locally initiated, voluntary and popular with farm groups.
- Encourages capital investments by eliminating the "impermanence syndrome". Encourages preservation and development of the commercial agricultural service community.
- Promotes "block" retention of lands.
- Places restraints on "public actors"
- Is voluntary and easier to administer than police power types of programs.

Disadvantages:

- Only advantageous when good land occurs in blocks and is not scattered.
- Significantly reduces tax base in agricultural communities.
- Accused of creating a "special class of citizen".

Comment: New York is now considering: (1) Lengthening the term of contract, (2) developing more precise data and more explicit guidelines, (3) combining districts, and (4) analyzing total actual cost of program.

B. Development Rights. The right to develop land has been identified as separable from other land rights in a number of areas. The public can then lease or purchase that right, thereby permanently preventing development. Some states have combined the development right concept with zoning. Instead of purchasing the development rights,

the town can issue development rights "certificates" which the land owner can then market to developers. Developers must be required to possess such "certificates" to build. Theoretically, this can compensate the land owner for value taken by down-zoning of his land. This process is referred to as transfer of development rights.

1. Public Development Rights/Easements. These programs involve the separation of development rights from fee simple ownership and transfer of those rights to the public either by lease or outright purchase. The difference between development value and farmland value is paid to the farmer as just compensation. Methods of financing include a special capital gains tax or a real estate transfer tax. A number of states, including Maine, allow municipalities to buy, accept or lease development rights; others include Massachusetts, New Jersey and Washington.

Example: Suffolk County, New York. This program was funded with thirty-year serial bonds. Recently increased costs stopped continuation of the program. Estimates to complete the project are now \$117 million for 15,000 acres. Farmers submitted bids to the county for the sale of their development rights. Upon receipt of the bid, appraisers were employed to appraise the value of the property for its highest use and its agricultural value. The county planned to take whatever is left after the voluntary bid procedure by eminent domain.

Advantages:

- Usually voluntary and it distributes the cost to people benefitted.
- Allows farmers a one-shot reduction in debt load.
- Like all compensated programs, it is easy to administer.
- Reduces inheritance taxes by removing speculative value
- Reduces absentee ownership by reducing appreciating values of land.

Disadvantages:

- Due to land pressure created by the act itself, the remaining land value inflates, therefore driving up the cost of the program.
- Future farmers lose appreciating value which has traditionally been used as retirement and collateral.
- Extremely expensive if near the urbanizing area.
- Often causes "leapfrog" development, if not regional, and, if regional, suffers from an anti-home-rule sentiment.
- Cited as being a "distortion of police powers".
- Can produce excessive land-use rigidity.

2. Transfer Development Rights. This is when the severed development rights are allowed to be sold on the open market. A zoning system which allows for the different density zones is essential

Example: Buckingham County, Iowa issues certificates to any owner of a ten-acre parcel. One certificate per acre is given out. Developers must then purchase development rights in order to increase densities on their lands. If certificates are unmarketable, the county can (1) buy them themselves, (1) exclude the land from the program, (3) change the system in a manner which would make them marketable.

Advantages:

- Cheaper to public.
- Permanent.
- Works well in rapidly-growing areas.
- May allow developers to avoid delays created by current land-use

- regulations by allowing him to purchase the right to develop lands which are zoned for development.
- Allows compensation for loss of development potential.

#### Disadvantages:

- Nearly impossible to balance supply and demand of rights certificates. If the supply is too great, land owners lose the value of their land, and if the supply is too low, homeowners cost becomes excessive.
- Once rights are sold, future farmers lose land appreciation which is often their retirement.
- Farmers complain that they are still taxed while holding the certificate (after they have lost the development rights).
- Eligibility determinations "nightmarish", especially in slow-growth area.
- Penalizes people with good developable land and helps ones with marginally developable land. For example: a landowner with ten acres of poorer land would receive certificates worth the same as a landowner who owned ten acres of prime development land.
- Elimination of the option to develop a limited number of single family detached lots can severely limit farmers who traditionally have developed a few lots to cover extraordinary farm expenses.
- Often can make developers build less dense (fewer floors) than now because the marginal profit per each additional unit declines but the TDR values per unit remains constant.
- Creates a transfer of wealth from consumers of floor space to owners of land in the development area and the owners of existing buildings.
- Loads entire burden of land preservation on future home buyers.
- Conflicts with national housing policies aimed at increasing the supply of low-cost housing.
- If compulsory, it may become illegal. If voluntary, you get "no real" land use control.
- The system can only work on a township basis due to politics of transferring wealth across township lines and can cause "leap-frog" development when done on a local level.

C. Fee Simple Purchase/Transfer. This simply involves government or private group purchase of land then lease or sale back to farmers with land use restrictions added.

Example: Saskatchewan has a land bank which purchases land and then leases it back to farmers (often the same farmer who sold it). The farmer's descendants automatically have first option on the land. Lease fees cover taxes. Farmers can buy the land back at the end of each five year period. It should be noted that, unlike Maine, Saskatchewan farmers couldn't find land buyers when they wanted to retire.

#### Advantages:

- Provides immediate one-time financial aid to farmers.
- Assures farmers a retirement while allowing easy entry to farming by young people.

#### Disadvantages:

- Not popular with farmers unless they now lack a good land market.
- Transaction and other costs high.

D. Land Trading. This is the process of trading publicly-owned lands for privately held prime farmlands. The land is then either sold or leased back to farmers with restrictions added.

Example: Although proposed in several areas, no states are employing this method.

Advantages:

- Little cost in a state with an abundance of publicly-owned land.
- Voluntary.

Disadvantages:

- Assumes willingness to trade, and may be hard to administer.

E. Zoning. This method involves traditional zoning complemented by exclusive agricultural zones.

Example: Many states have this type of zoning; Hawaii has probably been the most successful. Their success is largely due to the fact that zoning is state-wide and land-use changes require a permit by a state commission. Michigan has developed a technical manual for its communities to use to implement agricultural zoning.

Advantages:

- Can be effective and is familiar.
- Uses knowledge of land capabilities. (Is comprehensive.)
- Can include "buffer" zones between agriculture zones and built-up areas.

Disadvantages:

- Poor public image.
- Requires much public support and commitment.
- Often can lead to no growth situations which can be exclusionary and illegal.
- Can cause severe reduction in tax base, especially in rural communities that have a high proportion of agricultural valuation.

F. Positive Urban Approaches. These approaches include those public programs and policies that encourage centralization and include programs which:

1. Reward developers for cluster developments.
2. Levy a "site value" tax and otherwise encourages development of good sites.
3. Alter city taxes by increasing taxes on land and reducing taxes on improvements.
4. Assist developers in acquiring permits to develop in planned growth areas.
5. Provide public support to multi-family housing.
6. Provide for cheap developable lands. Some suggest a land bank like Saskatchewan's to buy the developable land (instead of farmland) and make it available to developers at reduced costs.

G. Tax Manipulation (non-property).

1. Inheritance Tax. By reducing inheritance taxes on farmlands, farms may be less likely to be broken up. A penalty for eventual land-use changes can be added. To prolong development, the penalty can be graduated from a very high level down to a low level over time. See special inheritance tax report.

Advantages: Reduces chances of heirs being forced to sub-divide the farm to pay inheritance taxes.

Disadvantages: Farm estates may not settle for years if the tax isn't substantial.

2. Capital Gains Tax. This method provides for a graduated capital gains penalty tax on short-term landholders. The penalty usually decreases rapidly over time.

Example: Vermont's 1973 capital gains tax has reduced land speculation. The penalty for short-term landholding is extreme (70% at 6 months) but reduces rapidly, reaching zero at the end of six years. Montana has added a twist by exempting all residential properties from the law.

Advantages: Discourages short-term speculation.

Disadvantages: Costs are often passed on to new home buyers.

3. "Circuit Breaker" Tax. This law allows farmers to reduce their total tax load if property taxes exceed a certain percent of their total income. In return, farmers sign a contract assuring that the land use does not change.

Example: Michigan allows farmers to contract with the treasury to review income tax credits if their property tax exceeds 8% of their total household income. The land-use contract is for ten years.

Advantages:

- Credit tax relief to only those that need it.
- Helps family farms.
- Assures equitable farm tax burden.

Disadvantages:

- Reportedly not very effective.

4. Other Tax changes include any which will discourage "tax loss" farming. Current income laws encourage non-farm investment in farming as a method of reducing tax liabilities created by income from other sources. See tax loss farming report.

H. Land Use and Development Review. These methods include any review processes that require permits. These processes, by changing public policy, can include stronger farmland consideration. These programs range from special review processes like A-95 to complex processes that resemble zoning.

Example: Vermont requires all developers to get permission from the state environmental board. The California Coastal Zone Conservation Act of 1972, a state-initiated, regionally-planned, regulatory system, gives the state coastal zone conservation commission ultimate regulating power. The commission members must have certain scientific and occupational backgrounds.

British Columbia has instituted a complex land-use control system. The system used commodity price control and a development freeze to entice support. The province has the authority to buy or zone agricultural land. Once zoned, there are few appeals for variances due to the "multi-level bureaucratic nightmare" of the appeal procedure. Parcel sizes, economic viability, and market condition are all intentionally removed as considerations. Proponents claim farmland savings of about 40,000 acres in its first five years (11.5 million acres total cropland base).

I. European Methods. European agriculture is entirely different from American agriculture. Their agriculture is heavily subsidized with most commodity prices being controlled. Except for a very few items such as butter, there are no surpluses.

Surpluses that do occur are "dumped" onto the East European market. Most countries have extreme import tariffs on all products. Europe and Russia are the world's largest importers of agricultural commodities. As a percent of their needs, European countries grow very little of their food. Due to the high cost of food, Europeans still retain the practice of seasonal buying.

Except for a few areas, farm units are so small that the entire units are used. Most farms are diversified and, except for the low countries, use tremendous amounts of fertilizers and other non-land inputs.

According to Johannes Delphendahl, "The European experience is not applicable to the United States. They have a 2,000-year history, a high population density and a severe food shortage".

"European systems for land-use control and planning are highly centralized, administratively run, and politically managed. There is very little judicial interference in those systems."

Examples: Sweden and Switzerland have tough land-use zoning. Sweden has a law which does not allow agricultural land to be used for other purposes. Great Britain has an active "quasi" public land trust which buys land and leases it back to the farmers. Nationally, nearly 400,000 acres are involved. Germany's main land-use reform involves consolidation of scattered heirship properties into efficient farm units. Programs redistribute the holdings of entire communities with regard to soils. Once reorganized, the new owners qualify for low-interest loans to build homes on the "new" farms. Often redistribution programs include very complex farm management practices such as irrigation systems. Old village homes are then remodeled and sold to newcomers. Germany's agricultural zoning is strict. Variances are given only if land is needed for another use. When subdivision is approved, the lot prices are politically established and the subdivision must be filled before another one is approved. France, unlike the rest of Europe, has more land and more specialized farms. Population pressures are slight. France has a program called "presumption" whereby the state, by eminent-domain-type methods, acquire first refusal rights on all land they want to preserve. Massachusetts has a similar law but it has not been used yet.

## EXERPTS AND SUMMARY

## STUDY OF NON-POINT AGRICULTURAL POLLUTION\*

## SNAP

The Study of Non-Point Agricultural Pollution (SNAP) was sponsored by the Maine Soil and Water Conservation Commission, the Maine Association of Conservation Districts, the Maine Department of Environmental Protection, and the Maine State Planning Office, and endorsed by Maine's Regional Planning Commissions. The study made it possible for Maine's 16 Soil and Water Conservation Districts to appraise and report individually on the three major non-point sources of agricultural pollution: soil erosion, animal manure, and chemicals. The statewide appraisal summarizes the reports prepared by the Conservation Districts. Copies of individual Soil and Water Conservation District reports may be obtained from District Supervisors (see Appendix C).

In addressing soil erosion and the resulting sediment as an agricultural non-point source of pollution, only fields at least 10 acres in size and used for row crops at least once in the past 5 years were studied. Limited funds and time prevented inventorying fields with less than 10 acres used for row crops. Fields smaller than 10 acres are important to agriculture in Maine, but most of the commercial row crops are grown on larger fields.

SNAP is a unique appraisal in that it is site specific. Rates of soil erosion were determined for each cropland field and identified on aerial photographs. This permits Conservation Districts to direct their limited resources to the worst problem situations on a priority basis. Fields with the highest rates of soil erosion tend to contribute the largest amounts of sediment pollution to surrounding waters.

Animal manure is a major source of non-point agricultural pollution in Maine. This appraisal identified farms with over 10 animal units; their locations are indicated on accompanying maps. The amount of manure produced in a given watershed directly influences the potential for non-point source agricultural pollution. A growing number of farmers have developed manure recycling plans and constructed appropriate handling facilities meeting United States Department of Agriculture Soil Conservation Service Field Office Technical Guide criteria to prevent or limit water pollution. Farms with plans and facilities also have been indicated on the attached maps. To control non-point source agricultural water pollution, Soil and Water Conservation Districts will draw on this information in directing technical assistance to farmers with the largest concentration of animal units adjacent to bodies of water.

\*Soil Conservation District - USDA

Under the authority of River Basin Surveys and Investigations, Section 6, Public Law 83-566, 68 Stat. 666 (16 U.S.C. 1006)

Pesticides and chemical fertilizers are essential to the production of food and fiber in Maine. These farm chemicals, however, have been identified as a third major source of agricultural non-point pollution. This appraisal has attempted to identify the types and amounts of agricultural chemicals being used within specific watersheds, based on the types and acres of crops grown. The potential for water pollution is related to the types and acres of crops grown in a specific watershed. This information should provide guidance for future studies designed to specifically identify chemical pollution by monitoring.

The timing and quantity of fertilizer and pesticide use was considered. Also evaluated were sources of spray water, the facilities for mixing pesticides, and chemical container disposal methods.

The development and implementation of complete soil and water conservation plans by farmers is fundamental to solving non-point agricultural pollution problems. Plans should represent each farmer's decisions based upon USDA's Soil Conservation Service (SCS) Field Office Technical Guide criteria for controlling soil erosion, recycling animal manure, and proper use of pesticides and fertilizers.



## SUMMARY

This three-part report discusses three sources of agricultural non-point pollution. Part I discusses the causes and effects of soil erosion and possible treatment. Part II discusses animal manure: the amount produced, disposal techniques, and water quality considerations. Part III discusses the use of agricultural chemicals and their impact on water quality.

Sheet and rill erosion on Maine's 302,742 inventoried acres of cropland averages 6.0 tons per acre per year and generates over 1.8 million tons of eroded soil annually. Approximately 15 percent of this eroded soil finds its way into Maine's waters as sediment. The most extensive cropland erosion problems are in the central part of Aroostook County. Nearly all gully erosion is in the eastern, central, and northern parts of Aroostook County. Cropland in the Knox-Lincoln Soil and Water Conservation District has the highest average per acre soil loss rate in the State, although the acreage involved is relatively small.

About 60 percent of the State's cropland needs conservation treatment to reduce soil loss to tolerable levels. Any accelerated conservation program must consider the economic impact on the farmer. Increased technical and financial help are needed to assist farmers in achieving land and water quality goals.

Approximately 2 million tons of animal manure are generated annually by approximately 166,000 animal units in Maine's 16 Soil and Water Conservation Districts. Improper storage of manure during the winter months and during periods when spreading would injure crops or prevent grazing is a major factor contributing to water pollution. Only 60 of 2,802 farms were identified as having animal manure recycling plans and animal manure storage facilities meeting SCS Field Office Technical Guide criteria.

Manure spreading practices and large numbers of livestock with direct access to water bodies were identified as potential sources of pollution on some farms.

Recycling plans are needed for all livestock enterprises to help farmers handle and store manure properly. Additional financial assistance is needed to encourage farmers to build needed manure storage facilities to prevent or reduce pollution of water bodies.

Chemical fertilizers and pesticides are essential in meeting the Nation's current food and fiber needs. Most agricultural operations use such chemicals according to label instructions and only in the amounts needed; however, the amount of toxic material used is increasing.

The potential for misuse and chemical accidents is also increasing. There have been incidents of pollution from agricultural chemicals in most areas of Maine. Problems occur in proportion to intensity of agriculture.

An evaluation of reported fishkills shows most have been caused by improper handling of pesticides. Biological magnification has occurred with some persistent pesticides used in the past. The greatest unknown of chemicals used in modern agriculture is the effect of two or more chemicals reacting together in the environment.

Nitrogen is highly soluble and represents a potential threat to human health in drinking water. Phosphorus contributes most to algae blooms in lakes and ponds and accelerates eutrophication.

Satisfactory methods must be found to properly dispose of pesticide containers and other agricultural waste to prevent contamination.

Economic benefits and environmental costs of using agricultural chemicals should be more thoroughly examined. Information about safe use of pesticides is being offered to the public as it becomes available.

TABLE 1 - TOTAL SOIL LOSS AND AVERAGE PER ACRE LOSS ON INVENTORIED  
CROPLAND IN MAINE'S SOIL AND WATER CONSERVATION DISTRICTS

Soil and Water Conservation Districts	Cropland (acres) <sup>1</sup>	Average soil loss (tons per acre per year) <sup>2</sup>	Total average sheet and rill erosion (tons per year)
Central Aroostook	144,954	6.9	1,000,000
Southern Aroostook	52,404	4.1	215,000
St. John Valley	48,920	6.9	338,000
Penobscot County	13,765	4.4	60,000
Kennebec County <sup>3</sup>	7,810	5.5	42,000
Somerset County	7,245	7.1	51,000
Androscoggin Valley	6,603	7.2	47,000
Oxford County	6,041	2.7	16,000
Cumberland County <sup>4</sup>	3,890	4.1	16,000
Waldo County	3,206	5.6	18,000
Piscataquis County	2,687	5.2	14,000
Franklin County	2,434	2.3	5,000
York County	2,223	5.1	11,500
Knox-Lincoln	354	13.3	4,700
Washington County	160	1.9	300
Hancock County	46	8.9	400
Totals	302,742	6.0	1,838,700

<sup>1</sup> Figures are only for fields 10 acres or larger except for Cumberland and Kennebec Counties.

<sup>2</sup> Average soil loss and average sheet and rill erosion figures vary slightly from District reports because of rounding.

<sup>3</sup> Includes 950 acres of fields smaller than 10 acres with soil loss problem.

<sup>4</sup> Includes some fields smaller than 10 acres in size.

TABLE 3 - FACTORS INFLUENCING SOIL LOSS

Soil and Water Conservation Districts	Total <sup>1</sup> cropland acres inventoried	Total cropland acres needing treatment	Percent of total in S&WCD	Factors producing excessive erosion <sup>2</sup>			
				Steep slopes	Long slopes	Poor rotations	Up and down hill planting
Central Aroostook	144,954	99,500	69	36,294	45,718	26,018	20,678
Southern Aroostook	52,404	17,526	33	10,297	7,653	3,775	6,273
St. John Valley	48,902	30,607	63	17,503	17,099	6,443	9,786
Penobscot County	13,765	7,560	54	2,294	2,407	1,733	1,720
Kennebec County <sup>3</sup>	7,810	4,045	52	1,269	1,803	931	1,191
Somerset County	7,245	5,400	74	131	2,173	1,462	4,315
Androscoggin Valley	6,603	3,707	56	2,096	2,551	2,139	1,074
Oxford County	6,041	342	6	186	322	330	181
Cumberland County <sup>4</sup>	3,890	1,475	38	645	520	170	148
Waldo County	3,206	2,137	67	514	474	1,615	1,004
Piscataquis County	2,687	1,300	48	323	394	583	--
Franklin County	2,434	183	3	52	61	60	10
York County	2,223	1,150	52	388	766	357	42
Knox-Lincoln	354	313	88	105	299	146	100
Washington County <sup>5</sup>	160	12	8	--	12	12	--
Hancock County	46	34	74	--	24	34	10
Totals	302,742	175,291	58	72,097	82,276	45,808	46,502

<sup>1</sup>Cropland inventoried was on fields 10 acres in size or larger unless otherwise indicated.

<sup>2</sup>A combination of factors influence soil erosion on most fields.

<sup>3</sup>Includes 950 acres in fields less than 10 acres.

<sup>4</sup>Includes some fields smaller than 10 acres in size.

<sup>5</sup>A large part of Washington County's erosion problem is on blueberry land which was not inventoried as part of this study.

TABLE 4 - NUMBER OF FARMS WITH OVER 10 ANIMAL UNITS (AU) AND THE NUMBER  
OF AU IN MAINE'S 16 SOIL AND WATER CONSERVATION DISTRICTS

Soil and Water Conservation Districts	Number of farms with over 10 AU			Number of AU		
	Poultry	Non- poultry	Total	Poultry	Non- poultry	Total
Androscoggin Valley	31	270	301	13,550	10,645	24,195
Central Aroostook	1	59	60	65	1,930	1,995
Cumberland County	46	181	227	1,850	7,400	9,250
Franklin County	14	123	137	1,403	4,227	5,630
Hancock County	8	31	39	1,063	520	1,583
Kennebec County	134	235	369	11,868	16,510	28,378
Knox-Lincoln	--	157	157	--	5,260	5,260
Oxford County	7	113	120	975	5,974	6,949
Penobscot County	33	159	192	3,984	11,118	15,102
Piscataquis County	2	57	59	120	3,880	4,000
Somerset County	61	337	398	7,150	13,005	20,155
Southern Aroostook	--	92	92	--	3,037	3,037
St. John Valley	1	63	64	12	1,502	1,514
Waldo County	167	203	370	18,882	11,251	30,133
Washington County	4	30	34	318	1,007	1,325
York County	31	152	183	3,295	4,670	7,965
Totals	540	2,262	2,802	64,535	101,936	166,471

TRANSPORTATION AND MAINE AGRICULTURE

*It is transportation, more than any other factor, that makes possible a modern economy. If no transportation between communities existed, each would have to be self-sufficient; cottage or home industries would prevail; a barter economy would exist; and the standard of living would be at a subsistence level, since man would be devoting full time to providing the basic necessities of life. The development of various modes of transportation has determined the location of cities and industries, made industrial and agricultural specialization possible, and reduced social and political barriers.*

--- American Farm Bureau

INTRODUCTION

It has been a consistent national policy that what the American farmer raised for market should get to the market place as quickly and as inexpensively as possible.

The Agricultural Marketing Act of 1937 declared that "the disruption of the orderly exchange of commodities in interstate commerce impairs the purchasing power of farmers and destroys the value of agricultural assets which support the national credit structure . . ."

A 1975 Farm Bureau report on "Transportation and Agriculture" states:

*During the past three or four decades, American farmers and ranchers have combined science, technology, and hard work to achieve the most remarkable increases in food and fiber production and productivity found anywhere in the world. But Americans and others throughout the world are still asking for more. Agriculture is willing to respond, consistent with its own interests, but it must have an efficient and dependable transportation system to deliver production input items to the farms and the fruits of production through the marketing and distribution system to the consumer.*

*Most agricultural products have little demand at the point of production or even at the point of processing. It is not until they are transported to the consumer that they reflect the full value represented in farm prices. All of the best efforts made in production will be lost if the distribution system breaks down or is given too little public policy consideration.*

A report by the Governor's Committees on Potatoes, Poultry and Dairy, some years ago, declared that "Transportation problems facing Maine Agriculture rate high priority in any discussion of its future economic well-being. Because of geographical disadvantages, high transportation costs for imported feeds, grains, fertilizers and other commodities place Maine farmers in an unenviable competitive position."

Maine is more vulnerable to transportation crises than other areas because of the State's "end of the line" geographical location. Our interstate highway system is limited, our rail system is fragmented and one line is bankrupt. Inland waterways are not accessible and ocean transportation of farm commodities for domestic markets has not proven feasible.

The railroads' share of fresh potato shipments dropped from 85 percent in 1955 to less than 1 percent for the 1977-78 crop year. Concurrently with this decline, shippers have come almost entirely dependent on trucks. Nearly all highway shipments are by exempt commodity carriers--with close to 90 percent of the hauls by truckers based out of state. Because of such factors as energy costs, truck rates, distance, deadheading, and weather the potato producing region in Northern Maine faces perennial shortages.

This decline in rail shipments of potatoes relative to trucks followed, generally, a pattern in the transportation of vegetables as a whole. A recent report commissioned by the Federal DOT, "A Long-Term Study of Produce Transportation" (Manalytics, Inc., December 1977) concluded that "by the mid-1980's railroads will have essentially no share of the produce traffic." The report continued

*Without standby rail service, the wide fluctuations in truck rates between peak season and off-season that already cause serious dislocations among owner-operators and fleet owners will be exacerbated.*

*The withdrawal of the railroads from the produce market, coupled with the annual replacement for the truck fleet and the normal growth in total produce traffic, will require an annual investment of at least \$240,000,000 for at least 4,000 new tractors and trailers.*

On the other hand, Maine's poultry industry, our largest user of livestock feed--consuming more than two-thirds of a million tons of feed each year--is almost wholly dependent on rail imports from the mid-western grain belt. Ninety-eight percent of our grain is imported, more than ninety percent of which is shipped by rail. This is the reason Maine poultrymen are highly sensitive to all factors affecting transportation, especially rail rates.

The poultry industry experiences periodic shortages of rail cars and reasonable transit times. Since local storage facilities do not permit more than three to five days of reserve grain supply, any disruption of rail shipments can have a disastrous effect. During recent winters grain cars from the midwest have sometimes been enroute 20-30 days--three to four times the normal transit time. And the very survival of our broiler and layer flocks is extremely vulnerable to inconsistencies in the availability of feed.

The State has, for years, strongly protested to the I.C.C. concerning disparities in rates which Maine feed grain users pay compared to those paid in the Southeast. The 3 car rail rates for corn to Augusta, Maine and to Atlanta, Georgia, as of December 1978 were \$23.02 a ton here and \$9.21 a ton in Georgia--a difference of \$9.57. Since 1972 the disparity in 3 car rates between the two regions has widened alarmingly, almost doubling.

Year	Ex Parte	Percent Increase	From Toledo to Augusta, Me. Miles 890	From Toledo to Boston, Ma. Miles 759	From St. Louis to Atlanta, Ga. Miles 601	Difference Relative To South
						Augusta Boston
1972	281	---	\$12.40	\$10.30	\$4.92½	+\$ 7.35 +\$5.37
1978	357	9.0	23.02	18.78	9.21	13.81 9.57

Nevertheless, there can be no denying that the railroads of the country are in deep financial trouble, and Maine's lines are inevitably affected by the economic health of the rest of the rail industry. Since the 1890's our railroads have been in close partnership with Maine farmers. They have had a long history of innovative and efficient service to the State's agricultural industry.

Today, however, with trucks "in the driver's seat" with respect to most Maine farm commodities, concern is focused on truck-related issues and policies: energy, road conditions, weight and safety regulations and problems of deadheading, to name a few.

### A PROFILE OF MAINE'S TRANSPORTATION SYSTEM

#### Highways and Trucks

In 1978 Maine had 21,741 miles of highways, nearly 90 percent of which is rural. In 1967 more than 92 percent of the State's highways and streets were paved.

The ratio of highways to population places Maine third highest in New England: about 20 miles per 1,000 population. Only 17.5 percent of Maine's total highways and streets are a part of the State primary system and only 8.9 percent are a part of the Federal Aid primary system, including the 318 miles of Interstate 95.

The Commission on Maine's Future has estimated that more than 70 percent of Maine's population lies within a 30-mile wide I-95 corridor. Rough calculations also indicate that 2,400 of the State's 7,600 farms are in the same corridor, with about 32 percent of the State's farmland. While 70 percent of the population is within the corridor only 10 percent of these represent farm families. The Commission concluded that "With limited mass transit available only in the larger cities, with rail service limited, slow, and in some cases more expensive than other modes of transportation, with long commuting distances inherent in the State's rural character, and with Maine business and industry heavily dependent on trucks, it is not likely that Maine can easily or quickly shift its emphasis away from highways."

The farming community has long pushed for a more adequate highway system not only to gain ready and safe access to markets, but to help stimulate new agricultural enterprises. However, the development and improvement of Maine highways is rarely in response to economic need. Traffic volume, accident patterns and other safety factors are the normal criteria. A case in point is the long-recognized need for an extension of I-95 north of Houlton. There are not only safety concerns with respect to U.S. 1 through the Aroostook potato region, but general highway limitations--two lane traffic, narrow widths, hills and curves--discourage needed potato truckers from traveling into the County. Distance is, of course, a major factor, but distance can be modified by time--which is one of the exempt truckers' prime considerations.

The absence of adequate east-west highways within the State is also a concern. Again, roads have been built to reflect north-south traffic flow. But to rural citizens in both eastern and western sections of the State, the old saying is true that "you can hardly get there from here." What is said of U.S. 1 in Aroostook is every bit as true for such routes as U.S. 2 and Maine State 6 and 9.

This concern for east-west intrastate routes does not carry over to a major regional east-west interstate highway. A direct Bangor to Amsterdam, New York throughway, often proposed, does not appear to offer significant advantages for either the farm or non-farm population.



The present poor surface conditions of much of Maine's highway system is obvious not only to the traveler but to the revenue-starved Department of Transportation.

With the exception of feed grain importations, most of Maine agricultural products today are transported by truck--either exempt, contract or private. The volume hauled by regulated carrier is low because of the exemption of unprocessed farm commodities under the Interstate Commerce Act.

Reference has already been made to the shift from rails to trucks in the transportation of fresh potatoes. This has aggravated the seasonal truck shortages which the Maine potato industry has experienced for years. During the 1977-78 shipping season shortages were reported 55 percent of the time. Supplies were short every shipping day during the months of March and April 1978.

During early 1978 a special committee of the Potato Commission received a \$45,000 USDA market improvement grant to study alternate methods of hauling potatoes. Much of the effort expended during the early months of last year involved rail-truck transfers in Portland and Boston. To date a feasible inter-modal system (with accompanying industry commitment) has failed to materialize.

In the meantime, with its growing dependence on trucks, the farm community feels threatened not only by increasing energy costs and potential fuel shortages, but by such governmental policies as reflected in a recent proposal of the Federal DOT's Bureau of Motor Carrier Safety to change its "hours of service" rules. The potato industry, especially, protested that more stringent rules would worsen an already precarious situation.

### Railroads

Maine is served by three major rail lines, the Boston and Maine (B & M), the Maine Central (MEC) and the Bangor and Aroostook (BAR). The first two interchange at Rigby Yards in South Portland, and the latter at Northern Maine Junction near Bangor. In addition, there are 300 miles of Canadian lines in Maine. For years the Maine roads were characterized by "paper, pulp, and potatoes." During the past decade, potatoes have dropped out of that alliterative phrase.

Maine Central has about 800 miles of track, Bangor and Aroostook nearly 550, and the Boston and Maine less than 50. Compared to many other railroads of the U.S., the MEC and BAR are small lines which have survived economically because of specialized products. They differ from other New England roads, also, in that they are primarily originating rather than terminating lines.

During the past 10 years a great deal has been said about the merger of the three U.S. roads serving the State. Lengthy and sometimes bitter struggles have gone on between MEC and the Amoskeag Corp. which owns the BAR and controls about one-third of MEC stock. Maine agricultural leaders have, from time to time, supported merger--a step which clearly appears advantageous to farm marketing even with the rails' loss of fresh potato traffic. In 1971 a questionnaire was sent to potato growers, dealers and processors and to feed grain plants in the State to solicit opinions about merger. Of those who responded--53 percent of the solicitation--58 percent said a consolidation of MEC and BAR could result in better service to their business. Sixty-three percent went on to say the inclusion of B&M in such a consolidation was "essential". A report, based on questionnaire<sup>1</sup> responses, concluded that "while some dissatisfaction with a merger is indicated, the majority of the response was favorable . . ."

---

1. "Railroad Transportation Service to Maine Agriculture. The Amoskeag Application", a report to the Maine Agricultural Advisory Council, September 1, 1971.

The major agricultural products now hauled by the Maine railroads are corn and soybean meal for the use in poultry rations. Reference has already been made to the ongoing feed grain rate debate in which Maine has long been involved. Issues surrounding this debate deserving further comment are:

1. The ICC proceedings "Feed Grains to New England" (Docket No. 35786)<sup>2</sup>.
2. The market dominance provisions of the 1976 Railroad Revitalization and Regulatory Reform Act<sup>3</sup>.
3. The ICC proposal to exempt agricultural commodities from rail regulations.

#### Feed Grains to New England:

It was nearly six years ago that the New England Grain and Feed Council (through its agency RATES, Inc.), and the New England Governors, the Northeast State Departments of Agriculture and regional farm organizations initiated a case before the ICC charging the unlawfulness of feed grain rates to New England. Following lengthy testimony the ICC presented its preliminary decision in early 1976. This was appealed to the full Commission. In February 1977 a final decision was made which acknowledged that "with respect to broiler, egg, and milk production trends generally, the Northeastern states have fared poorly when compared with the Southeast."

The ICC, thereupon found it "unjust and unreasonable" for the Eastern Railroads to not establish 10 car shipments of corn and ordered such rates "at levels sufficient to provide adequate revenue for service while also furnishing an inducement to movements in larger shipments". The Commission also declared that "future across-the-board increases could become harmful to the Northeast". In two of the three general rate increases since this decision the ICC has placed a hold-down on feed grain rates to New England.

While the 1977 decision was a step forward, the New England petitioners felt it did not address many issues in the case, and so in April 1977 appealed to the U.S. Court of Appeals for the District of Columbia. A decision in that appeal is still pending.

#### Market Dominance:

The 1976 law provided that market dominance holds if a transportation mode handled 70 percent or more of a specific commodity transported in an area during the previous year. The application of the provision would limit the railroads' otherwise liberalized rate-making authority. The so-called 4-R act allows roads, where there is no market dominance, to raise or lower rates up to 7 percent, on their own. Clearly the railroads do haul more than 70 percent of feed grain traffic into the State. This fact has been a significant issue not only in rate-making procedures, but in support of the position of New England agriculture that feed grain rates to the region are discriminatory. Efforts have been made to remove the market dominance concept, but to date have been unsuccessful. However, because of debate about ICC's definition, there has been very little impact from the provision.

#### Agricultural Exemption for Rails:

Trucks have been exempt from rate regulations on agricultural commodities since the 1930's. The ICC proposed last Spring to extend this exemption to the

---

2. See University of Connecticut's Research Report 48, "Recent Developments in Feed Transportation to New England", December 1977.

3. Ibid.

railroads. The Maine Departments of Agriculture and Transportation supported this action except for feed ingredients. They cited the DOT-Manalytics report--mentioned above--which documented the steady decline in such shipments, with the expectation that unless innovative steps are taken, all fresh produce traffic will disappear from the rails by early 1980's. In a preliminary decision released December 6, 1978, the ICC gave notice of such deregulation for fruits and vegetables, but not feed grains. William Fernald of Maine's DOT has said he believes "the railroads will have less interest in agricultural products under a deregulated transportation system than they have under the regulated system . . ." This may not be true if there is a real attempt at negotiating inter-modal traffic--as the potato industry is presently considering<sup>4</sup>.

No discussion of rail transportation would be complete without mention of energy. A great deal has been written in recent years concerning the relative energy efficiency of the railroads and trucks. A report recently released by the Agricultural Engineering Department at Orono<sup>5</sup> notes that transportation represents three percent of the energy used in the total "food cycle" (from production to consumption) which, in turn, is just five-tenths of one percent of the total energy used in the United States. Trucks consume more than five times the BTU's per ton-mile than the railroads.

One recommendation of the report calls for efforts "to upgrade rail service to the agricultural sector to provide usable rail transportation for agricultural products and supplies."

### Water

There are periodic studies and proposals for transporting farm commodities--especially feed grain--into Maine by water. Perhaps the most ambitious was that by the Water Transport Association in 1971. It envisioned the hauling of grain on the Great Lakes from Toledo to New York State on self unloading ships and "exploding" unit trains into New England. The WTA maintained such a system could reduce rates at the time by as much as 35 percent. An informal hearing was held by the ICC, but no action taken. The current proceeding on "Feed Grains to New England" grew out of the frustration which the feed mixers of the region felt following the water hearing.

In 1976 a further proposal was made for utilizing the St. Lawrence with unloading at Riviere du Loup and railroading to Southern Maine. Extensive rate investigations have found this route to be uncompetitive.

It is true that the lack of competition for the railroads have worked against a more reasonable feed grain rate for Maine. The Eastern Railroads have, themselves, conceded that lower rates in the South are due to inland waterways. And in the early 1960's Lipman Poultry of Augusta brought grain up the Kennebec by barge--and soon received lower rail rates, thereby negating the brief barge advantage.

To date, however, no permanent water alternative has been found for the importation of feed grain by rail.

Transportation is a major ingredient in a sound agricultural economy. The concern of Congress as well as that of farmers and farm organizations has not diminished across the years. But today this issue seems even more critical. It was in answer to this that Congress recently enacted legislation directing the Secretaries of Agriculture and Transportation to lay out a blueprint for a transportation system adequate to meet "the essential needs of the agricultural industry of the United States." What the direct impact of such a project may have on Maine is a matter of speculation. It does reflect an urgent national concern which parallels a concern in Maine.

---

4. See Fernald's 11/27/78 memo to David Shaw.

5. Smith, Norman et. al., "Energy Use in Maine Agriculture", UMO's Ag-Engineering Dept., January '79.

ENERGY USE  
IN  
MAINE AGRICULTURE

Funding for this report was provided by the State of Maine Office of Energy Resources through Department of Energy Grant No. . . . . The report was prepared as part of a more comprehensive study of Maine's agricultural and rural economy conducted by the Maine State Planning Office

Prepared by  
Norman Smith  
John G. Riley  
Charles W. Kittridge

Agricultural Engineering Department  
University of Maine  
Orono, Maine

January 1979

## Acknowledgements

The authors are particularly indebted to the following for technical information and assistance in preparing this report:-

Mr. Gary Daubin - State of Maine Office of Energy Resources  
Dr. Wilfred Erhardt - Vegetable Crops Specialist, CES, UMO  
Mr. John Goater - Animal Specialist, CES, UMO  
Dr. Vaughn Holyoke - Crops Specialist, CES, UMO  
Dr. Amr Ismail - Blueberry Specialist, CES, UMO  
Dr. Terry Jones - Plant Pathologist, CES, UMO  
Mrs. Dorothy Kelley - Executive Director, Maine Potato Council  
Mr. Gary Linton - State of Maine Office of Energy Resources  
Dr. Edward Micka - Economist, CES, UMO  
Mr. Edwin Plissey - Executive Director, Maine Potato Commission  
Mr. David Shaw - State of Maine Planning Office  
Mr. Duane Smith - Economist, CES, UMO  
Dr. Warren Stiles - Fruit Specialist, CES, UMO  
Dr. Calvin Walker - Dairy Specialist, CES, UMO  
Mr. Mardis Warner - Agricultural Engineer, CES, UMO  
Mr. Harry Whelden - Poultry Specialist, CES, UMO

## Contents

	Page
Agriculture in the National Scene . . . . .	1
Maine Agriculture in the National Scene . . . . .	4
Estimates of Maine Agriculture's Present Energy Consumption . . . . .	9
Future Possibilities for Energy Reduction in Maine Agriculture . . . . .	13
Estimates of Maine Agriculture's Energy Consumption by 1990 . . . . .	30
Recommendations for Local Planning and Action . . . .	35

## ENERGY USE IN MAINE AGRICULTURE

### AGRICULTURE IN THE NATIONAL SCENE

U.S. Agriculture is energy intensive, and like the USA as a whole, it is also very productive. Net exports of agricultural products amounted to over \$27 billion in 1977-78 and formed the brightest part of the U.S. trade picture.

Agriculture produces almost all the food we eat, and a percentage of our fiber needs in the form of cotton and wool. Almost 400 million acres of land are in use nationally for agriculture. Food production on these lands consumes about 3% of the total energy used in the USA. However, by the time food reaches the consumer's table it has cost approximately 16.5% of the energy used in the country. The breakdown is roughly as follows:

Function	% of Food Cycle Energy Use	% of Total U.S. Energy Use
Agricultural Production	18	3.0
Food Processing	33	5.5
Transportation	3	0.5
Wholesale & Retail Handling	16	2.5
Preparation and Cooking	<u>30</u>	<u>5.0</u>
	100	16.5

More energy is in fact used on preparing food in the home and in institutional kitchens than is used in producing it.

Closer examination of the energy consumption in our food cycle reveals further startling facts.

- About one third of the energy input to agricultural production is in the form of natural gas, most of this

for fertilizer production, and most of the energy used in fertilizer production is for nitrogen fertilizer. However only 3% of all U.S. natural gas is used for agricultural production, including fertilizer.

- When food was produced by a much less mechanized agriculture it was produced for considerably less energy per unit. For instance almost four times as much energy goes into producing a bushel of corn than was the case a century ago. However the corn still contains 2.25 times more energy than we expend in producing it. The additional energy in the corn is solar energy fixed by the corn plant through photo synthesis - the process which uses sunlight to combine carbon dioxide from the air and water from the soil into the starches, sugars, cellulose, etc. contained in the plant. Carbon dioxide is everywhere in the air but soil water is a scarce commodity in parts of the U.S.
- About 40 million acres of agricultural land are irrigated (10% of the total) but energy used for irrigation is about one eighth of all energy used in agriculture or about 0.4% of total U.S. energy use.
- Meat production is very energy intensive. Meat always provides less energy than was consumed by the animal from which the meat came. Different forms of meat have very different energy input:output ratios:

<u>Animal</u>	<u>Approximate Energy Input:Output Ratio</u>
Range fed sheep	2.3:1
Range fed cattle	4.6:1
Feed lot cattle	15:1
Broiler chicken	5:1

However, we do not generally purchase or consume meat for its energy content but for its contribution to our protein requirements and for the satisfaction of eating it.

- Many of agriculture's products are perishable and need to reach the consumer quickly, either from the field or storage. Transportation of fresh food products is usually by truck or air because of this. Rail or barge transport is much less energy consuming per unit but is often too slow for food transportation. The relative energy consumption figures for the different transportation modes are:

<u>Transportation mode</u>	<u>BTU/ton mile</u>
Air	42,000
Truck	3,800
Rail	670
Barge	680

A California lettuce consumed on the East Coast contains about 240 BTU of food energy. Producing it in California expended about 1600 BTU, while shipping it across country takes as much as 4500 BTU. However once again we must admit that we do not purchase lettuce for its energy content.

The list of "startling facts" about our food system could go on but those just discussed serve to illustrate that energy balance considerations are not the driving force in the food cycle, nor except in special instances are they likely to be.



Farmers grow food for profit, not for energy efficiency. We purchase a food product for many different reasons, generally without regard for the product's energy content and almost always without regard to its energy cost. However as energy costs increase and have a secondary effect on prices our attention may be caught and our buying habits may change.

#### MAINE AGRICULTURE IN THE NATIONAL SCENE

Maine has about 400,000 acres of tillable land, only one tenth of one percent of the national agricultural acreage. Nevertheless Maine's agricultural production is important to the Northeastern quarter of the U.S. About 12% of the nation's potatoes are produced in Maine. A good percentage of the broilers and eggs consumed in the Northeast are produced in Maine and the state is a net exporter of other agricultural products such as apples and blueberries.

However on closer inspection a number of additional facts appear.

- Cash receipts in Maine agriculture have declined about 6% since 1976 while other New England states have increased or held steady.
- The Maine potato industry, which is concentrated in the northern section of the state, is in a period of declining production. Acreage is down 14% since 1974. Potatoes are sold on markets in the eastern and east central portion of the country, giving Maine an advantage in potato marketing of being close to its market outlets. Adequate rainfall in the potato growing area makes irrigation unnecessary,

although depending on natural rainfall has some disadvantages as was demonstrated in the dry summer of 1978.

- The potato industry is a heavy user of commercial fertilizers, all of which are transported from outside the state. Over a hundred thousand tons annually are utilized by the potato industry.
- Potatoes are shipped to market by truck, a recent change from the rail transportation which was used previously. Trucks now account for almost the entire shipment of potatoes to market.
- Since the Maine potato growing area is situated in the northern part of the state, unit energy costs are high, partly due to the transportation distance involved.
- Potato processing companies in Maine are in financial difficulties. The newest processor has just ceased operations, apparently citing high electricity costs as one reason for the close down.
- It is very difficult to pinpoint a precise electricity cost differential for farmers and food processors within the state as power companies structure their rates differently depending on the situation. Demand charges vary, as do equipment costs and break points between energy cost levels. However the approximate bulk rate energy charges for general power service, (which would cover most farms) and for larger power service (which would cover most food processors) were approximately as follows in mid 1978 for Maine's three largest utilities.

<u>Utility</u>	<u>Cents per Kilowatt hour</u>		
	General Power Service	Large Power Service	Fuel Adjustment Charge
Central Maine Power Co.	1.74	1.1	0.77
Bangor Hydro Elec. Co.	2.21	0.92	1.09
Maine Public Service Co.	2.9	0.8	0.76

Fuel adjustment charges vary from time to time depending on how the electricity being used is produced. Generally as the percentage supplied by nuclear plants or hydro plants increases the fuel adjustment charges decreases.

The rates are not precisely comparable but Northern Maine farmers certainly do have higher electricity rates than the rest of the state. However the bulk rates paid for electricity by West Coast potato processing competitors really show the "Maine disadvantage" and the benefits derived from large scale hydro electric schemes.

<u>Potato Processing Area</u>	<u>Cents per Kilowatt hour</u>		
	General Power Service	Large Power Service	Fuel Adjustment Charge
Maine	2.9	0.8	0.76
Washington	1.28	0.85-1.06	None
Oregon	1.3-1.7	1.1 - 1.3	None

- The Maine poultry industry is a highly integrated enterprise. Situated close to its markets on the Eastern Seaboard, the poultry industry's main input is feed which is almost entirely shipped in from outside of the state.

Transportation costs for poultry feed are the highest in any poultry producing area in the United States.

- Egg production has increased since 1974. Table egg production is not a major utilizer of energy. Electricity for ventilation, lights and mechanical equipment is the main energy source for egg production.
- Broiler production is a high energy user, utilizing over three and one-half million gallons of No. 2 fuel annually to heat broiler houses. Although not a high percentage of the total cost of producing broilers, energy costs are direct costs which are felt very strongly by a highly competitive industry.
- Very little building has taken place in the broiler industry in recent years, though production has increased due to better space utilization. The average Maine broiler house is getting older and older.
- Dairy cattle numbers are down though milk production remains fairly steady.
- Maine agriculture is oil fueled. Natural gas which is available to most of Maine's competitors is not available to Maine farmers. They use oil and electricity instead, both fuels costing much more than natural gas:

<u>Fuel</u>	<u>Approx. Price/million BTU</u>
Natural Gas	2.50
Fuel Oil	3.70
Electricity	11.70

However, electricity prices vary widely from state to state, with Maine not always at a disadvantage. For example, most of Maine's broiler growers are serviced by Central Maine Power Co. Much of their competition is in Delaware, Maryland, Virginia and Georgia. The table below compares typical power costs for mid 1978:

<u>Broiler Growing Area</u>	<u>Cents per Kilowatt hour</u>		
	<u>General Power Service</u>	<u>Large Power Service</u>	<u>Fuel Adjustment Charge</u>
Maine	1.74	1.1	0.77
Delaware	1.9	1.9	0.16
Maryland	1.2-1.9	0.86-1.1	1.3-1.8
Georgia	4.4	1.3	0.28

Maine farmers have generally very similar electricity costs to those paid by farmers in other New England states but the rates paid by West Coast competitors producing processed potatoes are much to Maine's disadvantage as shown previously.

The list of energy facts could go on, but once again we must remember that energy costs are not the only factor affecting Maine agriculture. Nevertheless, changes in the relative costs of energy from different sources may present some possibilities and challenges for U.S. agriculture on which Maine could capitalize.

## ESTIMATES OF MAINE AGRICULTURE'S PRESENT ENERGY CONSUMPTION

As time and funding did not permit any form of survey to determine present patterns of energy use it was decided that the "1974 Data Base on Energy and U.S. Agriculture" developed by the USDA Economic Research Service would be used as the starting point. Energy consumption levels per unit of production would be checked against independently developed data from areas with similar products and practices to those used in Maine. The USDA Data Base figures would also be checked against information previously developed within the state for specific products and operations.

Some serious errors appeared to be present in the USDA Data Base - for example:

- Approximately 1 million gallons of oil is used each year to burn approximately 20,000 acres of blueberry barrens. This does not appear in the data base.
- Nitrogen fertilizer rates for potatoes are given as less than 40 lb/acre when in practice around 100 lb/acre is applied.
- It was found that survey data on field operations obtained in New York and Nebraska agreed very well together but did not match ERS data for similar work on crops in Maine. However data on animal production agreed quite well.

As a result the ERS data base for 1974 was modified to fit the best information available to the writers and appears as Table I. The LP gas figures are difficult to verify but are included without alteration.

TABLE I

## MAINE AGRICULTURE ENERGY CONSUMPTION IN 1974

(Based on USDA-ERS Data Base)

<u>Field Crops</u>	Acres	Diesel Equivalent	LP Gas	Elec.	Fertilizer and Pesticides
	(x 10 <sup>3</sup> )	(gals x 10 <sup>3</sup> )	(gals x 10 <sup>3</sup> )	(Kwh x 10 <sup>6</sup> )	(BTU x 10 <sup>9</sup> )
Potatoes	140	3359	3	1	1500
Hay/Haylage	200	336	145	1	530
Alfalfa	18	347	74	---	6
Corn Silage	40	784	36	---	113
Apples	8	544	20	---	82
Fresh Vegetables	7	280	15	---	38
Proc. Vegetables	5	239	19	---	37
Blueberries	50	1000	--	---	32
Unspec. Crops	--	124	--	---	32
Oats	45	504	22	---	55
Unspec. Irrigation	--	22	1	---	--
		<u>7539</u>	<u>343</u>	<u>3</u>	<u>2393</u>

Livestock

Type	Production or Population (X 1000 head)	Total (gals x 10 <sup>3</sup> )	Diesel Equivalent Fuel Oil Included in Total	LP Gas (gals x 10 <sup>3</sup> )	Elec. (Kwh x 10 <sup>6</sup> )
Layers	6565	344	79	69	25
Pullets	6800	926	482	151	---
Broilers	77426	3644	3174	--	22
Milk Cows	60	700	--	276	27
Beef Cows & Calves	12	136	72	--	---
Hogs	9	16	9	4	---
Sheep & Lambs	13	39	24	--	---
Turkeys	7	2	1	1	---
		<u>5807</u>	<u>3841</u>	<u>501</u>	<u>75</u>

\*Less than 500,000 Kwh

All other petroleum use is reported as diesel equivalents by assuming that diesel engines would do the same work as gasoline engines for approximately 70% of the fuel input.

The writers then consulted industry, research and extension personnel to determine what changes in numbers, acreage or production techniques had taken place since 1974 which might affect energy consumption. These changes were quantified as far as possible and used to develop the probable energy consumption data for the 1977-78 period which is presented as Table II. The major changes, other than increases or decreases in acreage or livestock numbers were:

Potatoes - approximately 60% of all tractor horsepower is now diesel.

- sales of air harvesters appear to be declining due to reduced stone separation problems. Conventional harvesters now being sold use approximately 3 gallons less fuel per acre than air machines.

Hay/Haylage - haylage has increased from 10% to 40% of the total acreage.

- diesel power units are used almost exclusively in haylage operations.
- haylage requires approximately 40% more energy per ton of dry matter preserved than does conventional haying. However LP gas use, which was presumably for hay drying, should have declined.

Corn Silage - nitrogen fertilizer application rate has been reduced approximately 20%.



TABLE II

## APPROXIMATE ENERGY CONSUMPTION IN MAINE AGRICULTURE, 1977-78

Field Crops	Acres (x 10 <sup>3</sup> )	Diesel Equivalent (gal x 10 <sup>3</sup> )	LP Gas (gals x 10 <sup>3</sup> )	Elec. (Kwh x 10 <sup>6</sup> )	Fertilizer & Pesticides (BTU x 10 <sup>9</sup> )
Potatoes	120+	2900	3	1	1250
Hay/Haylage	192	370	50	1	530
Alfalfa	22	350	.74	---	6
Corn Silage	42	820	36	---	100
Apples	8.5	580	20	---	87
Fresh Vegetables	7+	280	15	---	38
Proc. Vegetables	7.5	360	30	---	54
Blueberries	50	1000	--	---	32
Unspec. Crops	--	124	--	---	46
Oats, etc.	38	425	18	---	--
Unspec. Irrig.	--	22	1	---	--
		<u>7231</u>	<u>247</u>	<u>2</u>	<u>2143</u>

Livestock

Type	Production or Population (x 1000 head)	Diesel Equivalent Total (gals x 10 <sup>3</sup> )	Fuel Oil Included in Total (gals x 10 <sup>3</sup> )	LP Gas (gals x 10 <sup>3</sup> )	Elec. (Kwh x 10 <sup>6</sup> )
Layers	7125	345	80	69	22
Pullets	7500	930	480	150	---
Broilers	87000	3650	3174	--	22
Milk Cows	58	680	--	265	25
Beef Cows & Calves	12	136	72	--	---
Hogs	10	17	10	4	---
Sheep & Lambs	13	39	24	--	---
Turkeys	not known	--	--	--	---
		<u>5797</u>	<u>3841</u>	<u>488</u>	<u>69</u>

\*Less than 500,000 Kwh

Eggs - laying house temperatures have been increased from 55°F to 70+°F to reduce ventilation requirements and increase feed conversion efficiency.

Broilers/Pullets - ventilation rates for broiler houses have been reduced slightly.

- houses have been tightened up considerably.

- stocking densities have been increased.

Only .65 ft<sup>2</sup> per bird is used now against 0.9 ft<sup>2</sup> per bird in 1974.

- brooding is now done in half or one third of the house with consequent fuel savings.

Milk - new milk cooling units are incorporating heat recovery which allows hot water to be provided at a considerable saving in energy consumption.

#### FUTURE POSSIBILITIES FOR ENERGY REDUCTION IN MAINE AGRICULTURE

Within the next decade there are two steps by which savings in conventional energy (i.e. fossil fuel) usage in Maine agriculture may be realized. Conservation of present fuels, by modifications in technology and practices may be expected to have some effect within 2-5 years. Utilization of alternate, locally produced renewable energy sources will have an impact between 5 and 10 years hence.

##### Conservation

Efficiency of energy utilization in agriculture varies tremendously with the type of farming, the location, and the commodities involved. While agriculture in this country is extremely productive (1 farmer provides food for over 50 people)

its use of energy is not as efficient as it might be. However it is necessary to put the matter in perspective - the industry uses only 3% of the total U.S. energy (less than that used by jet aircraft), and in economic terms energy is but one factor contributing to production costs and to the value of the output. Again it must be emphasized that reduction in energy usage very often results in an overall increase in production costs and thus the incentive to make such reductions is often absent.

Any changes in practices will need either to save or make money for the farmer. Agriculture is profit driven. Regulations and incentives can bring changes but the most likely changes are those which are profitable.

It is important to realize that many of the conservation measures proposed for U.S. agriculture as a whole have little or no application in Maine. For example, irrigation scheduling may use up to 40% less water without a drop in yield, giving impressive potential energy savings in states where irrigation is necessary. Also many proposed conservation measures involve technology which may be several decades ahead, and thus have no relevance in this analysis. An example of this is the work being done on genetic development of corn and grains with the ability to fix atmospheric nitrogen, as leguminous plants do. This would reduce the fertilizer industry's dependence on diminishing natural gas supplies but it is doubtful whether it will have a significant impact within the next ten years.

Most projections of energy usage and potential savings in agriculture are based on the continuation of present trends in the consumption of agricultural products. This however is not

necessarily a certain assumption. Consumer preferences change not rapidly but often significantly over a 10 year period. One such change may be a reduction in demand for eggs and dairy products, with an accompanying increase in demand for beef, pork and poultry, caused by an increasing cholesterol consciousness. In Maine this would affect energy figures for the egg and broiler industries.

Conservation may be discussed in terms of specific commodities, and more generally in terms of the various activities in Maine agriculture.

#### Minimum tillage

If the amount of mechanical ground preparation for field crops such as potatoes can be reduced, considerable energy savings result, mainly in terms of tractor fuel saved. Tillage reduction usually reduces yields, and necessitates the use of herbicides and additional pesticides to control insect problems arising from crop residues - both require substantial energy input. Net energy savings of up to 5 gallons of gasoline/acre can however be realized, and there are added benefits in terms of fewer implements needed, and a potential reduction in soil and water loss; it would appear to be a good practice if yields can be maintained. Biological control may eventually reduce the necessity for the chemical pesticides and further cut energy usage but it is difficult to quantify or put a time-frame to this development.

#### Increased use of animal manures

Energy used in the production and application of artificial fertilizers represents almost one third of the total agricultural

energy consumption. Substitution of animal manures for these artificial fertilizers has the potential for saving the equivalent of 40 gallons of gasoline/acre. This practice has some potential if the manure is used where it is produced, but the concentration of nutrients is low in comparison to artificial fertilizers, necessitating much bulk handling. For example, the extra equipment, and the loading and spreading of 15 tons manure/acre (equivalent to the nitrogen requirements for corn) within 3 miles of the site of production, requires at least 30 gallons of gasoline/acre. Within this radius animal manures might compete, but probably not beyond this. Based on nutrient content animal manure as fertilizer is worth only \$3 to \$5 per ton. Animal manures as voided contain a large percentage of water. If labor costs are considered, the economic distribution limit is reduced to approximately 1 mile. Thus this measure only has application where animals and crops are raised in close proximity.

The largest source of unused animal manure in Maine is the poultry industry. Production is often quite far from agricultural land which could use the manure, and the fertilizer value of the manure, particularly broiler litter, is in fact quite small. The Nitrogen, Phosphorus and Potassium content of broiler litter makes it worth approximately \$20/dry ton at 1978 fertilizer prices. However the energy value of the litter as a fuel to replace No. 2 fuel oil used in heating broiler houses is over \$50 per ton. The broiler grower, who owns the litter, would be far better off receiving or using its fuel value than its fertilizer value.

Municipal sewage sludge may represent a potential substitute for artificial nitrogenous fertilizers if the metals and other

industrial effluent contaminants can be removed. Again however the economic distribution radius is rather limited.

Use of sewage sludge at fertilizer rates on agricultural land has great appeal, particularly for non-edible crops. By 1985 sewage sludge in Maine is reckoned to be capable of supplying 700,000 lb of fertilizer nitrogen per, year but this is less than 3% of nitrogen fertilizer used annually in the state.

#### Commodity substitution

Changing to less energy-consuming crops, for example, soy beans for corn, is an attractive proposition from a total energy use viewpoint, but, like most conservation practices, would only find acceptance if it offered comparable or increased economic returns, used less labor, or met the requirements of new regulations. Growing nitrogen - fixing leguminous crops could reduce energy consumption for fertilizer production. It is often suggested that they could be grown as additional fall or spring crops. This might become an accepted practice; however it seems unlikely in Maine due to the short growing season.

It has been suggested that since producing animal protein for food is energy inefficient, we should eat plant protein. However despite its energy inefficiency, production of animal protein does give people what they want to eat and, perhaps more importantly it can utilize plants (e.g. grass) which are indigestible to humans and which grow abundantly in Maine's climate. Maine can in fact produce more protein per acre in grass than Iowa can produce in soybeans. However the grass can only be used for animal feed at present.

Increased utilization of farm-produced feeds such as hay or haylage would reduce energy cost over bought-in feeds which may have high energy requirements for manufacture and would also need energy for transportation.

#### Demechanization

It has been suggested that a return to less mechanized ways of farming is one possibility for drastically reducing total energy usage, for example, replacing tractors with workstock. The feasibility of such schemes however is highly questionable. On a national basis it has been estimated that 61 million horses and mules would be needed to replace existing tractors, that it would take until 1993 to breed and raise this number, and would require 180 million acres to feed them, almost half the present agricultural land in the U.S. A return to human farm labor implies similar impracticalities - a requirement for 30-31 million farm hands to revert back to 1918 levels of technology. A man working a ten hour day costs slightly under \$30 at minimum wage. Simply in terms of potential output, the same work could be done using electrical energy for approximately 4 cents.

#### Diesel vs Gasoline Engines

Diesel engines have a higher fuel efficiency than gasoline engines, both on an energy (hp hrs/BTU) and a volume (hp hrs/gal) basis. Diesel fuel costs less and needs less energy to refine. By way of example, in one test, a diesel tractor gave 38% higher hp/gal than the equivalent gasoline version. This increased efficiency is reflected in all farm equipment using diesel engines. There is a higher unit cost for diesels, due to their complexity of manufacture, but as fuel costs rise the trend towards diesel engines will undoubtedly continue.

In addition to these generalized conservation trends or possibilities, it is relevant to look at potential sources of savings for a particular crop or activity.

#### Dairy

1. Heat recovery units which utilize waste heat from milk coolers for water heating.
2. Better equipment maintenance.
3. Adaptations in ventilation and lighting.

#### Poultry

1. Improvements in brooding operations.
2. More efficient feeding and waste handling systems.
3. Better lighting and ventilation.

#### Livestock

1. Modifications in grain drying - combination of high speed, fossil-fuel fired drying with slower, natural air drying.
2. Increased feeding of high moisture corn.
3. Improved feed handling and transportation.
4. Changes in stock management.
5. Better lighting and ventilation.

#### Field Vegetable and Orchard Crops

1. Reduction of preharvesting operations.
2. Modifications in harvesting and/or drying methods.
3. More efficient fertilizer and pesticide use.
4. Careful selection of power unit size.
5. Draft reduction of implements through better design and new materials.
6. Better matching of implement and power unit.



### Processing, Transportation and Marketing

1. High temperature milk pasteurization to eliminate the need for refrigeration.
2. Controlled atmosphere storage for fresh fruits and vegetables.
3. More use of cool outside air for cooling perishables in storage, transport and marketing.
4. Better truck scheduling to avoid running empty.
5. More use of airfoils on trucks.
6. Recycling of food packaging materials.
7. Return of some food processing activities to the production area permitting easier use of alternate energy sources.
8. Any reduction in the number of steps in the marketing chain reduces energy requirements, for example direct selling, pick-your-own, etc.
9. Consolidation in shipping to minimize space requirements. Standardized modular shipping containers and less packaging will reduce energy usage.
10. Increased use of railroads for distances over 200 miles where they are more efficient; this move would necessitate better scheduling than presently exists, and the availability of more refrigerated cars.

### POTENTIAL ALTERNATE ENERGY SOURCES FOR MAINE AGRICULTURE

In discussing the possible contributions to the agricultural energy supply which can be made by new or previously unused sources it is again necessary to consider Maine as a part of both the national energy picture and the agricultural industry as a whole. Several alternate energy sources, while having considerable potential nationwide have little or no application in Maine; for

example solar energy may have extensive applications in other parts of the U.S., for crop drying, powering irrigation pumps, electrical power generation, etc. but may have only limited potential in this state. In addition, some of the more available new fuels in Maine, particularly wood, have great potential for the states total energy picture, but less significant application in agriculture.

It is also necessary to differentiate between locally produced and used alternate energy sources, for example the use of poultry litter for broiler house heating, and the use of alternate fuels on a national basis, having indirect effects on agricultural energy consumption in Maine, typically the increasing use of coal to replace oil and natural gas. Such a differentiation is necessary in order to point out those areas where Maine might have some advantage over other areas.

(1) Solar Energy

The U.S. Department of Energy has projected that solar energy could contribute 5% of total agricultural energy by 1985, and 25% by 2000, with major applications in crop drying and the heating of water and buildings. While such figures are justifiable, though optimistically so, nationally, the potential applications in Maine are less, due to both the lower total amounts of solar radiation available, and the long winter periods of cloudy weather which may necessitate expensive back-up systems. Some applications of solar-energy usage are well-established, while other are at the experimental, or pre-commercial stage.

### Space Heating

The technology for solar heating of buildings has been accepted for some time now; production of components and systems is a well-established industry. Solar collectors have been gradually improved so that efficiencies of over 50% are the rule rather than the exception. In Maine pure solar heating, as the single heat source for a building, is not practical, but in combination with heat pumps and/or some form of thermal storage, the economics are attractive in comparison to conventionally fueled heating systems. However space heating in agriculture is limited to livestock housing, in Maine principally in the poultry industry. This industry could rely entirely on solar energy for space heating by 1990, but it is far more likely that other alternate fuels, e.g. wood or agricultural wastes will be more attractive.

### Water Heating

Again this is a well-proven technology with commercial equipment readily available. Without some form of thermal storage it is only marginally competitive with conventionally fueled systems. Solar water heating could be used in agriculture in Maine wherever hot water is required; potential total energy savings are of course relatively low. Also in many situations there are more attractive alternatives, for example although approximately 25% of the total energy used in a farm dairy could be saved by the use of solar heating, these savings will probably be realized by the use of heat recovery units which heat water with the waste heat from

milk cooling. Similar systems are becoming accepted in the food processing industry.

### Solar Cooling

This technology is by no means as far advanced as solar heating, and no commercial systems are yet available. A limited application in agriculture might be seen in milk cooling and livestock housing but in Maine's climate the potential savings are not great.

### Crop Drying

This is a desirable application for the use of solar energy, though less so in Maine than in many other states. It can replace oil or natural gas drying to a large extent. Although it results in slower drying and reduced capacity compared to conventional systems it can be used to dry the crop to a moisture content low enough for safe storage or transport. Considerable effort is being made to make solar crop-drying cost-effective. In Maine the potential total savings in energy are relatively low since the current use of conventional fuels for crop drying (principally of hay and oats) is itself low, but it is to be expected that LP gas will have been entirely replaced by solar energy or biomass fuels in this application by 1990.

### Solar Cells

Photovoltaic conversion of sunlight directly into electricity is presently a high-technology, high-cost proposition. Current costs of materials and processing for photovoltaic arrays are 50 to 100 times too high to compete with conventional systems. Any significant impact on energy usage by 1990 is highly unlikely, although the

possibility of a major technological breakthrough in solar cell fabrication should not be overlooked. Hybrid systems, combining photovoltaic electric generation with solar heating and lighting may be the most attractive, and thus the first significant application of this technology. Photovoltaics have no special relevance to agriculture, in Maine or elsewhere in the country; presumably if electricity is generated by this means at some point in the future it will be available to all users, therefore does not truly represent a savings of energy in agriculture.

(2) Wind Energy

The principal application for wind energy is in electric power generation. On a large scale much of what was said in regard to solar electricity applies here; if it contributes to a reduction in conventional energy use for electricity generation then obviously agriculture will feel a benefit in proportion to the amounts of electric power being used.

Electricity generation by wind power on a small-scale is technologically feasible but investment costs make it unattractive at present. Improved technology may alter the picture, but it is difficult to see this being a significant contribution to the electric power used in agriculture in Maine by 1990.

Other uses of wind energy, such as turbine shaft power used directly for water heating, or for drainage and irrigation pumps, have very limited potential for saving energy in the state's overall agricultural picture.

(3) Hydro Power

Most major hydro sites have been exploited. There is some interest in the development of small and/or low head sites but environmental considerations and the high capital investments needed do not favor an immediate exploitation. It is unlikely that many sites will be developed specifically for agricultural use. Energy savings in agriculture will however result from any overall conventional energy reduction for power generation.

(4) Energy from Biomass (Crop Residues or Special Fuel Crops)

Methane from agricultural wastes: Despite early optimism this technology has many practical drawbacks. Process control can be quite complex, and disposal of post-digester effluent is a problem. Large feed-lot installations appear to be the most attractive economically, but solid figures on energy production costs are few and far between. By way of example, one large (1900 cubic meter) digester, built at a cost of \$75,570 produced net, usable methane at a cost of 76 cents/cubic meter; commercial methane prices are approximately 8 cents/cubic meter. For this reason alone it is unlikely that anaerobic methane generation will contribute significant amounts of energy to Maine agriculture. For poultry deep litter, one of the largest contributions to the total agricultural wastes in the state, direct combustion offers a more attractive proposition.

Direct Combustion of Wood and Agricultural Wastes: The technology for burning these materials efficiently and on a small to medium scale has advanced rapidly over the past

few years. The economics of small, scattered systems built close to the site of fuel production indicate competitiveness with conventional fuels. The best application at present is for space heating, although electric power generation on a large scale is a distinct possibility. In Maine agriculture it is likely that a large proportion of space heating requirements (e.g. poultry housing) will be provided from wood or agricultural wastes by 1990. Ecological concerns regarding the non-return of wastes and residues will need to be addressed, though current opinion is that if the ash from the combustion process is returned to the land, for many soils most of the crop residues can be removed. It will be necessary to work out an appropriate balance between biomass removal for energy use, and retention for soil fertility and stabilization.

Alcohol from Biomass: The technology is well-established for converting farm crops and wood to alcohol. The end product, added to gasoline up to 10% of volume, may be used in existing gasoline engines. The process does however represent a net energy loss in that 0.5-0.8 BTU of usable energy are produced from 1 BTU of raw material e.g. corn. Production costs are high, and it has been calculated that 10/90 alcohol-gasoline mix (gasohol) would require a subsidy of over 10 cents/gallon. A further drawback is that in order to produce sufficient alcohol to substitute for 10% of the nation's gasoline, tremendous acreages of additional farmland would be needed. The process also produces large quantities

of distillers grains, a high-protein feed; this would depress soybean oil meal prices. A recent ERDA study gave the following comparative production costs:

Methanol from wood	\$5.20/million BTU
Methanol from coal	2.68/million BTU
Ethanol from corn (\$1/bushel)	8.99/million BTU
Ethanol from corn (\$2/bushel)	12.50/million BTU
Gasoline from petroleum	2.77/million BTU

Thus it would seem more prudent to grow agricultural crops for food, burn whatever wood was available for space heating and possibly electric power generation, and derive transportation fuels from either petroleum or coal.

In Maine, wood residues offer a more attractive feedstock than corn, but while raw material costs are less, the processing costs are higher. Decentralized plants would probably be more cost-effective, but on the whole the production of substantial quantities of alcohol in the next 10 years is unlikely.

(5) Other Sources

Waste Heat: Both conventional and nuclear generating stations reject large quantities of low-grade heat to the atmosphere ( $11 \times 10^{15}$  BTU annually). This has a potential use in food production for soil and air heating in greenhouses, and possibly for heating livestock housing. For example condenser waste heat at 85°F will maintain a greenhouse at 60°F with -43°F outside temperatures. In a pilot project in Tennessee annual savings of \$5000 per acre of greenhouse were realized over conventionally fueled systems. The major drawback is



that economic use of this low grade heat is limited to within a mile or so of its source. Certainly there is considerable potential energy in the cooling water of a plant such as Maine Yankee but the logistics of its practical use limit it as a major source of energy for agriculture.

Geothermal: No application to Maine agriculture is seen.

Tidal: No specific application to agriculture is seen. It may contribute indirectly through its use for electric power generation but almost certainly not before 1990.

In addition to these specific alternate energy resources, a straightforward substitution of electricity for petroleum in agriculture (e.g. electric motors for stationary gasoline engines or crop drying) represents a potential reduction in consumption of conventional energy supplies, since electricity can be generated from indigenous or renewable fuels, e.g. coal or wood. The distribution system already exists, and the possible use of off-peak power for agricultural operations represents an added benefit of such a substitution.

Obviously many suggestions and recommendations for changes in connection with energy use in agriculture may at first seem to have great merit but often are impractical for Maine's agriculture or can have little impact on the local situation.

From these and many other considerations there are few things we can say with much certainty. However we can be sure that:

- energy cost and conservation will be more important factors in agriculture's future than they have been in its past.

- the potential of agricultural wastes and residues will be exploited whenever profitable uses can be found.
- energy crops will receive national attention as they offer a possibility for a renewable energy resource.

## ESTIMATES OF MAINE AGRICULTURE'S ENERGY CONSUMPTION BY 1990

Four general assumptions were made in developing the estimates of the size and activities of Maine agriculture around 1990:

1. A food surplus is forecast by 1990 in developed countries - traditional agriculture is therefore not likely to expand very much in Maine.
2. Fuel prices will advance faster than general prices, fossil fuels faster than electricity.
3. Natural gas price deregulation will probably still allow natural gas prices to be approximately 70% of equivalent energy in oil. In addition, agricultural users of natural gas apparently will not pay a "catch up" increase on natural gas prices but will only pay increases due to inflation. This will continue the fuel cost advantage enjoyed by much of Maine's competition.
4. Profitability will still control actions of farmers, i.e., energy efficiency will not be a prime goal unless it pays in real terms.

Further specific changes were anticipated:

- |           |   |
|-----------|---|
| All crops | - LP gas, which is used mainly in stationary applications, usually for heating, will be replaced by locally produced fuels, probably derived from wood, farm wastes, or solar energy. |
| Potatoes  | - acreage may decline to 100-110,000 acres due to advantages enjoyed by   |

competitors and the trend to use of processed potato forms.

- air harvesters will not be used to any extent.
- diesel power units will be almost universally used in field operations.
- potato storages will be generally climate controlled and will use more electricity than present storages.
- systemic fungicides will replace sprays for control of late blight with consequent reduction in energy use.

#### Hay/Haylage

- percentage preserved as haylage will increase.
- no heat drying of hay will take place unless the heat is provided by direct solar heat or locally produced fuels.

#### Alfalfa

- the acreage will decline by at least 50%.

#### Apples

- present acreage increases will continue, about 10,000 acres of orchards are expected by 1990.
- orchards will be closer planted and use smaller equipment. However energy use per unit of production will not change significantly.
- pesticide use will decline by approximately 30%.

- Fresh Vegetables - it is very difficult to forecast changes but transportation cost increases relative to other costs might cause a large acreage increase in Maine.
- Processing vegetables - very little change is forecast due to processor's disadvantage in fuel costs and the short season.
- Blueberries - acreage is expected to decline with production maintained by more intensive culture on better land.
- Oats and small grains - up to 100,000 acres could be grown, mainly in Aroostook county, provided local markets can be developed.
- All livestock - use of fuel oil or LP gas for stationary purposes, mainly heating, will decline markedly. Locally produced fuels will be substituted.
- Eggs - production increases will continue at the present rate.  
- no technique changes are foreseen.
- Broilers/Pullets - broiler production will probably increase to 100 million birds per year.  
- pullet production will continue to be 5% over layer population.
- Milk Cows - numbers will continue to decline with increased production per cow maintaining total output.

- fuel use for direct water heating will be practically eliminated by heat recovery units on milk coolers.

Sheep and Lambs

- may increase to population of 20,000.

TABLE III

## ENERGY CONSUMPTION IN MAINE AGRICULTURE - 1990 ESTIMATES

Field Crops	Acres (x 10 <sup>3</sup> )	Diesel Equivalent (gal 10 <sup>3</sup> )	LP Gas (gals x 10 <sup>3</sup> )	Elec. (Kwh x 10 <sup>6</sup> )	Fertilizer & Pesticides (BTU x 10 <sup>9</sup> )
Potatoes	100+	2200	--	1.5	980
Hay/Haylage	200	400	--	1	530
Alfalfa	11	175	--	---	3
Corn Silage	40	800	--	---	90
Apples	10	580	--	---	75
Fresh Vegetables	Unknown	?	--	---	?
Proc. Vegetables	7.5	360	--	---	--
Blueberries	40	500	--	---	
Unspec. Crops	--	120	--	---	30
Oats, etc.	100	1000	--	---	90
Unspec. Irrig.	--	20	--	---	--
		6155	--	2.5	1798

Livestock

Type	Production or Population (x 1000 head)	Diesel Equivalent Total (gals x 10 <sup>3</sup> )	Fuel Oil Included in Total	LP Gas (gals x 10 <sup>3</sup> )	Elec. (Kwh x 10 <sup>6</sup> )
Layers	9000	340	--	--	28
Pullets	9450	570	--	--	---
Broilers	100000	546	--	--	25
Milk Cows	52	610	--	--	18
Beef Cows & Calves	12	64	--	--	---
Hogs	10	7	--	--	---
Sheep & Lambs	20	22	--	--	---
		2159	--	--	71

\*Less than 500,000 Kwh

## RECOMMENDATIONS FOR LOCAL PLANNING AND ACTION

For the projections of probable energy consumption in Maine agriculture by 1990 a number of changes in consumption patterns were assumed to take place. These assumptions were based on the general premise that the traditional enterprises in Maine agriculture will not be greatly benefited or hindered by events outside its control, such as the projected food surpluses in the developed world and shifts in relative fuel prices. However no fuel surpluses are projected for 1990 or beyond and Maine agriculture might well capitalize on this by developing a fuel production capacity.

A subsidiary premise was that profit would still be the prime motivation of farmers and others involved in the food cycle. The assumed changes which followed from these premises were made because they appeared to be both desirable and profitable for those undertaking them. In summary the changes were:

- Fossil fuels will be substituted by locally produced fuels wherever possible, Maine's traditional price disadvantage on conventional fuels seems likely to continue. Heating fuel appears to be by far the easiest to replace and agricultural or forest wastes appear to be the most likely local fuel source. However crops may be grown specifically for fuel, and solar energy may have considerable potential because of the modest temperature requirements of space heating and farm product drying.
- Present field crop acreages will generally decline or remain steady. Demand for traditional agricultural products from Maine is not expected to increase beyond the potential



production of present good farms. However new uses for crops such as grass and short rotation woody plants will probably take up land eliminated from traditional crop production, i.e. land will not fall back to grass or forest, it will be managed to those ends.

- Economy in equipment and chemical use will become general.
- Animal agriculture is generally more susceptible to energy related stresses than is field crop production. However Maine's poultry and egg industries even now are not particularly energy intensive, e.g. heating costs are less than 2% of the cost of broiler meat. Maine agriculture as a whole will benefit if the poultry industry finds it more profitable to use locally produced feed for part of the diet.

The following recommendations for local planning and action appear to have benefits for Maine agriculture and for the state as a whole:

- Rec. 1. Encourage energy conservation in all segments of agriculture by dissemination of information on latest practices, demonstrations of successful examples and assistance to individual farms and related concerns through direct extension consultations.
- Rec. 2. Encourage development of locally produced energy sources wherever economically feasible:
  - Farm and forest wastes are particularly attractive. Transformation of the wastes into more desirable fuel forms, possibly for use off the farm, will increase economic activity in rural areas and may provide relief

from oil prices in urban areas. For example wood waste can be pelleted into an easily handled fuel. Woodex of Maine is planning to locate a plant in Lincoln and projects consumer prices of less than \$35 per ton for its product. This is equivalent to oil at 35¢ per gallon. Pelleted broiler litter can be burned in furnaces to heat broiler houses or to fuel related processing activities.

- Solar assisted heat pumps show greater potential in Maine. Units now operating in Waterville and Orono have reduced overall fuel use and heating costs substantially and appear economically viable.
- Large scale solar drying of crops has already been demonstrated at the University of Maine.
- Small scale units are operating on family farms.

Rec. 3. Institute a liaison with present fuel distributors to determine the effects on their operations of impending changes in fuel use in agriculture and determine ways in which the present fuel distribution network might be developed to deliver fuels produced by Maine agriculture.

Rec. 4. Land that cannot produce traditional crops competitively should be considered for production which capitalizes on Maine's advantages, e.g. availability, adequate rainfall, previous clearing, impending fuel shortages, etc.

Examples of this:

- Woody plants grown in short rotation could provide fuel and/or fiber as the need arose. With even moderate fertilization from sludge or municipal wastes

3-4 tons of dry matter might be produced annually per acre. Continuous annual growth of 1 ton per acre with no soil enhancement has already been measured.

- well managed grass even on poor land can produce valuable protein for animal feed. Feeds equivalent to dairy concentrates have been produced from dried young grass. Partial solar drying makes this process particularly attractive.

5. Consideration should be given to planning for more self-contained regional agricultural systems e.g., broiler industry expansion seems possible. Adjacent arable land is a logical recipient of any poultry waste not used within the industry and would benefit considerably. The potato growing area in Aroostook County comprises most of Maine arable acreage. Expansion of the broiler industry into Aroostook county might be logical, possibly with construction of a processing plant in the area. The dollar density of broiler shipments is probably high enough to carry the additional mileage costs to market. Aroostook's soils would benefit from the organic matter in the broiler litter, grain crops could be grown for the poultry industry etc. etc.
6. Since rail uses only about one-fifth of the energy required for transportation compared to trucks, and since a usable rail system is already in place in Maine, efforts should be initiated to upgrade rail service to the agricultural sector to provide usable rail transporta-

tion for agricultural products and supplies.

7. An active demonstration program on energy conservation and use of locally produced fuels including solar energy, should be developed on state owned or state related facilities or operations. (The new wood chip fired heating system at the Hancock County Vocational Center is a good example of what can be done in this area).
  - Particular attention should be given to showing the economic advantages or disadvantages of any techniques or systems demonstrated.
  - Local businesses which might become involved in manufacturing or installing equipment necessary for implementing any techniques being demonstrated should be involved as much as possible in the demonstration process.

Two further recommendations emerge which apply beyond Maine.

8. Conservation of energy in processing and marketing of food should receive major attention. These parts of the food cycle consume twice the energy used in agricultural production and also account for a major part of food costs.
9. Better data on energy consumption in agriculture is needed. Figures presently in circulation contain serious errors which could cause difficulties for Maine in a fuel shortage if allocations were based on them.

However, it should be remembered that Maine is almost 90% forest. The potential of short and medium term fuel supplies from

this acreage for use by agriculture or other segments of Maine's economy should be examined and developed ready for use as needed. Even if development of other fuel sources made such biomass fuels superfluous the production capacity and know-how could be easily turned to fiber or chemical feedstock production.

Finally it should be remembered that Maine as whole consumes approximately 300 trillion BTU of energy per year. Agricultural production in Maine, including energy used to produce fertilizer, consumes rather less than 6 trillion BTU per year - approximately 2% of the total.

- - - - -

It should be noted that the opinions expressed in this report were developed after careful consideration but are the opinions of the writers and do not necessarily represent the position of any other persons or organizations.

Background information for this report came from a number of sources. The following publications contain useful information on the topics considered in the report:

tion on the topics considered in the report:

Britt, Carolyn and T. Walker. "Jobs and Energy in New England Food Production and Marketing". Report to State of Maine Planning Office, 1978.

Dearborn, Vance E. and E. S. Micka. "Maine Farm Income Statistics for 1975-77". CES-UMO Report 1978.

Doering, Otto C. "Energy Resource Decisions - Are We Giving Them Enough Energy?" To be published by ASAE 1979.

Duguay, M. A. "Solar Electricity: The Hybrid System Approach". American Scientist, Vol. 65, 1977.

Gavett, Earle K. "Can We De-mechanize Agriculture". Paper presented at N. E. Ag. Econ. Council, June 1975.

Gavett, Earle K. "Energy Policy and Research in Agriculture". Paper presented at Amer. Ag. Econ. Assn., August 1977.

Gunkel, W. W., D. R. Price et al. "Energy Requirements for New York State Agriculture". Cornell University Report 1974.

Hassan, A. E. and Norman Smith. 1975. "Design and Operation of a Demonstration Unit for Methane Generation". ASAE Paper 75-4539.

Hassan, A. E., H. M. Hassan and Norman Smith. 1975. "Energy Recovery and Feed Production from Poultry Wastes". Proc. Cornell Waste Management Conference.

Heichel, G. H. "Agricultural Production and Energy Resources". American Scientist, Vol. 64, 1976.

Johnston, W. D., Jr. "The Prospects for Photovoltaic Conversion". American Scientist, Vol. 65, 1977.

Kramer, J. A. and M. D. Schrock. "Energy Requirements of Kansas-Nebraska Production Agriculture". ASAE Paper No. 78-1518, 1978.

Pimentel, D. "Limits of Food Production and Energy". Cornell University Rep. 1977.

Riley, J. G. and Norman Smith. 1977. "Solar Energy Utilization by Photosynthetic Production of Solid Fuel". ASAE Paper 77-4018.

Riley, J. G. and Norman Smith. 1977. "Forest Residues as an Alternate Energy Source". Proc. 4th Ann. UMR DNR Energy Conference, University of Missouri-Rolla.

Rockey, D. A., W. Turnacliffe and R. J. Smith. "A 1900 M<sup>3</sup> Digester for Laying Hen Manure, Iowa". ASAE Paper 78-4569, Dec. 1978.

Schuh, Edward C. "The Projected World Food Situation in 1990 and U.S. Agriculture". To be published by ASAE 1979.

Smith, Norman, J. G. Riley and C. W. Kittridge. "Use of Litter for Broiler House Heating". ASAE Paper 78-4552, 1978.

Smith, Norman and T. J. Corcoran. 1976. "The Energy Analysis of Wood Production for Fuel Applications." American Chemical Society, New York.

Smith, Norman and R. C. Hill. 1976. "A Solar Assisted Heat Pump". ASAE Paper 76-4018.

Thornton, T. "An Assessment of Anaerobic Digestion in U.S. Agriculture". USDA-ESCS-06.

Van Arsdall, R. T. and P.J. Devlin. "Energy Policies - Price Impacts on the U.S. Food System". USDA Ag. Ec. Rep. No. 407 1978.

Wittmass, H., L. Olson and D. Lane. "Energy Requirements for Conventional Versus Minimum Tillage". ASAE Paper 76-1024, 1976.

- "Energy in Agriculture" CAST Rep. No. 14, 1973.
- "The U.S. Food and Fiber Sector - Energy Use and Outlook" USDA-ERS 1974.
- "Energy and U.S. Agriculture: 1974 Data Base" Vols 1 and 11 USDA-ERS 1976-77.
- "Solar Energy Applications in Agriculture" Maryland Agricultural Experiment Station, 1976.
- "A National Program of Agricultural Energy Research and Development". Nat. Assc. of Land Grant Colleges. Sept. 1976.
- "Waste to Woodex". 1977. Annual Report Bio-Solar Res and Dev. Corp.
- "Energy Use in Agriculture". CAST Rep. No. 68, 1977.
- "Current Energy Use in the Food and Fiber System", USDA-ERS Briefing Paper June 1977.
- "Gasohol from Grain - The Economic Issues", USDA-ESCS Rep. No. 11, 1978.
- "Waste Heat Utilization for Agriculture and Aquaculture". Tennessee Valley Authority Technical Report B-12, 1978.

CONSULTANTS TO MANAGEMENT  
IN FOOD MARKETING

FOOD BUSINESS ASSOCIATES INC.

SANTA CLAUS LAKE  
TEMPLE, MAINE 04984 U.S.A.  
207-778-2251

9 February 1979

# Marketing and Market Development

## OBSERVATIONS AND RECOMMENDATIONS

FOR THE

AGRICULTURAL DEVELOPMENT PLANNING PROJECT

State of Maine Executive Department

State Planning Office

Prepared under the direction of Robert Bull, President, Food Business Associates, Inc., from secondary data and from experience in working throughout the continent on extensive agricultural development endeavors. The cost of this report has been borne partly by a grant of \$600 from the State Planning Office.



## MARKETING AND MARKET DEVELOPMENT

### -CONTENTS-

	(page)
I. The Small Maine Farmer: Marketing Dilemma and Solutions.....	2
II. The Commercial Maine Producer: Achieving Market Stability and Profitable Growth.....	6
III. The Maine Food Processing and Distribution Industries: Opportunities for Development....	9
IV. The Role of The Public Sector: Promotion and Marketing Services.....	12

\_\_\_\_\_ o \_\_\_\_\_

### -STATEMENT OF PURPOSE-

The project goal is greater prosperity for Maine's Agricultural economy.

Key objectives are: solutions to the unique problems of small farmers, subsistence farm families in particular; enhanced growth and stability for commercial agricultural enterprises; development of more processor market alternatives; identification of potential new efficiencies in distribution systems; lower food costs for Maine consumers; and ever greater effectiveness in providing marketing assistance from the public sector.

# I. THE SMALL MAINE FARMER

## MARKETING DILEMMA AND SOLUTIONS

### The Problem: Poverty-Level Farm Income

Small farmers (those with gross receipts under \$20,000) have an average net income from farming at the poverty level. If the Maine farm population distribution is comparable to the national norm, about 64% of all farm people live on small farms with net income averaging \$4,278.

There are about 3500 small farms in Maine, 55% of the state's total. Many, if not most, small farm families supplement their farm income with off-farm jobs when work is available. Many, however, aspire to earn from farming pursuits a satisfactory family income. Marketing know-how and facilities are so seriously lacking that the modern food economy defies the ability of the typical small farmer to find a niche where his farm production can be converted into cash representing a worthwhile return over production costs.

To whatever extent that the small farmer is ushered out of his marketing dilemma, Maine's unemployment pressures will be eased, welfare costs will be trimmed and the tax base will be improved.

### A New Dimension To The Problem: Urban Refugees

Joining the traditional small farmers, and the commercial farmers who have been squeezed out of commercial pursuits by mass marketing requirements they couldn't meet, are legions of people who have retreated from urban society to a few acres of Maine farmland. Their expectation is to subsist on the land and sell "a few surplus vegetables or something" for spending money.

The refugee formula for living off the land rarely works. Cash requirements usually far exceed expectations. The sale of farm produce usually is tough to arrange and yields nominal amounts of cash. Off-season food purchases, clothing, medical care and other non-farm-produced essentials force all too many of these contemporary pioneers onto welfare and unemployment rolls as well.

### Small Farmers Locked In

All types of small farmers tend to be entrapped in small scales of operation. Limited capital, land and management resources

prohibit realization of any dreams of leap-frogging into commercial scales of operation. Large scales of commercialized agriculture often are contrary to family life style aspirations anyway.

To be practical, solutions to the small farm problem must be tailored expressly to their small scale operations. Admonitions to "get big - or get out" are pointless, neither one a viable alternative for a typical small farm family.

A few small farmers eventually will get big, however, but only by first becoming successful at farming on a small scale.

### Marketing Opportunities That Favor Small Farmers

Consumer preference trends are strongly in the direction of buying and using more fresh food, more natural food and more food that is sold in bulk instead of fancy, expensive packaging. This means a new predisposition toward purchasing food closer to its source, with fewer frills.

Our mature food marketing system now offers unprecedented rewards for specialization, in the forms of both new products and marketing innovations.

Enterprising small farmers come back strong when they respond to these opportunities. They leave the production of broilers, milk, potatoes, and other basic commodities to the big guys, re-establishing themselves as the specialists in things that are profitably produced only on a small scale.

Things that are finding important and permanent places in the shopping lists of today's more affluent discerning, adventurous families, and which are produced primarily by small farmers, include: gourds, ground artichokes, sprouts, dried flowers, potted herbs, parsnips, prepared salads, homemade jams, banana squash, organically-grown vegetables, watercress, baby carrots, chard, local tree-ripened pears, herb seasonings, Indian corn, exotic breeds of poultry, beets, specialty (local) cheeses, new and fun-to-use shapes and colors of tomatoes, cucumbers, eggplants, peppers, and scores of other products. Reviving also are some of the fruit and vegetable varieties of yesteryear, marketed to a receptively nostalgic public, like the old favorites among apple varieties and flower seedlings.

### Successful Sales and Marketing Methods

The best marketing program for a particular farmer depends on many variables. Either alone, or in concern with other small farmers, the small scale producer can be quite successful with one

or more of these options:

1. On-farm selling, including pick-your-own merchandising of apples, Christmas trees, cane berries, asparagus, grapes, cherries, blueberries and strawberries.
2. Roadside marketing, which yields an average gross income of about \$28,000 for U. S. farm families who operate seasonal produce stands.
3. Curb marketing and farmers' markets on designed streets in towns and cities, where sales are made from displays in pickup trucks and car trunks, success depending upon location and the kind of marketing policies adopted by the group of small farmers.
4. Store-door delivery selling to supermarkets by pre-arrangement with buying headquarters, usually quite profitable when certain guidelines are followed, for apples, corn, pumpkins, melons, cabbage, bedding plants, berries, potatoes, organically-produced vegetables and other items.
5. Mail/UPS marketing, while somewhat more specialized, the most profitable normally, measured by net profit ratios, for fruit, cheese, honey, Christmas wreaths, herbs, plants, preserves and crafts, adaptable for very small-scale farms as well as large ones.
6. Mobile retailing, door-to-door route selling of fruit, eggs, cheese, honey, fresh vegetables and other items, when well managed, offers very attractive rewards for small farmers.

Many examples could be cited for small scale roadside markets, store-door sales programs, mail/UPS distribution and mobile retailing ventures that have grown into multi-million dollar farming businesses. Unlike many enterprises, on the other hand, these marketing programs do not necessarily have to grow to remain successful, so they apply regardless of the farm family's aspirations.

Often the foregoing opportunities serve to build a base of capital and experience from which large scale commercial farming activities can be pursued. Intermediate marketing programs sometimes aid that evolution, cooperative packing/marketing affiliations, contract production for fruit and vegetable processors and other medium-scale agricultural activities.

Plants, nursery stock, firewood and other forest product market development merit special consideration by small farmers, along with food products.

#### Recommended Action

1. Encourage appropriate agencies, including the Agricultural Extension Service and the Maine Department of Agriculture, to provide the following information and assistance especially for small farmers:

##### Small Farmer Seminars

Management  
Marketing

##### Small Farmer Manuals

Management  
Marketing

##### Marketing Specialist Counselors

Farm Management  
Cooperative Marketing  
Farmers' Markets  
Other Small Scale Marketing Programs

2. Urge widespread publicity for services beneficial to elusive small farmers, that these services may be utilized to the fullest.
3. Devise a way to provide the state's smaller farmers with a new product market development service, to originate ideas and aid small farmers in their implementation, covering all foods, plants and forest products.

## II. THE COMMERCIAL MAINE PRODUCER

### ACHIEVING MARKET STABILITY AND PROFITABLE GROWTH

#### The Problem: Agriculture's Erratic Profitability and Declining Share of Gross State Product

Maine is an agricultural state, where products of the farmlands and forests are the foundation of the economy. Its agriculture has gradually become highly specialized and its agricultural-produced gross income has become hostage to the sharp fluctuations in the fortunes of just a few leading agricultural industries. Over the long term, agricultural income contributions to the gross state product are down sharply, 48% in 25 years, much more than the state's non-industrial economic base affords.

Potatoes account for about 28% of farm income, the largest segment. Eggs are next, at 24%, followed by broilers at 20%, milk at 16%, apples at 3%, blueberries at 2%, other vegetables at 2% and remaining livestock and crops at lesser amounts.

#### Potatoes: Competitive Posture Eroding

Maine's share of national potato production has slipped from as much as 15% in the 1950s to about 7% today. Potato processing has grown to represent half of today's market, only 40% going for tablestock, the balance for seed. Notwithstanding the stabilizing effect of processor marketing alternatives, the potato industry struggles against a reputation for inconsistent quality and poor sizing arriving in the marketplace. Despite the New York Mercantile Exchange opportunity to minimize wide market price fluctuation risks inherent in long-term storage, weakening demand for Maine potatoes increasingly subjects growers to returns below the cost of production, particularly in years like 1978 when the national crop is large, even when Maine harvests are light.

#### Eggs: A Growth Commodity Under Dark Clouds

A decade of growth finds Maine producing well over half of the New England region's eggs. Large, integrated producing operations are reasonably self-sufficient in marketing management.

Per capita consumption of eggs has dropped about 13% from its peak years of 1967 and 1971, alleviated somewhat by expanding export sales, prompting caution in projecting future growth potentials. Strengthening feed grain costs, due in large part to export demand, coupled with sharply climbing transportation costs, prelude higher prices and further curtailment of demand.

### Broilers: Bouyed By Red Meat Supply Problems

The outlook is good for continued growth in consumer demand and producer profits, thanks to much higher prices for red meats.

Vertical integration of production/marketing operations finds the industry operating very large scale facilities. Marketing has been re-oriented from commodity selling to brand name promotion, brand name competition from southern producing areas becoming intense in Maine's traditional markets. Maine suffers a transportation disadvantage in opening new markets. When the near-term reprieve, occasioned by short supplies of red meat, has passed, Maine producers must establish superior product attributes in the marketplace or face very thin producer profit margins.

### Dairy: Where Maine Enjoys Relative Stability

Price stability results from the federal Milk Market Order for New England and reasonably favorable increases have been authorized in the recent past. Nationally, supplies and utilization have approached an optimum balance. No formidable marketing problems, peculiar to Maine producers, get a top billing on the overall agricultural scene.

### Apples: Growth In Prospect

Demand for apples is strong. Prices have tended to advance with larger harvests.

Maine producers are not well intrenched in the market in terms of quality standards and sales programs comparable to the effective efforts of producers in Michigan, Washington or British Columbia which compete most effectively in the local New England market. Eliminating differences in marketing impact would enable Maine producers to exploit their close proximity to Northeastern markets with a decided profit advantage.

The quality of pears produced in Maine is unsurpassed. Although never a large commercial industry in Maine, large scale pear production possibilities would seem to warrant serious evaluation.

### Marketing Agreements and Orders: Timely Benefits Offered

Administered under the U. S. Department of Agriculture by authority of the Agricultural Marketing Agreement Act of 1937, marketing agreements and orders fit crops to markets by setting minimum quality requirements.

This mechanism offers Maine potato and fruit producers a prompt and effective method for re-establishing a distinctive reputation in the marketplace and avoiding market price demoralization

of inconsistent quality and/or sizing.

Maine producers are on record against the compromising of individual freedom that marketing agreements and orders undeniably bring about. Yet, when the fiscal health and viability of one or more important Maine agricultural industry is at stake, as it appears to be now, the goals of marketing agreement and order programs must be achieved. Since grower votes are needed to bring about a specific marketing order, the only alternative is state legislation to protect the integrity, thus the future, of a Maine agricultural pursuit like potato production.

Inspection services, for purposes of resolving seller/buyer disputes, are adequately accessible to Maine producers through the U. S. Department of Agriculture. Inspection facilities to elevate quality standards would be inherent in either a marketing order or substitute state legislation.

#### Market News: Vital To Prudent Marketing Decisions

Federal-state cooperative news services and those of the Maine Department of Agriculture are satisfactory for most Maine agricultural producers. Large producers avail themselves of these resources because they know where to get them and how to use them. Small producers often err for lack of adequate market information because they don't know the wheres and hows.

#### Recommended Action

1. Bring about a potato marketing order, or alternative state legislation, to restore and enhance the market integrity of Maine potatoes.
2. Evaluate the same approach to the marketing problems of Maine fruit producers.
3. Encourage the Maine Agricultural Experiment Station to conduct agricultural economic feasibility studies for the commercial production of possible new fruit crops like pears.
4. Investigate in depth the potential longer term marketing problems for Maine eggs and broilers, formulating recommendations for safeguarding market positions and disseminate this information via special producer marketing workshops.
5. Revise public sector promotional strategies and programs for Maine products as described in Section V.



### III. THE MAINE FOOD PROCESSING AND DISTRIBUTION INDUSTRIES

#### OPPORTUNITIES FOR DEVELOPMENT

##### The Problem: Real Vs. Imagined Consumer Disadvantages

Many Maine consumers do face much higher food prices than consumers in southern New England. The variations in retail food costs are surprisingly large within the state, from one county to another, an informal price check shows. Certainly the welfare of Maine's citizens warrants careful examination of food resources and marketing costs aimed at finding ways to make more efficient the movement of food from farm to table.

The matter is yet to be carefully researched. Superficial analyses of the Maine consumer's situation, however, shows that certain alleged disadvantages are genuine and that other alleged disadvantages are fallacious.

##### The Issue of Greater Food Self-Sufficiency: A Questionable Goal

It seems to be fashionable, in deliberations about Maine's food economy at public sessions, for the political and agricultural leaders of the state to argue for greater production/consumption self-sufficiency. The inherent assumption, that Maine consumes more than it produces, would indeed place the state at an economic disadvantage, if it were true. The implied assumption, that Maine should produce more of the variety of foodstuffs its consumers demand, is an attractive ideal, but only that, for if Maine could produce foodstuffs as economically as they are imported from other states, those opportunities would have been seized and developed by entrepreneurs in the agricultural and distribution sectors of the state's food economy. Self-sufficiency (if it is not already existing) merely for the sake of self-sufficiency, is bound to inflate consumer prices.

##### Production Compared to Consumption: Already Balanced

Painstaking comparisons have been made of consumption, reflected by population levels, to production and processing, with the following results:

<u>Factor</u>	<u>Maine As A % Of U. S.</u>
Population.....	0.5%
Farm Production of Food for Domestic Markets.....	0.5%+*
Food Processing and Manufacturing.....	0.5%**

\*University of Maine, Bulletin ARE 314

\*\*Food Business Associates, Inc., Technical Sales Guidelines for  
Industrial Food Brokers

This balance applies only to Maine in the New England region. Food processing, for example, finds all other New England states except Maine at a disadvantage, as shown below:

<u>State</u>	<u>Percent of U. S. Population</u>	<u>Percent of U. S. Food Processing</u>
Connecticut	1.5%	0.7%
Maine	0.5%	0.5%
Massachusetts	2.8%	1.8%
New Hampshire	0.4%	0.2%
Rhode Island	0.5%	0.3%
Vermont	<u>0.2%</u>	<u>0.1%</u>
New England (Total)	5.9%	3.6%

Maine's practical economic goal is to excel at what it can do best, exporting maximum quantities of those specializations to other states, and importing from other states whatever can be produced at less cost there, allowing for transportation adjustments... if the public interest is to be well served. This still allows for encouragement of more seasonal market vegetable production for intra-state consumption and any other production, whenever costs for native produce do not exceed delivered costs of produce from other sources, of course.

While prudent agricultural policy calls for continued and aggressive development of markets beyond Maine, for Maine production, Maine's current situation is not a bad one, compared to other New England states.

Wholesale Distribution: Heavily Concentrated yet Increasingly Competitive

One major wholesale distributor dominates the Maine scene, with a wholesale volume roughly three times that of its nearest rival among independent Maine wholesalers. Market penetration by large southern New England wholesalers has quickened in recent years, to make wholesaling more competitive.

Maine has two retailer-owned wholesale distribution centers, the larger operating at 7½ times the volume of the smaller, plus several small independent wholesale distributors.

Scale-of-operation is the name of the game in wholesale food distribution efficiency. Large distribution centers operate at small fractions of the operating cost ratios of small ones. Thus, a wholesale price check of 12 typical branded grocery products shows, small retailers pay unit prices (for wholesale quantities provided by a small scale source) that for most items exceed the retail prices charged by supermarkets in Maine cities. Customers of smaller stores using smaller wholesalers are hit particularly hard,

first by the high costs paid by the stores and secondly by the higher profit margins smaller stores must charge to stay alive.

Consumers would benefit if smaller wholesalers were to be merged into larger ones, and if larger ones provided small stores to a greater extent via efficient cash-and-carry wholesale depots where smaller retailers could obtain supplies much more economically than their small orders could be solicited and delivered.

#### Retail Distribution: Astonishing Price Differentials

Two major supermarket chains, once dominant factors in Maine, have been forced by lethargic mismanagement to retreat, closing many Maine stores and weakening the thrust of competition in many Maine towns. Town and rural populations, as opposed to customers in Maine's central and southern cities, pay considerably more for identical products. One admittedly superficial price check of 30 grocery products, between a Portland supermarket and one in a town 100 miles north where large chains had exited, revealed prices per consumer unit to be from 4¢ to 21¢ higher in the town, an alarming differential for which transportation can explain only a tiny part.

Consumers would be well-served with intensified supermarket competition in Maine's larger towns and with the advent of no-frills "warehouse" type markets catering to town and rural shoppers, as they do in northern plains states at a savings of 8% to 10% in consumer prices.

#### Recommended Action

1. Foster an exhaustive analysis of food wholesaling and retailing economics in Maine, with resultant recommendations for the trade on specific avenues to food cost reduction... which in the long run, will benefit the trade as well as Maine consumers.
2. Abandon schemes for Maine food production self-sufficiency for its own sake, as impractical and counterproductive.
3. Encourage food processing development for sale beyond the state, with a food business development program integrated into other state economic development efforts as commercial agricultural specializations emerge to provide raw materials, even where processor markets are secondary to fresh markets.

## IV. THE ROLE OF THE PUBLIC SECTOR

### PROMOTION AND MARKETING SERVICES

#### The Problem: Greater Effectiveness Needed

A casual review of public sector marketing activities yields the impression that they tend to chase after serious marketing problems after those problems develop... rather than providing foresighted leadership and information aimed at preventing serious marketing problems in the first place.

Promotional money appears to be spent without sound strategies for influencing demand, to be doing something. Promotional programs seem to be aimed disproportionately at consumers, with many handsome and costly recipe folders, for example, as opposed to work with wholesale volume buyers to win favorable decisions on specifying Maine sources and promoting those purchases for maximum volume in retail stores. It costs twice as much, for example, to purchase one colorful ad in a leading national magazine as it would cost for a year 'round promotion of Maine products to the trade and personal arrangements for feature displays in 75% of the supermarkets of Maine's trading area with the display advertising materials provided free.

Where funds are limited, in other words, trade promotion must get priority over consumer promotion, to ensure a good profit return on the dollars invested. Consumer buying decisions are finalized at the point-of-purchase in the stores, where promotions pay off best. If Maine's product isn't in the stores, or if it is there but exhibits poor quality and ineffective display presentation, consumer promotion becomes a pure waste... to be postponed until trade promotions are fully effective and promotional funds are more abundant.

For potato promotion, the multiple organizations involved would seem to make promotion planning and execution cumbersome and less efficient.

#### Strategies: Cater To The Customer, Not The Producer

Neither wholesale buyers or consumers are likely to purchase Maine foods out of a charitable instinct upon learning that the product is from Maine and Maine needs the business. People buy what they have been convinced will be good for themselves ...in terms of value, satisfactions, nutrition and other attributes.

The Maine identification is secondary to promotion of those attributes. Besides, supermarket chain policies are increasingly prohibiting promotions that are strongly oriented toward the source

because of limited flexibility in chain procurement and merchandising.

The key is to take the Maine products to the market, then promote their sales volume in the retail stores for added demand and better prices with repeat orders, basing that promotion on the product attributes.

#### Services:

Many public sector service resources are available. The need appears to be chiefly for leadership that anticipates and averts problems, for coordination of the various resources, and for aiming those resources more precisely at the state's marketing problems.

Several specific public sector service needs have been enumerated in foregoing sections of this report.

#### Recommended Action

1. Marshall the resources of the Agricultural Extension Service and the Agricultural Experiment Station to fill the research voids identified in preceding sections of this report and provide the information in crisp, simple publications and down-to-earth training programs for producers.
2. Make market development planning, and coordination of public agencies, a continuing function of the Maine Department of Agriculture.
3. Encourage a simplifying reorganization of potato marketing groups.
4. Provide a complete program of special marketing services for small farmers.
5. Re-define strategy for promotion of Maine products, stressing attributes over source.
6. Re-structure promotion priorities to give added weight to trade promotion.

FARM FINANCE IN MAINE

A Report by the Maine State Planning Office.

February 20, 1979

## FARM FINANCE TRENDS AND NEEDS

Capital and credit needs in agriculture have changed rapidly in the past several decades. Many factors including high rates of inflation, expanding worldwide demand for food, increasing farm size, more capital intensive farming, more complex farm marketing and management issues, rapidly increasing farmland values, more scarce sources of traditional credit, increasingly substantial obstacles to entrance into farming and concern for government assistance in this area, and related considerations make modern agricultural finance issues complex and deserving of public attention. This section identifies and discusses a number of important issues and trends in this area, primarily addressing changing credit needs in agriculture. The following section discusses major sources of farm credit in Maine and the U.S. The final section of this report presents a variety of recommendations for public and private sector actions in the area of agricultural finance.

### Increasing Growth in Farm Debt Relative to Income and Assets

Total capital and credit requirements in U.S. agriculture have doubled since 1970.

TABLE I  
Farm Debt Outstanding Nationally  
1950 - 1978

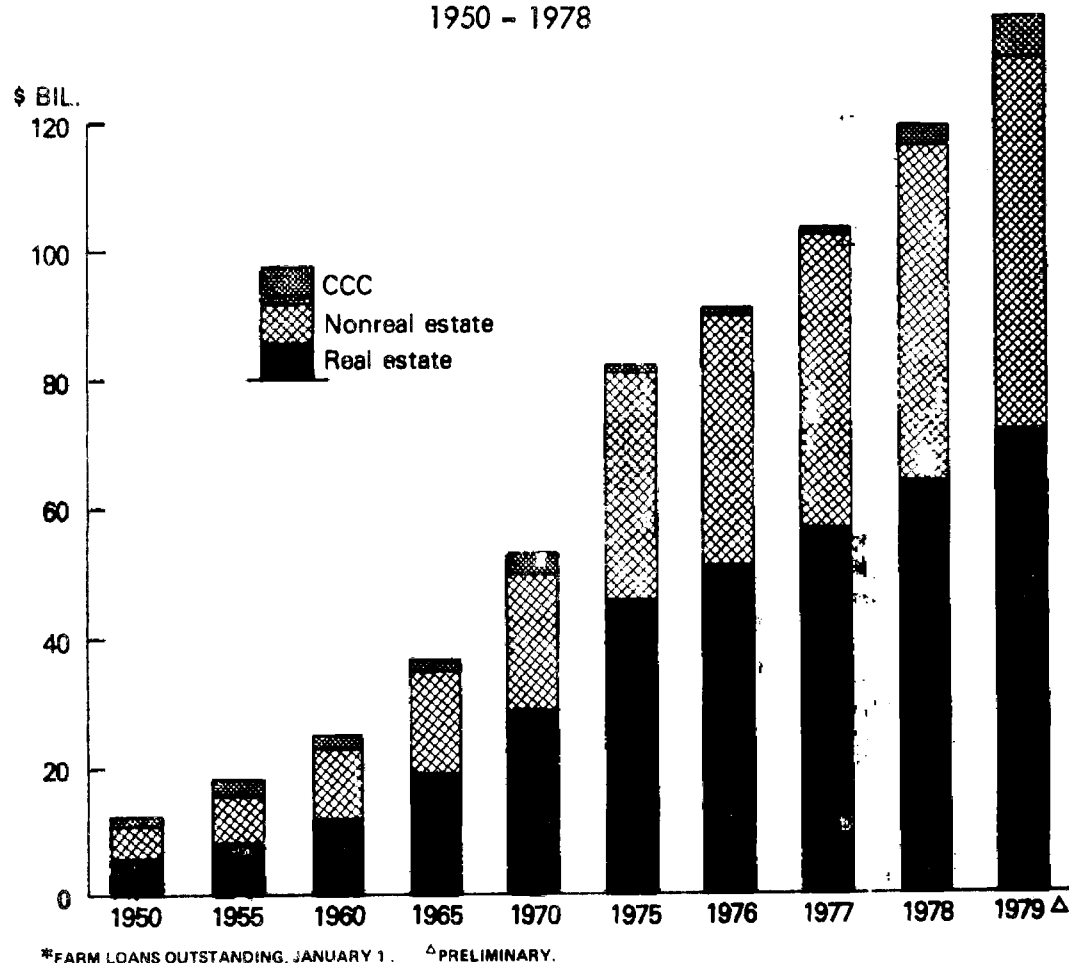


Table I indicates the tremendous growth in real estate and non-real estate farm debt as well as Commodity Credit Corporation loans in recent years for the United States as a whole. Total outstanding farm credit in the U.S. is now well over \$120 billion. Recent estimates indicate that credit levels will double again by the mid-1980's. In Maine outstanding farm credit has doubled in the last decade, reaching more than \$200 million in 1978. A summary of major credit sources and corresponding loan levels in Maine since 1950 appears in Table 2.

FARM FINANCING BY MAJOR INSTITUTIONAL SOURCES IN MAINE:  
LOANS OUTSTANDING BY LENDERS ON JANUARY 1st. \*\* 1950-1978

	Farmer's Home Administration			Farm Credit System			All Operating Banks			Total		
	Real Estate Debt	Operating Loans	Total	Federal Land Banks	Production Credit Associations ***	Total	Real Estate Debt	Operating Loans	Total	Real Estate Debt	Operating Loans	Total
(Loan Levels in Thousands of Dollars)												
78 Loan Level Market Share *	53,734 57.5%	35,234 42.5%	88,968 50.5%	30,361 32.5%	29,129 35%	59,490 34%	9,039 10%	18,674 22.5%	27,713 15.5%	93,134	83,037	176,171
75 Loan Level Market Share *	47,552 63%	34,406 44%	81,958 53.5%	19,927 26%	30,302 39%	50,229 33%	8,274 11%	12,817 17%	21,091 13.5%	75,753	77,525	153,278
70 Loan Level Market Share *	35,602 73.5%	34,026 53.5%	69,628 62%	7,124 15%	16,329 25.5%	23,453 21%	5,643 11.5%	13,478 21%	19,121 17%	48,369	63,833	112,202
65 Loan Level Market Share *	20,030 72.5%	15,652 43%	35,682 55.5%	3,768 13.5%	7,386 20%	11,154 17.5%	3,842 14%	13,574 37%	17,416 27%	27,640	36,612	64,252
60 Loan Level Market Share *	10,539 60.5%	9,656 33.5%	20,195 43.5%	4,415 25.5%	7,611 26%	12,026 26%	2,417 14%	11,759 40.5%	14,176 30.5%	17,37	29,026	46,397
55 Loan Level Market Share *	2,400 17.5%	5,624 25%	8,024 22%	4,289 31%	5,050 22.5%	9,339 26%	7,092 51.5%	11,683 52.5%	18,775 52%	13,781	22,357	36,138
50 Loan Level Market Share *	798 95%	3,595 20%	4,393 16.5%	3,118 37.5%	3,079 17%	6,197 23.5%	4,433 53%	11,468 63%	15,901 60%	8,349	18,142	26,491

Market shares represent percentages of total real estate debt, operating loans, and total loans from sources listed.

Source: USDA Economics, Statistical, and Cooperative Service.

\* PCA loans, in some cases, include a small percentage of aquatic loans.

TABLE 2



The three major sources indicated account for 75% or more of current total outstanding farm credit in Maine. All three sources have increased their loan levels considerably over the past 28 years, with an overall increase of more than 700%. A more complete breakdown of both national and Maine credit levels and sources is included later in this report.

Rapidly increasing farm credit levels have caused growing concern among farm lenders and investors about the ability of farm income-generating capacity to meet credit requirements inherent in ever increasing agricultural loans secured by rapidly inflating farm real estate values. The increasing value of farmland, upon which most long term farm loans are based, has been unprecedented in recent years. During the past five years the compound annual rate of increase in farmland market prices nationally has been more than 16% - a rate which would double land values every  $4\frac{1}{2}$  years. Farm income has not paralleled this rise in farmland values but, rather, has lagged behind increasing farm asset values as well as increasing debt levels. Table 3 indicates the historical relationship of farm income to farmland values. Table 4 indicates the trend in farm real estate loans by various lenders over the same time period. A comparison of recent debt to asset ratios for the farm sector in Maine as well as the U.S. shows that due largely to rapid increases in land values, total farm assets have been expanding faster than total farm debt. The debt to asset ratio of the farm sector nationally dropped from 16.8 in 1970 to 15.7 in 1977. More significantly, Maine's debt to asset ratio dropped from 24.6 in 1970 to 17.2 in 1977. This represents a substantial improvement in the overall equity position of Maine farmers in the 1970's, again due largely to higher land values.

TABLE 3

#### Trends in U.S. Farm Income and Land Values

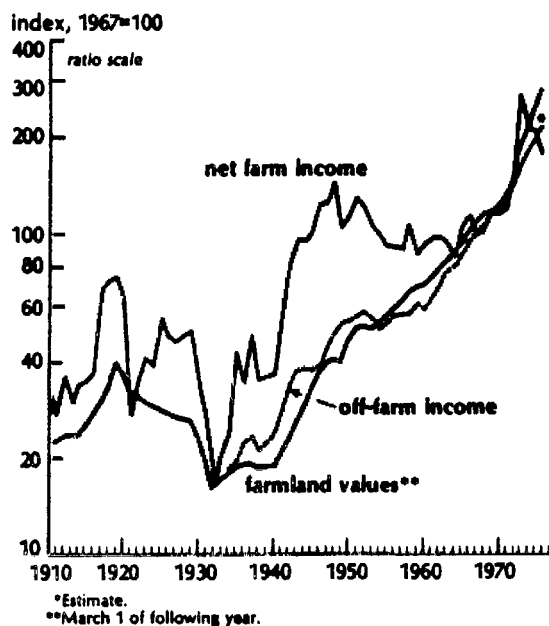
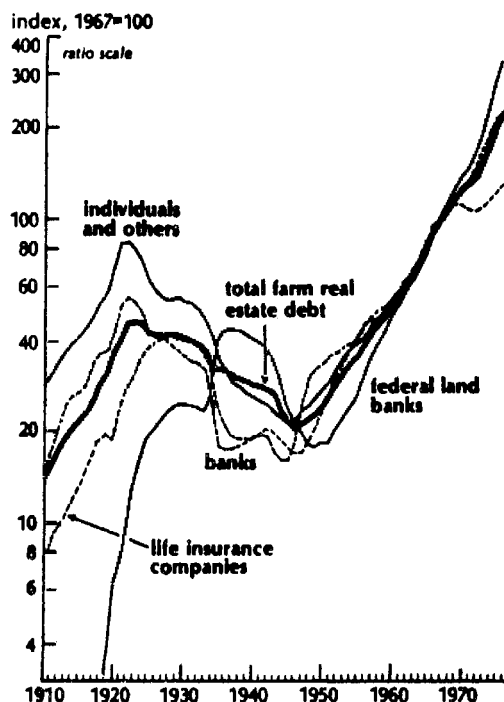


TABLE 4

#### Trends in U.S. Farm Real Estate Debt



From a credit point of view, the relationship between income and total debt is highly important. The recent increase in farmland value has reemphasized a long-standing concern about the debt-servicing capacity of high-priced land purchased or, in a more general sense, capital intensive farming. There has been a rapid uptrend recently in principal and interest payments in farm debt associated not only with the financing of land, but also with the financing of other capital and operating expenses. Table 5 presents data on farm debt, net income, and debt in net income ratios for Maine and the U.S. As the Table indicates, financial leverage in farming has increased tremendously from 1950 to 1977 with Maine increasing from 0.63 to 2.34, and the U.S. average increasing from 0.74 to 4.65. Thus, while financial leverage in Maine farming has increased considerably, it is still conservative compared to other parts of the U.S. Erratic net income patterns in Maine make such conservatism a prudent strategy. It is worth noting that agriculture in the U.S. is not a high leverage industry by general industrial standards and real estate loans tend to be high quality. Individual capital requirements, however, are very high compared to other industries.

### Changing Credit Sources and a Trend Toward Scarcity

Historically, individuals have provided the bulk of financing for farm real estate loans while banks and merchants have provided the bulk of operating and medium-term credit. The role of government in farm financing has traditionally been as a supplemental source for specialized purposes. But as credit and capital requirements continue to expand, other sources are gaining large market shares. In real estate loans the Federal Land Banks and life insurance companies have been expanding rapidly. Among institutional lenders, the Land Banks currently have more than 50% of total real estate loans. Life insurance companies, while holding a smaller share, are expanding aggressively with an increase of nearly 18% in their loan level in 1978. The Farmers Home Administration (FmHA) is also playing an important role, having increased its total agricultural loans from \$6 billion in 1976 to \$13 billion in 1978. Many FmHA loans recently have been emergency loans and operating loans. Production Credit Associations (PCA) are increasing operating loans at a faster rate than banks, but banks still lead this field nationally. Changing credit sources in Maine are discussed in detail later in this report.

As noted earlier, indications are that capital and credit requirements in agriculture will continue to grow significantly in the near future. A major question in the next decade is whether agriculture will be able to compete successfully for increasingly scarce capital. A recent issue of Doane's Agricultural Report (6/23/78) provides a somewhat gloomy outlook:

#### 1977 Return on Equity

All Manufacturing	14.1%
Petroleum and Coal Products	13.8%
Textile Products	7.8%
Farming	2.1%

Farming's problems are high cost of inputs and relatively low food prices.

Meeting future agricultural credit needs will require an increasing amount of sophistication and innovation on the part of both farmers and creditors. Farm credit institutions such as FmHA, the Land Banks, PCA's, and life insurance companies can be expected to continue increasing their shares of the farm credit market because of their specialized expertise in farm matters. Commercial banks, with their wide range of loan activities, will find competition increasingly difficult for the highest quality farm loans. Federal sources will continue to increase in importance, relying more and more on guarantee programs. Most importantly, the key to adequate capital and credit availability for farming will be profitability.

TABLE 1

FARM DEBT\*, NET INCOME\*\*, AND DEBT TO INCOME RATIOS MAINE AND THE U.S.: 1950 - 1977

Year	MAINE (dollars in millions)			U.S. (dollars in billions)		
	Total Debt*	Net Income**	Debt to Income Ratio	Total Debt*	Net Income**	Debt to Income Ratio
1977	188.0	80.4	2.34	95.4	20.5	4.65
1976	188.2	127.1	1.48	84.5	18.7	4.52
1975	171.5	57.3	2.99	75.8	24.5	3.09
1970	122.7	52.4	2.34	47.7	14.2	3.36
1965	73.5	106.3	0.69	30.5	12.9	2.36
1960	55.4	81.7	0.68	19.9	11.5	1.73
1955	51.1	72.7	0.70	14.4	11.3	1.27
1950	38.7	61.1	0.63	10.1	13.6	0.74

\* Debt figures include loans from all operating banks, Farmers Home Administration, Federal Land Banks, Production Credit Associations, life insurance companies, Federal Intermediate Credit Banks and other government sources. The figures do not include loans by non-reporting credit sources such as individuals and trade sources.

\*\* Net income figures represent net income to farm operators after an adjustment for any net change in physical inventories during the year.

## Diversity of Credit Services and Needs

Farming is an increasingly complex science requiring a broad range of skills in all aspects of production, marketing, finance. A past chairman of the Agricultural Committee of the American Bankers Association recently listed the following as some of the many credit needs of farmers:

- \* Seasonal crop financing
- \* Seasonal livestock financing for cow-calf, grass or cattle ranchers and feedlot operators
- \* Medium-term loans for herd improvement, or 1½- or 2-year loans to enlarge laying flocks in table egg operations
- \* Medium-term loans for land developments such as leveling, addition of soil amendments, and planting of trees and vines.
- \* Medium-term loans for irrigation installations, terracing of lands, and construction of farm ponds
- \* Medium-term loans for big-ticket equipment purchases
- \* Revolving lines of credit for equipment replacement
- \* Seasonal dairy loans for feed purchases
- \* Medium-term loans for farm service buildings such as shops, crop storage buildings, grain dryers, livestock and poultry structures, hog parlors, and laying and growing houses for poultry operations.
- \* Loans to buy milk base and quota
- \* Farm real estate loans for acquisition of additional lands, or to facilitate transfers of estates
- \* Term loans to acquire interests in cooperative or proprietary agribusinesses
- \* Loans to permit hedging in futures markets
- \* Loans on stored commodities
- \* Pre-export commodity financing
- \* Commodity export financing.

Additionally, farmers have many normal consumer credit needs for student loans, furniture, automobiles, and home improvement loans. There is also an increasing need for financial services in such areas as farm management, estate management, payroll services, enterprise planning, money market and securities investment, credit information, collection or financing of receivables, tax preparation, and related matters. As farm size and complexity increases, the quality of farm financial management services will become equally or perhaps more important than the quantity of farm credit.

## Credit Needs of Small, Part-time, and Entry-level Farmers

Special credit needs exist for small and part-time farmers, as well as people seeking to enter the farming business. A 1977 report of the Small Farm Liability Project in California listed the following as problems that small farmers encounter in obtaining financing:

1. Farmers do not have easy access to information regarding credit availability, application requirements, prudent use of credit and specialized credit sources and practices for agricultural operations.
2. The element of the unknown, peculiar to agriculture, interferes with obtaining financing - many financial institutions don't understand farming.
3. Real estate and development loans for investments characterized by long-delayed income (e.g., for orchards), are difficult for small family farmers to obtain due to low equity resources.

4. Many programs and agencies set up to finance agriculture are unable or unwilling to take risks necessary to finance the beginning farmer.
5. There appear to be no existing programs for funding agricultural production cooperatives or limited-purpose cooperatives such as machinery pools.
6. The Farmers Home Administration does not have adequate resources to meet the demand for loans under the present program.
7. Financing of small farm units has become synonymous with poor credit.
8. Returns on farm production make it difficult to pay high interest rates or compete with other enterprises for credit.
9. Inflated land prices are a deterrent to small farming, especially to the individual trying to enter farming.

A recent report of the Committee on Entrance to Farming of the Maine Food and Farmland Study Commission found many of these same problems in Maine, adding that current high interest rates and the lack of financial management assistance are particularly significant problems. The Committee concluded that there is adequate credit available in Maine for persons desiring to enter farming and emphasized a problematic aspect of special programs for marginal or beginning farmers, i.e., such added activity often tends to cause an oversupply of product in the marketplace, depressing prices, creating inequitable competitions, and harming all producers.

## SOURCES OF FARM CREDIT

Total farm debt can be divided into two categories: loans secured by real estate, and loans not so secured – primarily short and medium term operating loans. The major institutional lenders of farm debt are the Federal Land Banks and related Production Credit Associations, Farmers Home Administration, the Federal Intermediate Credit Banks, commercial banks, and life insurance companies. A variety of other institutions such as credit unions, savings and loan associations, the Small Business Administration, and finance companies provide much smaller amounts. Other important but non-institutional lenders of farm debt include individuals (largely owner-sellers of farm real estate who provide financing to buyers), and merchants, dealers, and agribusiness finance subsidiaries who provide primarily operating and medium-term credit. Additionally, institutions such as the Commodity Credit Corporation, the Rural Electrification Administration, and the Bank for Cooperatives provide specialized ancillary credit to farmers or to institutions serving farmers.

TABLE 6

Farm Loans Held by United States Lenders Plus Changes on Jan. 1 of Selected Years

	Volume Outstanding (in millions of dollars)				Percent Change In Volume		
	1968	1973	1977	1978	Past 1 yr.	Past 5 yrs.	Past 10 yrs.
<b>NON-REAL ESTATE:</b>							
Banks .....	\$ 9,272	14,315	23,283	25,708	10	80	177
Production Credit Associations .....	3,518	6,607	12,233	13,508	10	104	284
Federal Intermediate Credit Banks <sup>2</sup> ...	176	251	368	374	2	49	113
Farmers Home Administration .....	798	781	1,877	3,141	67	302	294
Individuals and others <sup>3</sup> .....	7,070	5,840	7,300	8,250	13	41	16
<b>Totals .....</b>	<b>20,834</b>	<b>27,794</b>	<b>45,061</b>	<b>50,981</b>	<b>13</b>	<b>83</b>	<b>145</b>
<b>REAL ESTATE:</b>							
Banks .....	\$ 3,061	4,792	6,781	7,780	15	62	154
Federal Land Banks .....	5,563	9,050	18,455	21,391	16	136	285
Life Insurance Companies .....	5,540	5,643	7,270	8,480	17	50	53
Farmers Home Administration .....	1,844	2,835	3,655	3,982	9	40	116
Individuals and others .....	9,135	13,437	20,266	21,669	7	61	137
<b>Totals .....</b>	<b>25,143</b>	<b>35,757</b>	<b>56,427</b>	<b>63,302</b>	<b>12</b>	<b>77</b>	<b>151</b>
<b>GRAND TOTAL .....</b>	<b>45,977</b>	<b>63,551</b>	<b>101,488</b>	<b>114,283</b>	<b>13</b>	<b>79</b>	<b>148</b>

<sup>1</sup>50 States excluding possessions.

<sup>2</sup>Loans discounted for OFIs.

<sup>3</sup>Merchants, dealers, individuals, and other nonreporting groups.

Source: Economic Research Service, USDA

TABLE 2

FARM REAL ESTATE DEBT IN MAINE: \* AMOUNT OUTSTANDING BY LENDER,  
JANUARY 1, 1950-78

Year		<u>Federal Land Banks</u>	<u>Farmers Home Administration</u>	<u>Life Insurance Companies**</u>	<u>All Operating Banks</u>	<u>Individuals and Others**</u>	<u>Total Farm Real Estate Debt</u>
1978	Loan Level	30,361	53,734	6,480	9,039	18,327	117,941
	% of Total	25.7%	45.6%	5.5%	7.7%	15.5%	
1975	Loan Level	19,927	47,552	1,300	8,274	16,923	93,976
	% of Total	21.2%	50.6%	1.4%	8.8%	18%	
1970	Loan Level	7,124	35,602	300	5,643	9,700	58,369
	% of Total	12.2%	61%	.5%	9.7%	16.6%	
1965	Loan Level	3,768	20,030	426	3,842	7,953	36,019
	% of Total	10.5%	55.6%	1.2%	10.7%	22%	
1960	Loan Level	4,415	10,539	469	2,417	6,232	24,072
	% of Total	18.3%	43.8%	2%	10%	25.9%	
1955	Loan Level	4,289	2,400	401	7,092	13,130	27,312
	% of Total	15.7%	8.8%	1.4%	26%	48.1%	
1950	Loan Level	3,118	798	15	4,433	12,098	20,462
	% of Total	15.2%	3.9%	.07%	21.7%	59.1%	

\* Source: USDA Economic, Statistical and Cooperative Service (ESCS).

\*\* ESCS estimate

TABLE 3

FARM OPERATING DEBT IN MAINE: \* AMOUNT OUTSTANDING BY LENDER, JANUARY 1,  
1950 - 1978

Year		All Operating Banks	Production Credit Associations	Federal Intermediate Credit Banks	Farmers Home Administration	Total
1978	Loan Level % of Total	18,674 22.5%	29,129 35.1%	0	35,234 42.4%	83,037
1975	Loan Level % of Total	12,817 16.5%	30,302 39.1%	0	34,406 44.4%	77,525
1970	Loan Level % of Total	13,478 21%	16,329 25.4%	469 0.7%	34,026 52.9%	64,302
1965	Loan Level % of Total	13,574 36.2%	7,386 19.7%	860 2.3%	15,652 41.8%	37,472
1960	Loan Level % of Total	11,759 37.6%	7,611 24.3%	2,282 7.3%	9,656 30.8%	31,308
1955	Loan Level % of Total	11,683 49.1%	5,050 21.2%	1,462 6.1%	5,624 23.6%	23,819
1950	Loan Level % of Total	11,468 62.8%	3,079 16.8%	131 0.7%	3,595 19.7%	18,273

\*Source: USDA Economics, Statistical, and Cooperative Service



Table 6 summarizes real estate and non-real estate farm loans held by various lenders in the United States. Tables 7 and 8 provide the same information for Maine from 1950 to 1978. Perhaps the most dramatic change in recent years has been the great increase in Farmers' Home Administration funds in Maine. This is now the state's largest source of farm credit. More detailed discussions of the information in these tables appears in the following sections on the more important farm credit sources to Maine agriculture. It is important to note in reviewing these tables, however, that merchant and dealer credit in Maine may currently be as high as \$30 million and represents a major but undocumented source of funds in meeting short and medium term farm operating needs.

### 1. The Farmers' Home Administration (FmHA)

The FmHA is a government lending agency within the U.S. Department of Agriculture. The agency was established in 1946 to assume some of the lending functions of the abolished Farm Security Administration. FmHA has authority for general rural and community development loans as well as farm loans. The objective of FmHA's farm loan program is to provide supervised credit to farmers unable to obtain adequate credit from commercial lenders at reasonable rates and terms. This is done through operating loans, farm ownership loans, and emergency loans. These programs are intended to maintain and strengthen the family farm structure by helping farmers who could not get credit elsewhere and by providing credit to beginning farmers.

Farm ownership loans are made to eligible farmers to enlarge, develop, and buy farms not larger than family farms; to refinance debts; and to make capital improvements. Each loan is scheduled for repayment in accordance with the borrower's ability to repay, over a period not exceeding 40 years. The maximum statutory interest rate at the time of this report is  $8\frac{1}{2}\%$  with a limit of \$200,000 per loan. An FmHA loan may be combined with an unlimited amount of loans from other sources, and, in certain cases, may be subordinated to loans from other lenders. To be eligible for FmHA farm ownership loans, an applicant must: 1) have farm experience and training; 2) be an owner-operator of a family farm producing or capable of producing a substantial portion of total family income; 3) be unable to obtain reasonable credit elsewhere; 4) be a U.S. citizen of legal age; 5) be able to obtain operating capital from other sources; 6) be able to refinance the unpaid balance of the loan when it is feasible to rely on commercial credit sources; and 7) be able to maintain his property and pay taxes and insurance when due. As indicated in Table 7, FmHA farm ownership loans currently amount to more than \$53 million in Maine or approximately 46% of farm real estate debt in Maine compared to a national share of that market of only 6.3%.

FmHA loans are made to eligible operators of farms, not larger than family farms, to pay for equipment, livestock, feed, seed, fertilizer, or other farm and home operating needs. Eligibility requirements are the same as for ownership loans plus the applicant must have a lease of sufficient duration and a farm of sufficient size and productivity to carry out a successful farming program. Each loan is scheduled for repayment in accordance with the borrower's ability to repay, over a period not exceeding seven years. The interest rate is adjusted from time to time based on U.S. Treasury rates, but is usually lower than rates charged by other farm lenders on similar loans. Loans are secured and loan size limits are set by law with a current maximum of \$100,000. More than \$35 million of FmHA operating loans were outstanding in Maine on January 1, 1978.

Emergency loans are made to eligible farmers in counties officially declared disaster areas. Such disasters can cause a temporary need for credit not available from other sources. Loans may be made for the purchase of feed, seed, fertilizer, replacement equipment, livestock, and for other items needed to restore normal operations. Loans are made at an interest rate of 5% with maturities of up to five years. Aroostook County has received substantial sums of FmHA emergency loans in recent years. Emergency loans on the 1977 potato crop totalled nearly \$25 million - covering production, harvesting and refinancing needs. An

emergency designation has been made again this year but loan levels are expected to be lower, at higher rates, and largely exclusive of refinancing needs.

Funds for FmHA programs are either guaranteed or insured. Guaranteed loans are made and serviced by private lenders. The loan funds are provided by the private lender with FmHA guaranteed to limit any loss to a specified percentage. Insured loans are made and serviced by FmHA personnel. There has recently been considerable interest in expanding the proportion of guaranteed loans due to personnel restrictions and the fact that these are essentially off-budget items. Both the guaranteed and insured loan programs are limited by ceilings established by Congress and, in many cases, are subsidized in that the interest rates charged may not equal the cost of funds to FmHA plus service costs.

FmHA farm lending programs have been aimed at "high risk" borrowers - typically young, entry-level farmers and those who do not meet usual credit standards such as equity position or repayment ability relative to loan size. In theory, FmHA is able to service this type of borrower without undue losses by providing technical advice and loan supervision. However, the role of FmHA has not always been according to stated intentions. In Maine, which has highest relative percent of FmHA to total financing of any state in the U.S. (approximately 45% of total credit in Maine from reporting sources), FmHA is clearly not an entry level program nor does it have the personnel capabilities to provide farmers with sufficient technical assistance to be instrumental in improving farm management. The high level of FmHA financing in Aroostook County has, in fact, been called counter-productive to the potato economy by artificially supporting poor or marginal farming operations. This situation is quite different in many other parts of the U.S. since FmHA's share of total farm financing on a national level is less than 10%.

However, as indicated in Table 7 and 8, FmHA is a major farm credit source in Maine, and although it accounts for only a small part of farm credit nationally, it is of critical importance to farming. Also, it is probably quite useful to commercial lenders who, rather than viewing FmHA as competition, are able to either use an FmHA guarantee program or refer applicants to FmHA in marginal or risky credit situations. Additionally, FmHA emergency loan programs provide some assurance to farmers and lenders that financial support is available in the case of severe disasters. Perhaps the greatest concern of the farm community regarding FmHA is the rapidly expanding importance of its non-farm programs.

## 2. The Federal Land Banks

The Federal Land Banks are part of the Cooperative Farm Credit System which also includes the Production Credit Associations, Federal Intermediate Credit Banks, and the Banks for Cooperatives. All of these institutions are made up of member-owned associations operating under the supervision of the Farm Credit Administration, an independent agency of the federal government. The Federal Land Banks were established by the Federal Farm Loan Act of 1916. Loans are made through more than 500 local associations, two of which are located in Maine - one in Auburn, and one in Presque Isle. Although the Land Banks operate under federal supervision, they function with private capital obtained through the sale of bonds backed by first mortgages on farm real estate.

The Federal Land Banks (FLB) make loans secured by first mortgages on real estate. Loans may be made to farmers and ranchers for any agricultural purpose and other credit needs of eligible applicants. FLB borrowers must be full or part-time farmers, rural residents, or operators of farm-related businesses. Loans may range from 5 to 40 years. Repayment plans are designed to accommodate borrower's cash flows and are therefore somewhat flexible although most loans specify a fixed number of installments. In no case can the amount of the loan exceed 85% of the appraised value of the real estate security. FLB's have variable interest rates with provisions for raising or lowering rates depending on the average cost of money to the banks.

TABLE 9  
FEDERAL LAND BANK FARM LOANS CLOSED BY FARM TYPE  
STATE OF MAINE

					CASHFIELD <sup>1</sup>	
	DAIRY	STOCKFARM	VEGETABLE	FRUIT	CROPS	POULTRY
<u>1971</u>						
Volume of Loans made (thous.)	\$ 378	-	\$ 463	\$ 146	-	\$ 149
Number of Loans	16	-	14	4	-	8
<u>1972</u>						
Volume of Loans made (thous.)	\$ 864	\$ 32	\$ 494	\$ 98	-	\$ 4,423
Number of Loans	22	2	15	2	-	7
<u>1973</u>						
Volume of Loans made (thous.)	\$ 1,676	\$ 146	\$ 1,140	\$ 211	-	\$ 351
Number of Loans	34	6	34	3	-	12
<u>1974</u>						
Volume of Loans made (thous.)	\$ 1,237	\$ 354	\$ 2,231	\$ 290	\$ 40	\$ 4,714
Number of Loans	26	9	56	5	1	16
<u>1975</u>						
Volume of Loans made (thous.)	\$ 1,377	\$ 360	\$ 990	\$ 237	\$ 80	\$ 958
Number of Loans	26	7	23	3	2	8
<u>1976</u>						
Volume of Loans made (thous.)	\$ 1,963	\$ 250	\$ 1,811	\$ 1,015	\$ 22	\$ 5,332
Number of Loans	36	4	30	7	1	11
<u>1977</u>						
Volume of Loans made (thous.)	\$ 1,722	\$ 25	\$ 1,296	\$ 50	\$ 28	\$ 3,432
Number of Loans	34	1	27	1	1	9
<u>1978 (through Oct. 25th)</u>						
Volume of Loans made (thous.)	\$ 863	\$ 44	\$ 766	\$ 665	\$ 42	\$ 118
Number of Loans	16	2	18	5	1	1

1. Cashfield crops - Those loans whose major production consists of either corn feed, oats, grains, wheat, soybeans, field crop seeds, or any general feed crops.
2. Other - A miscellaneous farm-type which combines those loans whose commodities are one of either; misc. field seeds, hay, clover, misc. livestock (rabbits, mink, chinchillas), misc. fur-bearing animals, maple syrup, nurseries, or fish products.
3. Unclassified - Those loans in which the farm-type was not stated.

As indicated in Table 7, FLB's have more than \$30 million in real estate secured debts in Maine, about 25% of the state's total farm real estate debt. Table 9 shows loans closed by FLB's in Maine for 1971-78 by type of farm. The farm types receiving the most funds in recent years have been poultry, dairy, and vegetable (mostly potato farmers). It is important to note that the Federal Land Banks are the largest institutional source of farm real estate debt in the U.S. with nearly 35% of the share of this market. The FLB's as well as other institutions in the Cooperative Farm Credit System, are known for the high quality and professionalism of their credit and technical assistance services.

### 3. Production Credit Associations (PCA)

PCA's, another part of the Cooperative Farm Credit System, are credit cooperatives owned and controlled by their members. They were authorized by law in 1933 as a means for providing short and intermediate term credit for the same markets eligible for Land Bank loans. There are more than 400 PCA's operating in the United States, and two in Maine. Funds for PCA loans come from bonds issued by the Federal Intermediate Credit Banks (FICB) which act as a credit discounting mechanism not only for PCA's but also, to a lesser extent, to commercial banks and other financial institutions. PCA loan rates are dependent on the borrowing rates of the FICB's on the money market.

PCA loan terms may range up to seven years in length. Repayment plans are designed to accommodate the borrower's cash flows. While some loans are written with a fixed number of annual, semi-annual, or monthly installments, many PCA's have instituted budget or line-of-credit financing plans. Under these plans, a borrower arranges in advance for a loan to cover all his financial requirements for an entire season or agricultural cycle. He draws the money as he needs it and repays it according to a pre-arranged schedule. Loan service fees and stock ownership requirements affect the net cost of funds. Loans may be made to farm-related businesses for working capital, equipment, purchases, or other operating needs.

The farm loan volumes of PCA's in Maine as of January 1, 1978, was approximately \$29 million, representing about 35% of farm operating loans (exclusive of merchant credit) at that point in time. Table 10 shows outstanding PCA loans in Maine as of December 31, 1978 by farm type. As in the case of the Federal Land Banks, PCA's are a highly important source of credit in farming with approximately a 26% share of total farm operating loans in the U.S. Commercial banks are most important in this credit market with a 50% share nationally but only a 22% share in Maine. These figures are exclusive of merchant credit. In addition to offering credit and financial advice, many PCA's provide borrowers with other services including credit life insurance, crop hail insurance, and farm recordkeeping.

### 4. Banks for Cooperatives

Although not a major source of farm credit in Maine, it is important to mention the Banks for Cooperatives since they play a significant role in areas where cooperatives are a more important part of the farm economy. Twelve Banks for Cooperatives were provided for in the Farm Credit Act of 1933. The nearest one to Maine is in Springfield, Massachusetts. These banks make loans for any purpose that will enable cooperatives to perform marketing, supply, or business service functions. Repayment plans are tailored to meet the cash flow needs of the borrowing cooperative. Seasonal loans are made primarily to finance current operations or seasonal assets including commodities. Such loans normally mature within 18 months and may be secured or unsecured. Credit is extended for financing long term assets or working capital. This may include loans for construction, remodeling, or expanding facilities or for purchasing land, buildings, or equipment. In addition to providing credit, bank staffs advise and counsel borrowers in such areas as budgeting, long-range planning, operating analysis, auditing practices, mergers and consolidations, and the formation of new cooperatives.

TABLE 10

## PRODUCTION CREDIT ASSOCIATION LOANS OUTSTANDING

as of December 31, 1978, by Farm-type

## STATE OF MAINE

<u>Farm-type</u>	<u>Number of Loans</u>	<u>Volume of Loans (\$1,000)</u>
Dairy	255	7,186
Stockfarm	22	375
Vegetable	306	13,536
Fruit	22	1,419
Cashfield crops <sup>1</sup>	9	214
Poultry	48	4,607
Aquatic	163	2,681
Other <sup>2</sup>	73	2,214
Unclassified <sup>3</sup>	16	664
Total	914	32,896

<sup>1</sup>Cashfield Crops - Those loans whose major production consisted of either corn feed, oats, grains, wheat, soybeans, field crops or any general feed crops.

<sup>2</sup>Other - A miscellaneous farm-type which combines those loans whose commodities are one of either: General livestock and livestock products, general field crop, maple syrup, horticultural, forest products, or outside income.

<sup>3</sup>Unclassified - Those loans in which the farm-type was not stated.

## 5. Commercial Banks

Commercial banks as a group are the leading source of non-real estate farm loans in the U.S. with 51% of this market. Banks also are important in providing real estate loans with 12% of that market. In Maine, banks' share of non-real estate loans as of January 1, 1978, was 22.5%, and their share of operating loans was approximately 8%. It is important to note that the market share of banks in both farm real estate and operating loans in Maine has declined dramatically since 1950 despite increasing loan levels by banks. Loans secured by real estate increased from \$4.4 million in 1950 to \$9 million in 1978 with the market share dropping from 22% to less than 8%. Operating loans increased from \$11.5 million to \$18.7 million while market share declined from 63% to 22.5%. Dramatic increases in funding from other sources have been responsible for the relative decline in importance of bank financing in agriculture in the past several decades.

Farm loans by commercial banks in Maine are concentrated in the portfolios of a relatively small number of institutions. As indicated in Table 11, two banks in Aroostook County, Northern National Bank (Casco northern affiliate) and First National Bank of Aroostook (Depositor's Trust affiliate) accounted for more than \$11 million of the \$27.7 million in farm loans held by Maine commercial banks. Three bank organizations, Casco Northern, Depositor's Trust, and Northeast Bank shares account for more than half of the farm loans made by Maine banks. Only 8 banks have total farm loan portfolios of more than \$1 million.

Banks are prominent in providing credit to the farm sector nationally for several reasons. First, banks are readily accessible to farmers since they are located in nearly every town in major farming regions. Banks are able to give prompt credit service at competitive interest rates. They can also provide a full range of financial services including all types of loans, checking and savings accounts, safe deposit boxes, and other services such as farm management counseling and recordkeeping, estate planning, management of trusts, and investment counseling. Although banks can and do make all types of farm loans, shorter term loans are usually preferred due to the source of a large portion of loan funds: demand deposits which can withdraw quickly. A smaller portion of loans are for intermediate term needs such as machinery, livestock, and buildings. These loans carry maturities of from one to ten years, again, with shorter maturities preferred. Even most bank loans for the purchase of real estate are for fewer than 15 years and are smaller than the bank loans made by Federal Land Banks or life insurance companies. Mortgage loans like this are helpful in financing add-on acreage, the dominant type of farm land transfer.

A number of factors affect the ability of banks to finance farming in Maine. Although banks have been and still are a major institutional source of credit to the farm sector, sharply rising capital and credit needs have made it difficult for many rural banks to accommodate these needs adequately. Farm debts have grown much faster than the resources and deposits of many rural banks. Low per capita income and low per capita bank deposits in Maine have further limited the supply of loan funds. As this trend continues, loan deposit ratios have in many cases reached a maximum level considered prudent by bank management. These ratios are currently significantly higher in Maine than nationally inferring that although bank credit is relatively scarce in Maine versus the national average, banks have been liberal in using available dollars to fund domestic loan activity. Given this situation, further increases in farm credit may be difficult.

Another problem for some rural banks is that credit requirements of farm units may exceed the amount an individual bank can legally and prudently lend from its own resources. This situation has occurred with increasing frequency nationally as the size of commercial farms has grown faster than have the capital resources of many rural banks. Another concern in some areas has been state usury laws which have limited loan activity recently as interest rates have increased across-the-board. Maine's usury law, however, is not a limiting factor.

TABLE 4

LOANS TO FARMERS BY 30 LEADING BANKS IN MAINE\*, LOAN LEVELS AS  
OF DECEMBER 31, 1977

Bank	Dollars in Thousands		
	Loans Secured by Real Estate	Operating Loans	Total
1. Northern National Bank	270	8066	8336
2. 1st National Bank of Aroostook	613	2613	3226
3. Federal Trust Co.	975	876	1851
4. Depositor's Trust Co.	1099	720	1819
5. Houlton Trust Co.	691	964	1655
6. Washburn Trust Co.	187	1140	1327
7. Aroostook Trust Co.	57	1117	1174
8. Northeast Bank of Lewiston-Auburn	695	321	1016
9. Katahdin Trust Co.	312	654	966
10. Bar Harbor Banking and Trust	754	75	829
11. Skowhegan Savings Bank	705	0	705
12. Depositor's Trust of Bangor	130	547	677
13. Merchants National Bank of Bangor	0	529	529
14. Northeast Bank and Trust	383	93	476
15. Merrill Trust Co.	285	67	352
16. Norway National Bank	44	254	298
17. Waterville Savings Bank	250	0	250
18. First Bank N.A.	120	112	232
19. Northeast Bank of Farmington	153	33	186
20. Norway Savings Bank	179	0	179
21. Camden National Bank	92	73	165
22. Northeast Bank of Sanford	18	133	151
23. Maine National Bank	150	0	150
24. Mid-Maine Mutual	144	0	144
25. 1st National Bank of Biddeford	55	68	123
26. National Bank of Gardiner	91	30	121
27. The Dirigo Bank and Trust Co.	86	32	118
28. Northeast Bank of Lincoln	37	64	101
29. Saco-Biddeford Savings Institution	91	0	91
30. Gardiner Savings Institution	82	0	82

\* Sources: Controller of the Currency and Maine Bureau of Banking

Another limiting factor has developed as rural areas and rural economies have become less farm oriented in recent years. As this trend has continued, and as banks have become more centralized, many banks have lost specialized expertise in farm credit matters and have, in many cases, stopped treating farm loans as a separate and specialized portfolio. This has not only caused a dilation of interest in farming but has constituted a significant disadvantage for banks relative to competing organizations such as the Production Credit Associations, Federal Land Banks, and FmHA where farm expertise is increasingly concentrated. Outstanding non-real estate farm loans by banks are more than double the amount held by PCA's nationally. But competition is intensifying, often based on quality of service, and in Maine PCA's surpassed banks in this type of loans in the late 1960's and by January 1, 1978, had outstanding operating loans of \$29 million compared to \$18.7 million for banks. Clearly, if banks are to maintain an important role in farm financing in Maine they will need to develop greater specialization and interest in agricultural matters and find ways to augment funds available for farm credit.

## 6. Life Insurance Companies

Life insurance companies play an important role in mortgage financing of both urban and rural real estate. Long-term real estate loans are among the investments best suited for the funds they hold as reserves for policy holders. Generally, reserves of a life insurance policy accumulate over time and provide insurance companies with large sums of money which can be invested for long periods of time to produce income. Life insurance companies currently hold \$8.5 billion or more than 13% of total farm real estate loans in the U.S. Only a decade ago they were the single largest institutional source of farm real estate debt in the nation. More recently their relative importance has declined largely due to substantial credit increases by the Federal Land Banks. Increasingly, life insurance companies are concentrating their loans in the larger-than-average farms. The average size of life insurance company loans made during 1977 was 277% larger than loans made by the FLB's. Relatively few insurance companies are active in the farm market. It is estimated that 21 firms account for about 96% of the industry's farm mortgage lending, and just 8 firms account for 87% of the industry total. Although the life insurance industry is an important lender to the farm sector, the amounts loaned represent less than 3% of the industry's total investment portfolio.

Investments by life insurance companies in Maine agriculture currently amount to \$6.5 million. Most of the industry's investments, as expected, are located in the large-scale farm-states such as Texas, California, Iowa, Illinois, Florida, etc. Very few funds are invested in the northeast because the relatively small scale and low density of agricultural activity in this area makes servicing this market very difficult and less profitable than in the larger farm areas.

## 7. Individuals

As noted earlier, individuals are the leading source of farm mortgage loans. Most of this lending occurs when a farmer retires and is willing and able to accept a down payment plus a contract for a deed or mortgage for the sale price of the farm. A much less prevalent private financing pattern is for non-farmers to provide funds for farm real estate debt with bankers sometimes acting as intermediaries. Land contracts are widely used, especially in time of tight credit, and in some areas may account for half or more of the financing of farm real estate transfers. These contracts have the advantage to buyers of allowing for a smaller down-payment than possible with most commercial credit sources. They also allow sellers to dispose of property regardless of mortgage market conditions. Financing by individuals currently amounts to \$18.3 million or 15.5% of farm real estate debt in Maine. This represents an increase in the past 20 years but in Maine as well as at the national level private financing has been a very dominant farm financing source in prior times.



## 8. Other Sources

Merchant and dealer credit, as mentioned previously, is used extensively by farmers and has long been an essential ingredient in retailing operations. In regard to "hard goods" such as farm machinery, most manufacturers, through their dealers, have financing plans for farmer customers with either a bank or other credit institution. Credit for "soft goods" such as fertilizer, feed, petroleum products, or other operating inputs is frequently extended under relatively informal arrangements such as account credit carried for monthly billing or for billing at harvest. Interest may or may not be charged. Although merchant and dealer credit is known to account for a large share of operating credit in agriculture, little specific data is available on loan levels, terms, and characteristics. Based on volume of farm activity, including equipment and "soft goods" purchases, it is estimated that merchant and dealer credit currently amounts to \$25 to 30 million in Maine.

The Small Business Administration (SBA) also plays a role in agricultural financing. In general, SBA loan activities are to agribusiness enterprises rather than directly to farmers. However, a recent broadening of its definition of eligible borrowers has included farmers. It is able to make loans to finance real estate, equipment, capital improvements, operating expenses, and refinancing of debt. As of mid-year 1978, SBA had \$1.6 million in farm loans in Maine. This included 1 loans of both long and short terms.

Savings and loan associations have not been an important factor in the farm lending field in Maine or nationally. They can make loans secured by farm real estate for up to 25 years and up to 80% of the value of the property used for commercial farming. Savings and loan associations in Maine have a total of about \$1.5 million in farm real estate debt.

## Appendix ENT 1

### Agricultural Programs at the University of Maine at Orono

#### Programs of Study

##### 1. B.S., M.S., and Ph.D. Programs in:

Animal & Veterinary Sciences  
including Pre-Veterinary

Agricultural & Resource Economics  
Production Economics  
Business Management  
Marketing  
Sociology of Rural Life

Biological Sciences  
Biology  
Biochemistry  
Botany  
Entomology  
Microbiology

Agricultural Engineering  
Agricultural Mechanization  
Forest Engineering

Forest Resources  
Forest Management  
Wildlife Management  
Wood Sciences

Human Development  
Food and Nutrition  
Early Childhood Education  
Home Economics Education  
Health and Family Life  
Education  
Social Service

Plant and Soil Sciences  
Natural Resources  
Recreation and Park  
Management

##### 2. Associate Degree (Two-Year) Programs in:

Animal Medical Technology  
Animal Agriculture Technology  
Landscape and Nursery Management  
Forest Management Technology  
Merchandising  
Resource and Business Management

## Appendix ENT 2

### General and Vocational Agricultural Courses in Maine High Schools 1978-1979

<u>Type</u>	<u>School</u>	<u>Area</u>
General Programs (9)	1. Dover-Foxcroft	Forestry (4 years)
	2. East Corinth	Agricultural Science General
	3. Easton	General Production
	4. Fort Fairfield	General Horticulture
	5. Lee	General Horticulture (Fresh. & Soph.)
	6. Limestone	General Horticulture (4 years)
	7. Mars Hill	Production (4 years)
	8. Thorndike	General (Fresh. & Soph.)
	9. Waldoboro	Horticulture (4 years)
General Courses (6)	1. Ellsworth	Agriculture, Forestry & Ecology
	2. Hampden Academy	Ecology
	3. Hinckley	School Farm
	4. Paris	Agricultural Science (Ecology, Forestry & Home Gardening)
	5. Rumford	Forestry & Oceanography
	6. Strong	Outdoor Special Education
Vocational Courses (32)		
A. Agricultural Co-op (1)		
	1. Newport	
B. Agricultural Mechanics (4)		
	1. Belfast	
	2. Caribou	
	3. Presque Isle	
	4. NMVTI (VTI)	
C. Agricultural Production (2)		
	1. Houlton	
	2. Presque Isle	
D. Agricultural Resources (3)		
	1. Skowhegan	
	2. Sanford	
	3. Rockland	

<u>Type</u>	<u>School</u>	<u>Area</u>
E. Forestry (12)	1. Ashland	
	2. Calais (VTI)	
	3. Dexter	
	4. Dyer Brook	
	5. Farmington	
	6. Greenville	
	7. Jackman	
	8. Madawaska	
	9. Mattawamkeag	
	10. NMVTI (VTI)	
	11. Norway	
	12. Readfield	
F. Horticulture (6)	1. Augusta (2)	
	2. Portland	
	3. South Portland	
	4. South Portland (VTI)	
	5. South Portland (Arthur G. Gould School)	
	6. Topsham	
G. Marine Occupations (4)	1. Brunswick/Orrs Island	
	2. Calais	
	3. Rockland	
	4. South Portland (VTI)	

## Appendix ENT 3

### MAINE ORGANIC FARMERS AND GARDENERS ASSOCIATION APPRENTICESHIP PROGRAM

#### Purpose

To bring together those seeking a learning experience in permanent agriculture with those already working at it and who are willing to share their experience in exchange for labor plus room and board.

#### Description

The program got its start in 1975 when it was suggested to the MOFGA Board that it set up a means to handle frequent inquiries by people looking for farm apprentice situations. The program is currently managed as a spare time activity by three people who serve to handle inquiries and place farmers in contact with prospective apprentices. To cover costs, farmers are charged a fee of \$20, half of which is refundable if no apprentice is found. Apprentices pay a \$5 non-refundable fee. Both farmer and apprentice applicants are asked to fill out questionnaires, which are then matched for areas of interest and compatibility in other ways. Where possible, each is given three or more choices, receiving copies of the questionnaires from the selected applicants. Each farmer has the opportunity to look over the application questionnaires of three or more apprentices, and contact one or more of his/her choice. Each apprentice also makes a choice from three or more farmer application questionnaires. The final placement must then be worked out between farmer and apprentice, though in a number of cases additional contact was needed when the first arrangements didn't work out.

By June 1978 MOFGA has processed 180 inquiries and had received 39 applications from farmers and 67 from apprentices. In that year, 32 apprentices started with 21 farmers and 24 finished the season. One of these has continued with the farmer. New applications continue to arrive, though at a reduced rate, some for next year and some wanting to start right now, for a season's experience to a year or more. Several recent placements have been made with others in process.

Farmers have been contacted largely through MOFGA and its newspaper. Apprentice applicants have been college-age young people, mostly women and from all over the country and several foreign countries, with very few from Maine. Because of the steady flow of inquiries, little advertising has been done.

A meeting for discussion from farmers has yet to take place.

# Maine Department of Agriculture



~~JOSEPH W. WILLIAMS, Commissioner~~

June 19, 1979

Maine Food and Farmland Study Commission  
Fred Hutchinson, Chairman  
John Dawson, Vice Chairman  
Tyler Libby, Project Director

600 State Office Building  
Augusta, Maine 04333  
Telephone 207/289-3874

Mr. Marvin Ewing, Director  
Bureau of Labor  
Department of Manpower Affairs  
State Office Building  
Augusta, ME 04333

Dear Mr. Ewing:

Enclosed is a copy of the final report of the Maine Food and Farmland Study Commission. This report has been sent to the Governor and the 109th Maine State Legislature. We have made several recommendations regarding your Bureau. If the Governor or the Legislature concurs with our recommendations, you will be asked to respond to the following:

Item I.A. in the Government section asks you to encourage the federal government to empower the State of Maine to decide if alien labor is needed for harvest operations;

Item I.B. in the Government section asks that your office encourage the federal government to modify labor laws to allow more appropriate use of children in harvesting Maine's agricultural crops.

If you have any questions, please call.

Sincerely,

A handwritten signature in cursive script that reads "Fred Hutchinson".

Frederick E. Hutchinson, Chairman  
Maine Food and Farmland Study Commission

Enclosure

#### Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

#### Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee

# Maine Department of Agriculture



~~Joseph N. Williams, Commissioner~~

Stuart N. Smith, Commissioner

Maine Food and Farmland Study Commission  
Fred Hutchinson, Chairman  
John Dawson, Vice Chairman  
Tyler Libby, Project Director

600 State Office Building  
Augusta, Maine 04333  
Telephone 207/289-3874

June 19, 1979

Mr. Lionel C. Ferland, Sr.  
ASCS  
USDA Office Building  
University of Maine  
Orono, ME 04469

Dear Mr. Ferland:

The Maine Food and farmland Study Commission has completed its final report to the Governor and the 109th Maine Legislature. In that report we made recommendations that involve your agency. If the legislature or the Governor concur with our findings, your agency will be encouraged to modify a few of your programs.

The recommendations which address your agency are found on page two under Soil Erosion in the enclosed report. Basically, the recommendations would urge you to place even a greater priority on soil erosion problems. We further suggest that government conservation funds be spent on farms with the greatest erosion and pollution abatement problems first. Priority should be given to farmers willing to enter into long range conservation programs. Specifically, see items II.A. and II.B. under soil erosion in the Farmland section.

I would like to also thank you for your support and help in developing this report. If you have any questions or would like to have any of our points clarified, please call.

Sincerely,

Frederick E. Hutchinson, Chairman  
Food and Farmland Study Commission

Enclosure

#### Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

#### Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee

# Maine Department of Agriculture



~~Joseph N. Williams, Commissioner~~

Stuart N. Smith, Commissioner

Maine Food and Farmland Study Commission  
Fred Hutchinson, Chairman  
John Dawson, Vice Chairman  
Tyler Libby, Project Director

600 State Office Building  
Augusta, Maine 04333  
Telephone 207/289-3874

June 18, 1979

H. Sawin Millett, Jr., Commissioner  
Maine Department of Education  
and Cultural Services  
State Street  
Augusta, ME 04333

Dear Commissioner Millett:

Enclosed is the final report of the Maine Food and Farmland Study Commission. This report has been sent to the Governor and the 109th Maine State Legislature. One recommendation in the report could affect your agency if the Governor or the Legislature concurs.

That recommendation is Item I.A. in the Education section, which asks your department to develop a policy of support for Maine's agriculture and create educational programs for kindergarten through adult regarding agriculture and our food system.

If you have questions on this, please contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Fred".

Frederick E. Hutchinson, Chairman  
Food and Farmland Study Commission

Enclosure

## Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

## Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee



# Maine Department of Agriculture



~~Joseph N. Williams, Commissioner~~

June 18, 1979

Maine Food and Farmland Study Commission  
Fred Hutchinson, Chairman  
John Dawson, Vice Chairman  
Tyler Libby, Project Director  
600 State Office Building  
Augusta, Maine 04333  
Telephone 207/289-3874

Dr. Kenneth E. Wing, Dean  
College of Life Sciences  
and Agriculture  
Winslow Hall  
University of Maine  
Orono, ME 04473

Dear Dean Wing:

Enclosed is the Maine Food and Farmland Study Commission's final report. This report has been sent to the Governor and the 109th Maine State Legislature. Numerous recommendations in the report would affect your programs. If the legislature or the Governor concurs with them you will be asked to modify your programs as indicated in the following:

1. Item V.A. in the Farmlands section recommends that research activities in conservation be increased to include an expanded soil audit program. Priority research programs would be: "developing viable rotation crops for Aroostook, reduce soil compaction, and encourage the development of local sources of soil improving materials."
2. Item III.D and E in the Marketing section ask the University of Maine at Orono to identify and develop markets for under-sized and off-grade produce and alternative agricultural products.
3. Item I.C. in the Education section asks that you "implement a comprehensive program which would combine an apprenticeship program with a formal associate degree program in Small Farm Management."
4. Item I.E. in the Education section requests that the University "collect, analyze, and adapt data from worldwide sources on alternative technologies. A library of existing methods be maintained with more popular information published for easy access."

The University is expected to play an essential and expanded role in agriculture. Hopefully this report can help to encourage additional agricultural work of the University.

#### Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

#### Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee

Dean Kenneth E. Wing

-2-

June 18, 1979

We thank you for the great deal of support and help you have given us in developing this report. If you have any questions or need any points clarified, please call.

Sincerely,

A handwritten signature in cursive script, appearing to read "Fred".

Frederick E. Hutchinson, Chairman  
Food and Farmland Study Commission

Enclosure

# Maine Department of Agriculture



~~Joseph N. Williams, Commissioner~~  
Stuart N. Smith, Commissioner

Maine Food and Farmland Study Commission  
Fred Hutchinson, Chairman  
John Dawson, Vice Chairman  
Tyler Libby, Project Director  
600 State Office Building  
Augusta, Maine 04333  
Telephone 207/289-3874

Edwin H. Bates, Director  
Cooperative Extension Service  
Winslow Hall  
University of Maine  
Orono, ME 04469

Dear Director Bates:

Enclosed is the Final Report of the Maine Food and Farmland Study Commission. This report has been sent to the Governor and the 109th Maine State Legislature. Numerous recommendations in the report would affect your programs. If the Governor or the Legislature concurs with them, you will be asked to modify a few of your programs as indicated.

1. Item V.A. in the Farmlands section asks that extension activities in conservation be expanded. Priority goals cited are: increased rotation crops for Aroostook, increased use of locally available soil improving materials, and reduced soil compaction.
2. Item I.B. in the Education section calls for expanded extension help for family farms, specifically with "small farm management, alternative technologies, biological soil management, integrated pest management, and production methods for alternative crops".

Generally, the Commission felt that the Cooperative Extension Service should plan an expanded role in agriculture. Not only will the existing commercial farmers have to be helped but the influx of small and part-time farmers must also be served.

We thank you for the tremendous support that you gave this Commission.

Sincerely,

Frederick E. Hutchinson, Chairman  
Food and Farmland Study Commission

Enclosure

#### Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

#### Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee

# Maine Department of Agriculture



~~Joseph N. Williams, Commissioner~~

Stuart Smith, Commissioner

June 15, 1979

Maine Food and Farmland Study Commission

Fred Hutchinson, Chairman

John Dawson, Vice Chairman

Tyler Libby, Project Director

600 State Office Building

Augusta, Maine 04333

Telephone 207/289-3874

Mr. Roger Mallar, Commissioner  
Department of Transportation  
Capitol Street  
Augusta, ME 04333

Dear Commissioner Mallar:

Enclosed is the Maine Food and Farmland Study Commission's final report. This report is now in the hands of the Governor and the 109th Maine State Legislature. If the Legislature or the Governor concur with our findings, you will be asked to modify a few of your programs as follows:

Item I.A. in the Transportation section charges you with "providing inputs to the federal process to precipitate the consolidation of Maine railroad lines into one system".

Item II.A. in the Transportation section asks "the Department of Transportation to facilitate inter-modal service by supporting the elimination of legal barriers to inter-modal ownership, supporting improvement of cargo port facilities, and conducting an experimental "piggy back" transportation program".

Item II.B. of the Transportation section recommends that the Department of Transportation conduct research "to determine ways in which deregulation proposals might affect Maine agriculture, and ways in which the Interstate Commerce Act might be amended to modernize and improve agricultural transportation in Maine".

If you have any questions, please call.

Sincerely,

*Fred Hutchinson*

Frederick E. Hutchinson, Chairman  
Maine Food and Farmland Study  
Commission

Enclosure

#### Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

#### Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee

# Maine Department of Agriculture



~~Joseph N. Williams, Commissioner~~

Stuart N. Smith, Commissioner

Maine Food and Farmland Study Commission  
Fred Hutchinson, Chairman  
John Dawson, Vice Chairman  
Tyler Libby, Project Director

600 State Office Building  
Augusta, Maine 04333  
Telephone 207/289-3874

June 15, 1979

Mr. Seth H. Bradstreet, State Director  
Farmers Home Administration  
USDA Office Building  
University of Maine  
Orono, ME 04469

Dear Seth:

Enclosed is the Maine Food and Farmland Study Commission's final report. This report has been sent to the Governor and the 109th Maine State Legislature. There are five recommendations in the report which concern your programs. If the legislature or the Governor concur with our recommendations you will be urged to modify your programs as indicated

Item III.A. of the Farmlands section requests that you discontinue the practice of making loans for housing on highly productive agricultural lands.

Item I.A. of the Marketing section suggests that you expand your support of small farm marketing and storage cooperatives. Also we recommend that you more strongly support the production of new and promising agricultural enterprises.

Item II.B. of the Finance section urges you to continue to support only family type farms "intended to support at least one family and where the family retains a maximum amount of entrepreneurial control".

Item III.B. of the Finance section requests that a soil and water conservation plan be a prerequisite to public funding.

We thank you and your staff who helped us in our efforts. If you have any questions or would like us to clarify any points, please call.

Sincerely,

A handwritten signature in cursive script, appearing to read "Fred".

Frederick E. Hutchinson, Chairman  
Food and Farmland Study Commission

#### Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

#### Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee

# Maine Department of Agriculture



~~Joseph W. Williams, Commissioner~~  
Stuart Smith, Commissioner

Maine Food and Farmland Study Commission  
Fred Hutchinson, Chairman  
John Dawson, Vice Chairman  
Tyler Libby, Project Director

600 State Office Building  
Augusta, Maine 04333  
Telephone 207/289-3874

June 11, 1979

Eddie L. Wood  
Soil Conservation Service  
USDA Office Building  
University of Maine  
Orono, Maine 04469

Dear Mr. Wood:

Enclosed is the final copy of the Maine Food and Farmland Study Commission report. This report has been sent to the Governor and the 109th Maine State Legislature. If the Legislature or the Governor concur with our findings, you may be requested to modify a few of your programs.

Generally we request that you place highest priority on cropland problems such as erosion, non-point pollution, and land use issues. Specifically we suggest that the soil and water conservation districts be supported in their efforts to identify Maine's most productive cropland. Item #I.D. on page two recommends that you "accelerate publishing of prime soils maps in the I-95 corridor". Item #II.B. under soil erosion is a recommendation that your agency place priority on correcting cropland erosion.

We thank you for the great deal of support your agency has given the Maine Food and Farmland Study Commission. If you have any questions or would like points of the report clarified, please call.

Sincerely,

Frederick E. Hutchinson  
Chairman  
Food and Farmland Study Commission

FH:TL/mg

Enclosure

#### Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

#### Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee

# Maine Department of Agriculture



~~Joseph N. Williams, Commissioner~~  
Stuart N. Smith, Commissioner

Maine Food and Farmland Study Commission  
Fred Hutchinson, Chairman  
John Dawson, Vice Chairman  
Tyler Libby, Project Director  
600 State Office Building  
Augusta, Maine 04333  
Telephone 207/289-3874

June 15, 1979

Mrs. Inge L. Foster, Chairperson  
State Board of Education  
State Street  
Augusta, ME 04333

Dear Mrs. Foster:

Enclosed is the final report of the Maine Food and Farmland Study Commission. This report has been sent to the Governor and the 109th Maine State Legislature. One recommendation in the report would affect your group if the Governor or the legislature concurs.

The recommendation in Item I.H. in the Education Section of the report asks that: "The State Board of Education encourage local school boards to expand and upgrade the vocational agricultural programs. More vo-ag teachers need to be employed."

If you have questions regarding this report, please contact me.

Sincerely,

Frederick E. Hutchinson  
Chairman, Maine Food and Farmland  
Study Commission

FEH:cmb

Enclosure

#### Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

#### Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee

# Maine Department of Agriculture



~~Joseph N. Williams, Commissioner~~  
Stuart N. Smith, Commissioner

Maine Food and Farmland Study Commission  
Fred Hutchinson, Chairman  
John Dawson, Vice Chairman  
Tyler Libby, Project Director  
600 State Office Building  
Augusta, Maine 04333  
Telephone 207/289-3874

June 15, 1979

Mr. John Joseph, Director  
Office of Energy Resources  
Executive Department  
State House  
Augusta, ME 04333

Dear Mr. Joseph:

The enclosed is the final report of the Maine Food and Farmland Study Commission. The report has been sent to the 109th Maine State Legislature and the Governor. A few recommendations concern your agency. If the Governor or the legislature concur with our recommendations, you will be asked to respond to the following:

Item I.A. in the Energy Section asks your office to evaluate and modify the state energy plans if needed to assure agricultural priority to the use of fuel in energy shortage situations;

Item II.A. in the Energy Section charges you to form an agricultural energy task force as outlined.

If you have questions regarding the above, please contact me.

Sincerely,

Frederick E. Hutchinson  
Chairman, Food and Farmland  
Study Commission

FEH:cmb  
Enclosure

## Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

## Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee



# Maine Department of Agriculture



~~Joseph N. Williams, Commissioner~~

June 18, 1979

Maine Food and Farmland Study Commission  
Fred Hutchinson, Chairman  
John Dawson, Vice Chairman  
Tyler Libby, Project Director  
600 State Office Building  
Augusta, Maine 04333  
Telephone 207/289-3874

Commissioner Stuart N. Smith  
Maine Department of Agriculture  
State Office Building  
Augusta, ME 04333

Dear Commissioner Smith:

The Maine Food and Farmland Study Commission has completed its Final Report to the Governor and the 109th Maine Legislature. In that report we recommended a number of things that involve your agency. If the Legislature or the Governor concur with our findings, your agency may be significantly impacted. These recommendations which affect you are:

1. Item I.A. in the Farmlands section would establish agricultural districts which would be coterminous with and administered by Soil and Water Conservation Districts. This would probably require increased staffing of all 16 Soil and Water Conservation Districts and the State Soil and Water Conservation Commission.
2. Item I.C. in the Farmlands section charges the Department of Agriculture to develop an ongoing program to facilitate farmland preservation and conservation. Farmland use and ownership would be monitored and highly productive farmlands would be identified.
3. Item IV.A. would charge the Maine Department of Agriculture with being responsible to see that farmland considerations are made on state and federal projects. This can best be done by existing state review processes and the A-95 process.
4. Item II.A. in the Marketing section asks the Department of Agriculture to adopt regulations which require that potatoes shipped from Maine exceed the requirements of the U.S. #1 grade.
5. Item II.B. in the Marketing section calls for the development of a "Buy Maine" program.
6. Item III.A. in the Marketing section asks that the department implement the Direct Marketing Act.

#### Divisions

Administration — Animal Industry — Inspections — Markets — Plant Industry — Promotions — Animal Welfare

#### Commissions, Committees and Board

Harness Racing Commission, Milk Commission, Soil & Water Conservation, Seed Potato Board, Veterinarian's Examining Board, Agricultural Bargaining Board, Pesticides Control Board, Dairy Council Committee, Milk Tax Committee

7. Item III.E. asks that the department identify markets for alternative agricultural products.
8. Item III.F. in the Marketing section asks that the Department of Agriculture study the feasibility of revitalizing the food processing industry.
9. Item IV.B. in the Marketing section requests that the Commissioner create two new task forces, one for produce and one for livestock, to develop recommendations on the needs for coordinating arrangements and mechanisms within their respective industries.
10. Item II.A. in the Finance section asks for the department to administer a fund which would offer low interest land loans to new entrants into farming.
11. Item II.C. in the Finance section asks the Maine Department of Agriculture to encourage banks to do more farm financing.
12. Item II.D. in the Finance section charges the department with providing input to the federal process, i.e. support of expanded national crop insurance.
13. Item II.A. in the Government section calls for the periodical assessment of the impact of occupational safety and health laws on agriculture in Maine and recommendation of changes as necessary.
14. Item II.B. in the Transportation section requests that the department assist the Department of Transportation in determining ways that transportation regulations should be changed and how deregulation proposals will affect agriculture.
15. Item I.D. in the Education section asks that the department identify successful farmers willing to work as advisors and match them up with new farmers desiring assistance.
16. Item I.G. in the Education section calls for the establishment of a speakers bureau as well as facilitating media coverage to educate Maine people regarding agriculture and the findings of the Commission.
17. Item I.A. in the Entrance to Farming section asks that the department create a mechanism within the department that would coordinate entrance to farming activities.
18. Item II.A. in the Entrance to Farming section calls for the development of programs which would encourage non-farm landowners to lease their land to farmers.

We fully realize that proposed changes would require significant changes within the Department and that many of the roles identified would be new and would require a new direction for the department. We feel that the Maine Department of Agriculture

Commissioner Stuart N. Smith

-2-

June 18, 1979

needs to expand into these new areas if the increasingly complex needs of Maine agriculture are to be met.

Sincerely,

A handwritten signature in cursive script, appearing to read "Fred", written in dark ink.

Frederick E. Hutchinson, Chairman  
Food and Farmland Study Commission

Enclosure