Agriculture Canada

ORIENTATION OF CANADIAN AGRICULTURE

A TASK FORCE REPORT

Economic and Social Factors Related to Agriculture and Food

Volume III

1977

CANADA DEPARTMENT
OF AGRICULTURE

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FOREWORD

The Task Force on the Orientation of Canadian Agriculture was set up by the Senior Management Committee of Agriculture Canada with the following terms of reference: to describe Canadian agriculture and its evolution since 1950; to examine federal agricultural policies and programs; and to propose alternative planning options for agriculture consistent with national objectives.

Members of the Steering Committee were: B.B. Migicovsky, Chairman; D.G. Hamilton; M.J. Heney; A.E. Hannah; J.E. McGowan; and G.I. Trant.

Members of the Task Force were: W.S. Ferguson and W.J. Anderson, Co-Chairmen; C.J. Bishop; C.D. Caldwell; A.S. Johnson; and W.H. Leggett.

We wish to pay special tribute to the contribution of Dr. W.S. Ferguson whose untimely death occured part way through the process of preparation of these reports. Dr. Ferguson served as Co-Chairman of the Task Force and made a major contribution both to the background philosophy and organization of the study. In particular, the review of the agricultural resources of the country and the production potential from their efficient use attracted his attention. The sections on these topics reflect many of his ideas. As they were still unfinished at the time of his death, others have had to carry them forward, but his competent leadership in these areas remains evident. Dr. Ferguson was keenly interested in the whole project and its implications for future planning of the industry, and his sincere dedication to the development and preparation of the reports is gratefully acknowledged.

Volume I of the report contains 21 chapters which describe Canadian agriculture and changes that have taken place since 1950. Chapters 1 to 9 cover production and market structure, resources, input supply system, institutional services and domestic food utilization. The material in chapters 10 to 21 is concerned with commodity groups; these chapters, therefore, contain a more detailed description of the situation with respect to livestock and crops.

Volume II contains an analysis of the goals, programs, instruments and performance indicators of Canadian agricultural policy.

Volume III includes five sections which examine:

(1) broad scenarios of the future demand for and supply of Canadian agricultural products;

(2) the case for maximizing agricultural production;

(3) instability in Canadian agriculture;

(4) a family-farm oriented agriculture; and

(5) various economic instruments which have been used or proposed to manage agricultural supply and demand.

Volume IV has been written for Senior Management. It contains summaries of Volumes I, II and III and the conclusions of the Task Force.

The authors of the papers in Volumes I, II and III are listed in each Volume. With the exception of (5) Volume III, the papers were prepared by officials of Agriculture Canada. Ms. Lucie Larose edited all the manuscripts, supervised the final typing and preparation of the charts and made the arrangements for printing. These tasks involved many hours of painstaking work, which the Steering Committee and Task Force gratefully acknowledge. Special thanks are also due to Dr. W. Pigden for his help and advice in preparing the papers on animal products and the supply scenarios.

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1. INTRODUCTION

An adequate and dependable food supply is among the most basic of human needs. However, Canadians have had little to be concerned about the adequacy of food supply. Agricultural policy has emphasized the economic development of technology and resources to provide exportable surpluses and this has resulted in a net positive balance in Canada's food trade account and a supply of food that has always been cheap relative to consumers' incomes.

In spite of the inflation in food prices in recent years, the situation with respect to adequacy of food and its cost relative to income has changed very little. Canadians nevertheless have shown an increasing awareness of agriculture and food supply systems. The reasons for the heightened interest in matters pertaining to food include:

- the sharp increase in grain prices during the early seventies;
- publicity about possible changes in climatological patterns;
- improved communication systems which have increased public awareness of the inadequacy of the food supply in many parts of the world;
- crises in other resourse industries and increased environmental consciousness which have induced many to question the assumption that production increases from a finite resource base can continue;
- increasing emphasis on nutrition and food quality as factors in health and preventative medicine;
- spiraling inflation and public action to attempt to control prices;
- growing producer concern over increasing buyer concentration in the market and, conversely, consumer concern over public and private attempts to increase producer bargaining power;
- increasing urbanization of Canadian society and the many ramifications of this process such as: greater use of convenience foods and dining out, increasing social concern for the family structure, greater consciousness of disparities in living conditions, reduced feeling of security and self-sufficiency with respect to food supply.

As a result, many groups and individuals have demanded the formulation of a food policy for Canada because of the uncertanties which they feel exist.

Statements emanating from various sectors of Canadian society indicate that the reasons cited above are given widely different weights by various groups and individuals. Some emphasize the issue of global food supply and are dedicated to the cause of increasing production to the maximum so as to contribute as much as possible to the elimination of malnutrition in the world. This viewpoint holds that adequate nutrition is a basic human right, the fulfillment of which should not be controlled by normal market forces. At the other extreme are those who believe that food production is a purely economic activity and that there should be little or no interference with supply or demand in the marketplace. Ranged between these polar positions is a spectrum of opinion with advocates of various kinds of supply and demand management which would favor either domestic consumers or producers depending largely on the values or interests of the individual or group. Overlaid on this spectrum are social concerns for the continuing viability of rural communities and the maintenance of the family farm as a social institution.

In the following section, these perceptions and concern for agriculture and the food supply system are discussed under the following headings:

(1) supply and demand scenarios for agricultural commodities under selected assumptions with respect to population, income and use of the resource base;

(2) the concept of maximum production and the implications of attempting to adopt it;

(3) extent and impact of instability in Canadian agriculture;

(4) a family-farm oriented agriculture;

(5) various methods of supply and demand management.

2. SCENARIOS OF DEMAND AND SUPPLY

Accurate projections of domestic demand and supply for agricultural commodities are difficult to make because they depend on economic, social, climatic, technological, demographic and political forces, some of which are notoriously capricious. Export demand is even more difficult to project, as is evident from the section of this report which deals with the factors which influence the export demand for Canadian agricultural products. Therefore, rather than try to quantify future export demand, the approach taken in this section has been to compare domestic demand with production potential under several assumptions, and calculate the resulting surpluses or deficits.

2.1 DOMESTIC DEMAND

Domestic demand is primarily a function of demographic factors and personal disposable income. Among the former, population size is the most important, although distribution with respect to age and among rural and urban areas, and social customs are also elements of demography which influence demand. In the background studies[1] on which this section is based, population size was accepted as the dominant demographic factor.

The future size of population in Canada depends on natural growth and net immigration. Depending on the assumed rates of change in those two variables, low, medium and high population estimates of 27, 30 and 33 million persons have been made by Statistics Canada for 2000 A.D.[2] These three estimates have been used as the population variable in the demand scenarios.

The second important variable is real personal disposable income (PDI). In Canada, where obesity is a more serious concern than malnutrition, the total food consumed in caloric terms is not influenced significantly by PDI. Consequently, the income elasticity of aggregate demand for food products is low. However, for specific items, income elasticity is relatively high, e.g., selected meat products and specialty cheese, but for other items, such as wheat flour, it is very low or even negative.

Recently, Canadians have been urged to moderate their eating habits for the benefit of their health and to conserve food for those persons in the world who are undernourished. The Department of National Health and Welfare has published recommended per-capita consumption levels in the Canada Food Guide.[3]

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1. Interdepartmental Food Policy Review Committee, Projections of Canada's Agricultural Capacity, Study No. 7, 1974.

   Agriculture Canada, Land Use for Agricultural Purposes. Background paper for Interdepartmental Task Force on Land, 1975.

2. Statistics Canada, Cat. 91-514.

3. Health and Welfare Canada, How to Plan Meals for Your Family, 1970.

It is very difficult to estimate how much influence, if any, such guidelines may have on the demand for food. Nevertheless, they do state the requirements for an economical, adequate diet and for that reason have been used in this report as one scenario to provide a comparison with the food requirements associated with the two levels of per-capita income.

The above two criteria, per-capita income and nutritional requirements, were used to define three scenarios to project the domestic demand for food in 2000 A.D., which was estimated in terms of the required output of field crops at three levels of population. The total amounts of cereal, oilseed, horticulture and forage crops were calculated by aggregating the demand for crop products for direct human consumption and the derived demand for crops required to produce the animal products.

Scenario 1 assumes per-capita consumption based on the current level of Canadian incomes. Scenario 2 assumes per-capita consumption that would be generated by a level of economic growth which would result in an annual increase of 4.5 percent in real per-capita income up to 2000 A.D. Scenario 3 assumes that the principle which would govern consumer's purchases of food would be the choice supplying nutritional requirements economically, i.e., the Canada Food Guide principle. Within each of the scenarios, the requirements for cereal, oilseeds, horticultural and forage crops in 2000 A.D. were calculated for three levels of population projections of 27, 30 and 33 million persons. The aggregate demand projections therefore cover a range of fast to slow rates of population growth and minimum to maximum per-capita food requirements. The projections are shown in Table 1.

If current per-capita consumption patterns were maintained (Scenario 1, Table 1), a Canadian population of 30 million in 2000 A.D. would require approximately 36 percent more crop output. If economic growth in Canada were achieved at the high level projected by Statistics Canada for the year 2000 (Scenario 2, Table 1), a population of 30 million would require approximately 90 percent more cereal and oilseed products, about 42 percent more horticultural products, and about 133 percent more forage crops. If Canadians were to adjust their eating habits to the guidelines proposed by nutritional advisors (Scenario 3), the consumption of cereal crops by a population of 30 million would decrease by 11 percent because the reduction in consumption of animal products would reduce the need for feed grains; the demand for oilseeds would increase by 57 percent, horticultural crops by 118 percent and there would be no change for forage crops (Table 1).

2.2 DOMESTIC SUPPLY

There are four principle means of altering crop output: (i) by varying the use of inputs such as fertilizers and chemicals to control weeds and plant diseases, (ii) by adjusting the proportions of different crops and summerfallow, (iii) by increasing or decreasing the total agricultural land base, and (iv) by utilizing output increasing technology.

Short-term production adjustments to conform to changes in prices and costs usually are made by altering inputs per unit of land and cropping patterns. However, many producers limit the use of purchased inputs because of problems of financing or because of inadequate knowledge of available technology. Consequently, there is a wide variation among producers in the output achieved per unit of land. Since it has been estimated that such inputs as fertilizer and pesticides contribute 50 percent or more to total yields, cultivated area alone is an inadequate indicator of potential production.

Longer-term adjustments can be made by expanding or contracting the total land area used for agriculture, and by adjusting the distribution of crops to the ones best adapted to each climatic region. The land area used by agriculture has remained relatively constant for many years but this has resulted from substantial decreases in farmland in Eastern Canada offset by increases in the west. These shifts have had a negative impact on potential production because the land lost to agriculture in Eastern Canada is located in more productive climatic regions than the new land acquired in the west. It has been estimated that the land lost to agriculture in central and southern Canada is potentially three to six times more productive than new land brought into agricultural use. Currently, approximately 32 million hectares of suitable land in Canada are not utilized by agriculture, but this reserve is located in the least favorable climatic zones and would not be capable of contributing to production in the area involved.

Adjustments made in crop distribution to emphasize the most productive crop species or rotation in various climatic regions usually are made very slowly. Examples would include the rate of reduction in summerfallow, and of adoption of new forage species in semi-arid regions, and the production of wheat in areas where alternate crops could produce much higher total digestible nutrients per unit of land. There are many economic and social forces which slow or prevent rationalization of land use to gain such adaptive advantages. In attempting to estimate future supply, one must make some assumptions about the factors discussed above. Supply Scenario 1 assumes that the forces which have influenced yield in recent years would continue in the future, and that land use and area would remain as in the base period. Consequently, Supply Scenario 1 is a projection of the yield trends established during the period 1960 to 1971. Another approach (Supply Scenario 2) would be to assume that a high level of management would be adopted by farmers on the land capable of sustained production of cultivated crops (CLI classes 1-3). Yield estimates appropriate to this assumption have been made by others.[4] In Scenario 2, the average annual output of 1970-74 has been projected to 2000 A.D. on the assumption that crop distribution would remain as at present and that lower class lands would be used for grazing or forage production.

This analysis suggests that cereal crop production could increase by approximately 35 percent by 2000 A.D., assuming economic incentives about the same as during the past 15 years (Table 2); oilseed crop production could increase approximately 27 percent, horticultural crops 5 percent and forage crops 10 percent. If economic incentives and land use policies were to stimulate production to the high productivity level assumed in Scenario 2, the production of cereal crops could increase 75 percent, oilseed crops and horticultural crops 50 percent, and forage production 65 percent.

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4. Agriculture Canada, The Agricultural productivity of the Soil of Ontario and Quebec, Monograph No. 13, 1973.

   Shields, J.A. & W.S. Ferguson, Land Resources, Production Possibilities and Limitations for Crop Production in the Prairie Provinces, In Oilseed and Pulse Crops in Western Canada, 1975.

   Agriculture Canada, The Agricultural Productivity of the Soils of the Atlantic Provinces, Monograph No. 12.

2.3 POTENTIAL FOR SURPLUSES AND DEFICITS

In the supply-demand scenarios shown in Tables 1 and 2, the difference between production and or a deficit which could be made up from a combination of imports, domestic demand projected to 2000 A.D. would represent a surplus which would be available for export.

In the supply-demand scenarios shown in Tables 1 and 2, the difference between production and domestic demand projected to 2000 A.D. would represent a surplus available for export or a deficit which could be made up from a combination of imports, extending land use, intensifying production and developing output increasing technology. Table 3 shows the surpluses and deficits associated with each of six combinations of supply and demand; as a base for comparison, the current situation (1970-74) is also shown. All combinations of the supply-demand scenarios projected to 2000 A.D., except the combination of strong domestic demand (Demand Scenario 2) and 1960-71 trend in yields (Supply Scenario 1), would generate a substantially larger surplus of cereals. For oilseed crops, Canada would be approximately self-sufficient under each of the combinations of demand and supply projections. Horticultural crops show increasing deficits developing under most of the combinations of supply and demand scenarios. Forage crops show very large deficit positions under the strong demand scenario and large surpluses under the economic nutrition scenario.

2.4 CONCLUSION

If Canadian agriculture increased productivity along the trend line of the sixties (Supply Scenario 1), there would be substantial deficits in horticulture output, particularly under Demand Scenario 3; there would be substantial deficits in forages except under Demand Scenario 3 and especially under Demand Scenario 2; the surplus of cereals would be larger than at present except under Demand Scenario 2, when it would be much reduced.

The high productivity supply scenario would generate substantial surpluses of cereals and would approximately balance demand in horticulture output except under the economic nutrition scenario. It would produce a surplus of forage under the demand scenario which assumed growth in population but not in per-capita income, but would result in a large deficit under the assumption of population growth coupled with rising real income per-capita.

It can be seen from the data that the projected surplus-deficit positions of the commodity groups are strongly influenced by the supply-demand scenario which is assumed. The data do suggest that if a strong supply oriented policy were followed, cereal surpluses would be substantially larger than at present but forage supply would be inadequate to meet the needs of a population growing at the medium projected rate and with a rising per-capita real income. If recent trends in the growth of supply continue, the data show deficits developing in forage, horticulture and oilseeds.

Table 1 PROJECTIONS TO 2000 A.D. OF CANADIAN DOMESTIC DEMAND FOR FIELD CROPS AT THREE LEVELS OF PER-CAPITA CONSUMPTION AND THREE POPULATION PROJECTIONS

	Current Demand 1970-74	Levels of Per-Capita Demand[a] Scenario 1 Current Income Per Capita			Scenario 2 High Income Per-Capita			Scenario 3 Nutritional Requirement		
Population X 10^6		27	30	33	27	30	33	27	30	33
		- million tonnes -								
Cereal Crops	20.2	24.9	27.5	30.3	34.1	38.0	41.6	14.8	16.4	18.0
Oilseed Crops	1.8	2.2	2.4	2.7	3.0	3.4	3.8	2.3	2.6	2.8
Hort. Crops	4.7	5.8	6.4	7.1	6.0	6.7	7.3	8.4	9.3	10.2
Forage Crops	40.6	49.9	55.2	60.9	85.3	94.6	103.9	36.5	40.6	44.7

[a] Scenario 1. Demand generated by per-capita consumption estimated for 1970-72; Statistics Canada, Cat. 32-226.

Scenario 2. Demand generaged by per-capita consumption levels resulting from maximum economic growth.

Scenario 3. Demand generated by per-capita consumption levels as recommended in the Canada Food Guide; (Health and Welfare Canada, How to Plan Meals for Your Family, 1970).

Table 2 PROJECTIONS TO 2000 A.D. OF CANADIAN DOMESTIC SUPPLY OF FIELD CROPS FOR TWO PRODUCTION SCENARIOS

Commodity Groups	Current Production	Supply Scenario[a] 1	2
	1970-74	Trend	High Productivity
	- million tonnes -		
Cereal	34.0	46.4	59.9
Oilseed	1.9	2.4	2.8
Horticultural	4.3	4.5	6.4
Forage: improved land	25.2[b]	27.7	41.7
- unimproved land	16.3[b]	17.9	27.0

[a]Scenario 1. Potential supply estimated by extrapolating 1960-71 yield trends with crop distribution and areas as reported in the 1971 census.

Scenario 2. High productivity supply situation, assuming a high level of management on all class 1-3 agricultural soils with crop distribution proportional to 1971 census information.

[b]See Table 4 in The Case for Maximizing Canadian Agriculture (Volume III, Chapter 3).

Table 3 PROJECTIONS TO 2000 A.D. OF SURPLUSES AND DEFICITS IN CROPS PRODUCED IN CANADA UNDER TWO SUPPLY SCENARIOS AND THREE DEMAND SCENARIOS WITH POPULATION PROJECTED TO 30 MILLION

Supply Scenario[a]	Demand Scenario[b]	Cereals	Oilseeds	Horti-culture	Forage
		- million tonnes -			
Current (1970-74)	Current (1970-74)	13.8	0.1	-0.4	0.9
1	1	18.9	0.0	-1.9	-9.6
1	2	8.4	-1.0	-2.2	-49.0
1	3	30.0	-0.2	-4.8	5.0
2	1	32.4	0.4	0.0	13.5
2	2	21.9	-0.6	-0.3	-25.9
2	3	43.5	0.2	-2.9	28.1

[a]Scenario 1. Potential supply estimated by extrapolating 1960-71 yield trends with crop distribution and areas as reported in the 1971 census.

Scenario 2. High productivity supply situation, assuming a high level of management on all class 1-3 agricultural soils with crop distribution proportional to 1971 census information.

[b]Scenario 1. Demand generated by per-capita consumption estimated for 1970-72; Statistics Canada, Cat. 32-226.

Scenario 2. Demand generated by per-capita consumption levels resulting from maximum economic growth.

Scenario 3. Demand generated by per-capita consumption levels as recommended in the Canada Food Guide; (Health and Welfare Canada, How to Plan Meals for Your Family, 1970).

3. THE CASE FOR MAXIMIZING CANADIAN AGRICULTURAL PRODUCTION

3.1 INTRODUCTION

The belief that sufficient food to fulfill nutritional requirements is a basic human right pervades the thinking of many Canadians and other peoples of the world. The desire to discover means of supplying food to that segment of human society unable to produce sufficient food for itself, or to generate sufficient purchasing power to obtain it through trade, is frequently expressed by individuals, governments, and many national and international organizations.

In this context, some people criticize, in varying degrees, the system in which food production and consumption decisions are made with the objective of maximizing producer income and consumer satisfaction. The critics argue that an adequate supply of food is a basic human right and should not be dependent upon income. Opinions on this subject vary. For example, most Canadians would regard the destruction of surplus food supplies for purposes of maximizing income as morally wrong; others would feel that underdevelopment and under-utilization of available land and water resources would be equally wrong even though it would not be economically sound if based on commercial markets. Others would advocate curtailment of the extravagant use of some food resources to satisfy consumers' exotic tastes.

These criticisms are based on three primary assumptions:

(1) a significant proportion of the world's population is unable to obtain sufficient food to satisfy nutritional requirements and this situation will persist unless positive corrective measures are undertaken;

(2) persistent food deficits are a result of economic and social constraints rather than physical limitations on production;

(3) it is possible to develop mechanisms to overcome these constraints.

Underlying much of the anxiety and concern expressed on this subject is the knowledge that the world population continues to grow. As a consequence, food production must also increase to maintain current consumption levels, and must exceed the rate of population growth to achieve any improvement over the current situation. Of course, food consumption by many people thoughout the world is currently far in excess of nutritional needs, and more equitable distribution of food supplies would help to overcome the problem. However, as long as world population continues to increase, redistribution of food would only provide temporary relief to the problem of inadequate food.

Because of the view that food supply and availability should not be wholly dependent on purchasing power, an examination of the maximum limits of Canadian agricultural production appears justified. In the following sections, the current world food situation, and some international activities related to food supplies, are examined in addition to considering what would be involved in maximizing Canadian agricultural production.

3.2 WORLD FOOD SITUATION

3.2.1 Trends in World Food Production and Demand

Although definitions of undernourishment may differ, The Food and Agriculture Organization (FAO) has conservatively estimated that about a quarter of the population in the Far East, the Near East and Africa does not have enough food to meet minimum nutritional requirements. The total population in those regions of the world where the food supply is not adequate to meet basic nutritional requirements, excluding Asian communist countries, amounts to about 460 million people. A less conservative definition might well double that figure.

Various FAO and other studies indicate that the food deficits of the developing countries are growing. Before World War II, these countries, as a group, were net exporters of grains: overall net exports averaged 13 million tonnes in the period 1934-38 but now they are net importers of grain, their principal food. Estimated annual net imports (excluding China) rose from 19 million tonnes for 1970-72 to 35 million tonnes for 1974-76, despite severe import restrictions caused by the shortage of foreign exchange of some members of that group.

North America has emerged as the major exporter of cereal grains only since World War II. Prior to this period, all geographic regions, except Western Europe, were net exporters. In 1934-38, Latin America exported an average of 9 million tonnes per year, North America exported 5 million tonnes, and Eastern Europe, including the Soviet Union, exported 5 million tonnes.

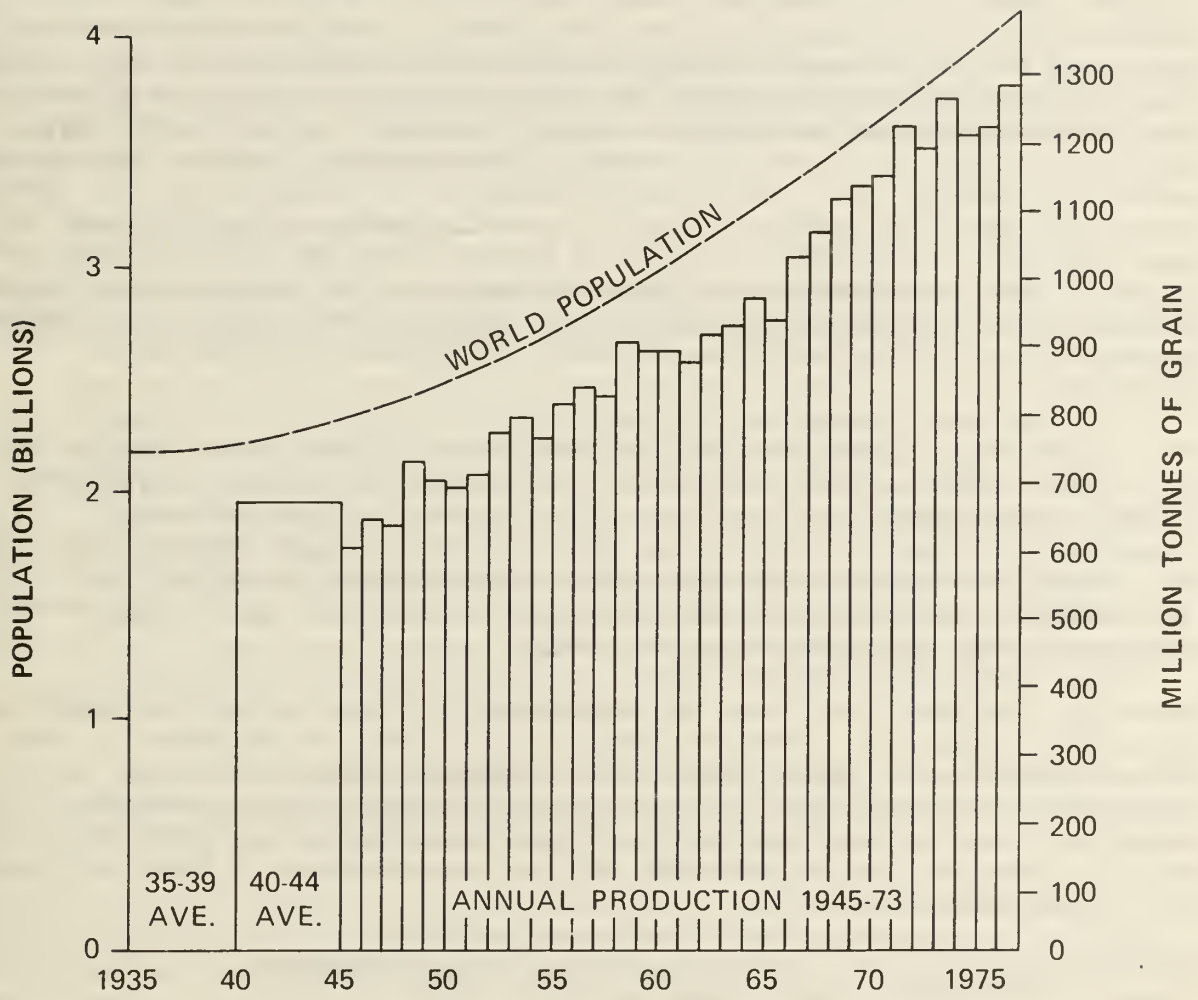
In recent years, Asia has become a major importer. The region imports 50 million tonnes of grain per year, most of it by three countries: Japan, China, and India. Africa, Latin America, and some Eastern European countries have become food-deficit regions. Western Europe, continually a major importer, has been the only stable element through the period; its net imports seldom moved outside the range of 20-30 million tonnes.

During the past thirty years, world grain production, which accounts for approximately 50 percent of world food consumption, has increased at a rate slightly in excess of population growth (Figure 1), although this apparent gain may be partly due to the exceptionally favorable sequence of crops between 1965 and 1970. FAO projections for the World Food Conference, based on estimates of effective demand for food in the developing countries, show a net grain deficit of 85 million tonnes by 1985 - more than double the recent levels that have caused severe difficulties in financing.

A recent USDA study[5] concludes that the gap between production and demand for food in the developing countries will be a primary concern in the next decade, and that world food production can keep a half-step ahead of population growth while providing increases in per-capita consumption. Assuming moderate economic growth, the study projects a net deficit of about 59 million tonnes of grain in the developing countries by 1985. This deficit will be reduced only slightly to about 52 million tonnes, if economic growth should not recover

5. Economic Research Service, United States Department of Agriculture.

FIGURE 1
WORLD GRAIN PRODUCTION COMPARED TO POPULATION GROWTH, 1935 to 1975



Source: Thompson, Louis M., Living with Climatic Change, Science Council of Canada, 1977.

until the early 1980's. If, however, economic growth should accelerate, and raise the demand for grain-fed livestock products around the world, the deficit could reach 78 million tonnes.

The USDA study also projects, however, large grain surpluses of 24 to 79 million tonnes in the developed countries by 1985. The USDA study therefore stresses the growing dilemna of grain surpluses in the developed countries and the rising deficits in many developing countries in the years to come. The study suggests that the nature of the food problems facing the world over the next decade will hinge mainly on the extent to which the developing world builds up a grain-fed livestock sector. If developing countries continue on an essentially cereals diet, and if the consumption of animal protein in developed countries rises only moderately, world grain exporters will easily meet world import demand. The world is capable of producing enough grain at reasonable prices to meet the demands of a largely cereal diet in the developing world. Even if demand expands modestly in the use of grain for livestock in developing countries, production should be sufficient to prevent excessive price increases.

World agricultural prospects for the next ten to fifteen years are the subject of a recent study by the Organization for Economic Cooperative Development (OECD).[6] The study finds that during this period the industrialized countries will remain the principal source of agricultural exports, while the food supply situation of the developing countries will remain critical. According to the study, the instability of agricultural markets may worsen if adequate corrective measures are not taken.

The study concludes that, over the next ten to fifteen years, the supply and demand for cereals and livestock products will likely be dominated by the following features: easily mobilizable production potential in the industrialized countries; a critical food situation in many developing countries; changing and therefore uncertain agricultural and food policies of certain countries such as the USSR, and the repercussions of these policies on the international market.

3.2.2 Developments in International Food Supply Programs

Research and Development Programs

Based on the premise that increased agricultural production in food deficit countries is the only satisfactory solution to the food problem, a wide range of agricultural research and development programs have been sponsored by public and private international agencies. Canada has been an active participant and promoter of such programs. The many reports of studies on the potential for increased food production in food-deficit regions indicate that this is a viable alternative. However, there are significant physical, social, and economic constraints which must be overcome. Experience indicates that

6. OECD, Study of Trends in World Supply and Demand of Major Agricultural Commodities, Paris, 1976.

progress will be much slower than anticipated early with the enthusiasm generated by the 'green revolution' concept. There is no doubt that these international initiatives will contribute to long-term solutions of the problem of food-deficit regions. However, progress to date has been below the targets recommended by FAO and has not consistently exceeded the population growth rate.

The development approach was given further support at the World Food Conference in 1975 which recommended the creation of an international fund for agricultural development. This was further supported by recommendations from the recent World Water Conference in Brazil.

The New Economic Order

This concept originated with a number of developing countries and was enunciated following the World Population Conference in the following terms:

> "The recent United Nations Declaration for a New International Economic Order calls for a new order of development, one which takes into account the satisfaction of the needs and wants of every citizen of the earth .....
> ...What is being called for is the eradication of the basic causes of poverty, hunger .....
> ...Significant changes must occur in all of the world's nations to assure the kind of rational development which will be guided by this new global ideal - changes which will be directed towards an equitable distribution of the world's resources and more fairly satisfy the needs of all peoples."

The concept identifies seven principal items dealing with international commodity trade which are designed to overcome the trade problems of developing countries by shifting the terms of trade in their favor.

The implications of such a set of proposals for Canadian agriculture are important. The proposed commodity agreements are much more restrictive than any previous ones, with permanent regulatory mechanisms for pricing commodities in world trade. To a large extent, intergovernmental decisions would replace market forces in determining commodity production, trade, and pricing. Political and social pressures would then play a greater role in determining international income distribution. It is difficult to assess the extent to which these proposals might be adopted but they are certain to have some influence on the terms of future international commodity agreements.

In addition to the programs and proposals aimed at providing long-term solutions to the problems in food-deficit region, there are a number related to security against short-term fluctuations in supply.

The Committee on World Food Security was established as a standing committee of FAO following the World Food Conference. The Committee is required to keep the current and prospective demand, supply and stock position for basic foodstuffs

under continuous review, disseminate timely information on developments, and recommend short-term and longer-term policy actions considered necessary to assure adequate cereal supplies for minimum world food security.

The Committee is also required to keep under review the International Undertaking on World Food Security. This is an FAO proposal which requests countries to follow national stock policies which in combination should maintain at least a minimum safe level of basic food stocks for the world as a whole. Nations which do not presently have national stock targets or objectives are asked to establish them at least at the levels regarded as necessary to ensure continuity of supplies to meet domestic and, where appropriate, export requirements. As of April 1976, 69 governments, including Canada, had adhered to the Undertaking.

International Wheat Council

The International Wheat Council (IWC) has also been discussing the issue of grain reserves as part of a new international wheat agreement. The main concerns in the IWC are of a commercial nature. Discussions have been proceeding at a slow pace.

General Agreement on Trade and Tariff

In the Multilateral Trade Negotiations of GATT, the Agriculture Group has agreed that problems affecting certain agricultural products which accounted for a large share in world trade and were widely traded might lend themselves to multilateral solutions. Accordingly, it has set up a negotiating Subgroup on Grains to deal with all the elements relevant to trade in this sector.

3.3 CANADIAN AGRICULTURAL PRODUCTION POTENTIAL

The quality of soil and climate determine the productivity of land and the crops which can be grown. The agricultural land and climatic resources of Canada are described in Volume I-A, Chapter 3, which indicates that the maximum amount of land in Canada capable of agricultural production amounts to approximately 129 million hectares. The Census reports that agriculture is using approximately 69 million hectares of cultivated and range land. An appraisal of the land with agricultural capability by the Canada Land Inventory indicates that there are approximately 60 million hectares not currently used by agriculture which it would be technically feasible to convert to agricultural use if the economic incentives were adequate.

Several methods have been used to estimate the production potential of Canadian agriculture. One was to extrapolate yield trends to some future date. This was the method used to derive Supply Scenario 1 shown in Table 2 of Chapter 2 on Supply and Demand Scenarios for Canadian Agriculture. Another was to analyse the yields obtained under experimental conditions. A third method was to derive consensus view of yields from optimum production and crop rotations achieved by top rated managers. This method was used to derive Supply Scenario 2 in Table 2 in the above mentioned chapter. In this chapter, the high yield

potential was applied to an expanded land base to estimate the maximum production possible from the application of the best current agricultural technology to the estimated maximum agricultural land base (Table 4).

The available land base was derived from Resource Base of the Agriculture and Food Industry (Volume I, Chapter 3) where it is defined on the basis of climatic zones A-F and soil capability classes 1-6. For purposes of establishing crop rotations, it was assumed that grain corn was the preferred crop for areas over 2,400 corn heat units, and soybeans the preferred oilseed in the same zones. Corn was assigned 50 percent of classes 1-3 land in these zones and soybeans 25 percent. It was assumed that winter wheat would be the preferred cereal and that cultivated forages would occupy 50 percent of all class 4 lands. Classes 5 and 6 lands were assumed to be suitable only for hay and pasture. Spring wheat was assumed to be the preferred crop in climatic zone D and barley in climatic zones C and E. Rapeseed and flaxseed were assumed to occupy 25 percent of the land area in the regions in which these crops are currently produced. It was further assumed that summerfallow would be reduced by approximately 80 percent. The area assigned to other crops was arbitrarily increased by 50 percent in the areas currently producing crops falling into this category. The potential yields of the various crops on class 1 land were derived as described above and adjusted for lower class lands by the factors used by Nowland.[7] For crops produced over all climatic zones, the following yield relationships were assumed to exist: A = 100, B = 90, C = 75, D = 50 and E = 35. In Table 4, the results of this analysis are compared with current production levels. No assumptions have been made concerning possible research contributions to improve technology and increase the output potential in the future.

In Table 5, the estimated animal consumption of forage, cereals and protein supplement is compared with the production figures from Table 4. The difference represents the surplus over domestic demand for livestock products. To obtain estimates of the proportion of crop production required to meet the domestic demand for livestock products, current and projected consumption estimates[8] were used. The projected estimates were for 2000 A.D. and were based on a population of 30 million people with per-capita real income which had grown from the current level at 4.5 percent per year. Feed requirements were based on nutritional requirements of the livestock population following currently recommended feeding practices. A second estimate was made assuming that domestic beef requirements could be provided from an all forage diet.

7. Nowland, J., Monograph No. 13, Agriculture Canada, 1975.

8. Agriculture Canada, Agricultural Land Use in Canada, Committee on Land Use, 1975.

Table 4 A COMPARISON OF CURRENT LAND USE AND PRODUCTION WITH ESTIMATED MAXIMUM POTENTIAL FOR CANADIAN AGRICULTURE

Crop	Current (1971-73) Land Use hectares x 10^6	Current (1971-73) Production tonnes x 10^6	Maximum Production Agriculture Land Use hectares x 10^6	Land Use % increase	Production tonnes x 10^6	Production % increase
Cereals	17.7	29.6	29.5	67	62.2	110
Oilseeds	2.5	2.3	4.8	82	5.2	126
Corn	0.5	2.7	3.0	500	19.8	630
Summerfallow	11.2	--	2.6	--	--	--
Other	0.4	--	0.6	50	--	--
Improved forage	6.2[a]	25.2	13.5[d]	118	55.0[f]	118
Unimproved forage	25.0[b]	16.6[c]	66.5[e]	166	101.0[g]	508

[a] See Table 3.6 - Resource Base of the Agriculture and Food Industry.

[b] See Table 3.1 - Total for unimproved farmland (Ibid).

[c] Current forage production on unimproved hay and pasture estimated at 0.63 tonnes/hectare.

[d] Assumed cultivated forage occupies 50 percent of all Class 4 lands (Table 3.2 Ibid).

[e] Assumed unimproved forage and pasture would occupy 50 percent Class 4, plus all of Classes 5 and 6.

[f] Assumed management does not increase yield - higher yield estimate results from increased crop area. Total yield calculated from current yield levels.

[g] Assumptions are:
- See footnote 5. No increase in yield on 40 percent of the unimproved hay and pasture area (26.6 million hectares). Yield figure based on 0.63 tonnes/hectare yield. See Section 3.2.1 Resource Base of the Agriculture and Food Industry.
- *On remaining 60 percent of land for unimproved hay and pasture (see footnote 5 above) yield, estimates based on yield relationships for climatic zones (see Nowland J. Monograph 13. Agriculture Canada, 1975). Using 4 tonnes/ha for A, B & C climatic zones, 3 T/ha for D, 2 T/ha for F, 0.5 T/ha for F, and 3.0 T/ha for equivalent areas in British Columbia.

*Or assume on 60 percent of land (regardless of climatic zone); yield is 2.13 tonnes/hectare.

Table 5 FEED REQUIREMENTS TO SUPPLY DOMESTIC DEMAND FOR LIVESTOCK PRODUCTS, CANADA, CURRENT AND 2000 A.D.

	Forage (dry basis)		Cereal Grains		Protein Supplement	
	Current[1]	Year 2000[2]	Current	Year 2000	Current	Year 2000
	- million tonnes -					
Total Consumption[a]	40.6	81.0	6.1	10.3	1.5	2.7
Total Consumption[b]	32.2	65.0	9.2	18.3	1.5	2.7
					Soybean equivalent	
					1.9	3.4
					Rapeseed equivalent	
					2.6	4.7
					Soybeans	
Total Production	41.8	156.0	32.3	80.0	0.3	2.1
					Rapeseed	
					2.3	10.0
Surplus Over Livestock Needs[c]						
					Soybeans	
(all forage beef)	1.2	75.0	26.2	69.8	-1.6	-1.3
					Rapeseed	
(grain fed beef)	9.6	91.0	23.1	49.6	-0.3	5.3

[a] Forage consumption of the beef herd on forage only (estimated 30.5 million tonnes) plus forage requirements for the dairy herd (estimated 10.1 million tonnes). (Based on 33 kg forage/kg dressed beef and 1.3 kg forage/kg millk.)

[b] Forage consumption of the beef herd where 50 percent of feedlot rations is grain plus the forage requirements for the dairy herd. (Based on 25 kg forage/kg dressed beef and 1.3 kg forage/kg milk.) Current utilization of cereals for animal feed totals 15.3 X 10^6 tonnes from estimates of crop disposition shown in Tables 16.2 and 17.2, Volume 1.

[c] Based on current livestock population estimates as per Statistics Canada's Census of Agriculture and Agriculture Canada's Livestock Market Review.

Sources: See footnotes 7 and 8.

The estimates of maximum forage production compared to future domestic demands are interesting since production estimates are based on principles of most appropriate land use. The estimated potential to produce large surpluses of forage requires further investigation since it suggests the possibility of a much expanded ruminant livestock industry in Canada based primarily on the utilization of lower class lands.

The analysis of protein supplement requirement and production indicates that, with soybean meal as the sole source Canada would not be self-sufficient even if soybean production were expanded to its maximum potential with current varieties. Rapeseed could supply all domestic requirements if the meal were suitable for swine and poultry feeds. New varieties with better quality meal are being commercialized and are expected to replace a substantial proportion of soybean meal requirements.

The results of this analysis suggest that the upper limit on Canadian agricultural production is substantially above even the projected high productivity level shown in Table 2. Applying the foregoing concept of maximum production indicates that the ultimate level of cereal crop production in a highly managed agricultural system geared to maximize production could be 150 percent greater than current production levels. The estimated maximum production for oilseed crops would be 126 percent above current levels, and forage crops 270 percent. While these results may be fanciful in terms of current economic incentives and market needs, they are consistent with statements from various sources that world agriculture has the capacity to feed a much expanded world population if the means could be found to utilize a greater proportion of the potential production capacity of conventional agriculture.

3.4 FACTORS RESTRICTING PRODUCTION

3.4.1 Availability of Land Resources

The above analyses suggest that more effective utilization of lower class lands for the production of livestock products could significantly increase output. The main factors restricting increased utilization of these lands appear to be: relatively high cost of development, lack of incentive to apply advanced technology to forage production and utilization and competition from forestry, recreation and wildlife.

A key factor relating to the availability of land for agriculture is the increasing competition for higher class lands from urban and industrial uses. This is important, not only because of the land occupied but because within the urban fringe, which includes nearly 50 percent of the most productive land, the complex service network, upon wich an efficient agriculture depends, is seriously disrupted.

3.4.2 Management from Present Land Base

Agricultural production in Canada has been increasing at an average annual rate of 2.0 to 2.5 percent. A large proportion of this growth can be attributed to better management including greater use of fertilizer, and improved pest control, tillage practices and varieties. A comparison of the production levels achieved by 'top managers' with average production levels indicates opportunities for continued production gains through improved management.

3.4.3 Instability in Supply and Demand

Because of variable weather conditions, crop production is inherently unstable. For example, the coefficient of variability of prairie wheat yields during the past 50 years is approximately 25 percent. When analysed by decades, there is a tendency towards decreasing variability. This is undoubtedly partly due to improved technology but it may also be partly attributable to more stable weather conditions during recent decades. It seems reasonable to assume a continuing variability of approximately 20 percent in Canadian wheat production. Other wheat producing countries have experienced similar or greater climate induced variability in production.

Since much of the potential demand for food is in the developing countries where economic conditions are very uncertain, this factor will continue to be a serious restraint on increasing production. The purchase and sales policies of the USSR and China will continue to be highly uncertain and could be destabilizing forces in world markets. These uncertainties will be a consideration in determining the magnitude of deliberately accumulated surpluses of cereal grains.

Variability in the supply and relative prices of inputs such as fertilizers and fuels may also restrain production. However, input prices probably will not emerge as a serious restriction on Canadian production in the immediate future.

3.4.4 Marketing

A number of factors under this heading mitigate against increased Canadian agricultural production. Of prime importance is the long rail haul to ocean ports for export marketing. Secondly, there is the potential competition from the large surplus capacity of United States agriculture, particularly for crops such as corn and soybeans which are marginal in Canada yet have higher yield potential than many conventional crops. This relationship forces Canadian growers to produce crops which are lower yielding but more competitive with United States production. In addition, the size of the domestic market, which is generally more dependable than the export market, is small relative to the total production capacity of Canadian agricultural resources.

3.5 POLICY INSTRUMENTS RELEVANT TO MAXIMIZING PRODUCTION

3.5.1 Production

To achieve the levels of production projected in this analysis, Canadian agriculture would be required to utilize advanced technology to the maximum. To accomplish this in the 25-year time frame projected, a much more intensive and extensive program of research, development and education would be required.

Policy instruments which influence resource allocation could have a great influence on the achievement of maximum production. Agricultural product prices would have to be high enough to permit producers to compete for capital, labor and land under conditions of declining yields at the margin of cultivation, or legislative authority would have to be invoked to allocate these resources to agriculture. Similarly within the agricultural sector, land allocation among commodities would have to be either directly controlled or achieved through an arbitrarily selected, publicly supported set of product prices.

3.5.2 Marketing

Under conditions of maximum production, cereal grains available for export could more than double and beef production could greatly expand utilizing the forage from unimproved land. Although many of the projections of international food requirements suggest the need for these quantities of food in the developing areas of the world, the lack of purchasing power would prevent normal marketing channels from handling such surpluses. Consequently, the major emphasis would have to be on concessional marketing. The instruments could include outright gifts, various types of barter systems, as well as much freer access to Canadian markets of products from those countries which need the food.

3.6 CONCLUSION

3.6.1 Limits to Maximum Production

Estimated maximum agricultural production capacity in Canada is more than double current production levels. The major factors limiting production are: unfavorable price-cost relationships resulting from prices in world markets, prices of labour and other inputs and competition for land from other sectors of the Canadian economy; import policies adopted by trading partners which limit opportunities to expand sales to developed countries; lack of purchasing power in food-deficit regions of the world; inadequate application of technological knowledge within the agricultural sector.

The last of these limitations could be most directly influenced by Canadian agricultural programs which would include research and development, and extension.

Resource allocation problems would be difficult to assess and solve. Land resource problems fall into three categories: (1) developed land, where returns in producing agricultural products are not sufficient to compete on the land market with such other uses as urban development; (2) undeveloped land, where competition arises because of projected future needs of forestry, recreation, and wildlife; (3) the allocation of land within agriculture because maximum production would require specific crop allocation. Moreover, the problem is further complicated by the distribution of transportation, processing and market facilities.

Competition for developed land could be attacked either directly by legislation to control allocation or by various means to make capital available to assist agriculture to compete. Undoubtedly, agriculture could gain access to a portion of the undeveloped land without much difficulty, but the cost of developing it, in both economic and social terms, would be high. However, the direction of change in land use of the past two decades, when agriculture lost some of the most productive land to urban related activities and gained undeveloped land in the marginal climatic regions, could not continue under a policy of maximum production.

3.6.2 World Food Security

Canadian agriculture has sufficient reserve capacity to make further contributions to world food security and there are a number of reasons for continuing to support programs to expand agriculture faster than commercial demand would require: greater support to world food programs would assure continued development of food production capability in Canada to meet potential growth in domestic and export markets; production programs in Canada provide the resources and information required to undertake international development projects in the less developed regions of the world, thus contributing to increased self-sufficiency in these countries; harmonious international relationships are highly dependent on making progress in solving the disparities which exist in the availability of world food supplies; international food programs tend to alleviate pressure for increased provincial insularity and protectionism, thus contributing to national unity.

It would be difficult to make any objective appraisal of the appropriate magnitude of such contributions. One approach could be for Canada to maintain a program which was designed to eliminate the surpluses which occur because of the inherent instability of demand and supply. This would be difficult to manage in such a way that commitments could be met on a regular basis. At the extreme, Canada could strive to maximize production without regard for economic rationalization. This policy would require large income transfers from other sectors of the Canadian economy and substantial sacrifice of freedom of choice on the part of farmers. Adopting such a policy would be an expensive way of contributing to world food needs. Thus, it seems unlikely that maximum production would be an acceptable economic and political objective for agriculture. It may be expected therefore that the rate of expansion of agriculture will continue to be primarily related to the rate of growth of commercial demand.

4. INSTABILITY IN CANADIAN AGRICULTURE

4.1 INTRODUCTION

This paper discusses the problem of instability in Canadian agriculture and its effects on farmers, consumers and input markets; describes the policy instruments, namely price stabilization, income stabilization, protection against loss from natural hazards, and supply management, which Canada has adopted to cope with agricultural instability; indicates Canada's interest in developing international plans which would have stabilizing effects on agricultural commodities.

4.2 EXTENT AND IMPACT OF INSTABILITY

4.2.1 Agriculture

Fluctuations in the prices, volume of output and net income of Canadian agriculture have two distinct characteristics: they occur independently from the business cycle and the magnitude of the fluctuations leads to much greater instability than that experienced by other industries. While agriculture worldwide is notoriously subject to market and weather factors which lead to instability, Canadian agriculture is particularly vulnerable for several reasons. One is the high proportion of agriculture located in the prairie region where the variations in rainfall from year to year result in large differences in output which are largely outside the control of the producer. Another is that Canadian agriculture is particularly exposed to fluctuations in international commodity markets because of a fairly open trade policy and the fact that about 40 percent of agriculture's gross income is derived from international trade. The third reason is that the nature of the supply and demand elasticities for the individual commodities is such that changes in agricultural output and prices do not offset each other sufficiently to stabilize gross income. For example, the output of the large grain producing sector in Canadian agriculture has a very low correlation with the prices received for the products. Finally, the relative stability of prices of cash inputs results in a fairly stable cost structure which makes farm net income even more unstable than gross income.

The extent of agricultural instability in Canada is illustrated by data on prices and net incomes, and the coefficients of variation of production, prices and farm cash receipts for a number of the important agricultural products in Canada shown in the Table below 6. These data indicate that instability (1) is much greater for farms than for other unincorporated businesses; (2) is characteristic of all major commodities produced by Canadian agriculture; (3) is somewhat greater in the case of field crops and more associated with output than in the case of animal products; (4) frequently results in situations in which gross income does not cover cash costs.

Changes in the factors that lead to instability to a large extent are unpredictable, with the result that producers of agricultural products generally face uncertainty about prices, output and net income at the time that output decisions must be made.

Table 6 COEFFICIENT OF VARIATION OF THE DEVIATIONS FROM A LINEAR TREND IN PRODUCTION, PRICES AND FARM CASH RECEIPTS, CANADA, 1951 TO 1975

Products	Production		Prices		Farm Cash Receipts	
	1951-75	1951-73	1951-75	1951-73	1951-75	1951-73
Wheat	24.6	25.4	41.2	12.5	45.0	26.4
Barley	32.1	34.8	39.7	17.3	73.3	44.9
Corn	23.5	26.3	30.0	13.1	76.6	53.1
Rapeseed	69.1	82.6	45.9	21.9	64.7[a]	67.2[a]
Cattle, numbers	8.6	8.6	28.3	25.2	21.4	16.0
Cattle, dressed weights	5.2	5.3				
Hogs, numbers	11.1	10.3	27.8	21.2	26.2	22.6
Hogs, trimmed weights	12.0	11.4				
Cheese	7.9	7.2	25.1	15.1		
Butter	11.0	9.5	12.8	7.6	20.36	6.5
Milk	6.9	6.1	23.8	11.2		

aData available from 1958 only.

Source: Economics Branch, Agriculture Canada.

4.2.2 Consumers

The effect of variability in output and prices of agricultural products is transmitted to the rest of the economy through the various market channels. The effect of instability on consumer prices is generally very much less than at the farm level, although since the recent increase in food prices consumers have expressed much concern about price variability.

The reason for greater stability in consumer prices is that the price elasticity of the derived demand at the farm level is typically less than at the retail level because of stable marketing margins. Moreover, for only a few products does the price elasticity of demand at retail show an absolute value as high as 1.0. Thus consumers to a considerable extent are insulated from the high level of instability which has such a marked impact on agriculture. In a very few cases, a fixed percentage margin exists between the two market levels; for those products the price variability is the same at the farm and retail levels. This seems to be true for Canadian beef marketing. Analysis shows that variations in prices of choice steer carcasses between the farm and wholesale levels are very similar.

4.2.3 Input Markets

The agricultural instability which is so significant to Canadian farmers is not an important factor in the business cycle because of the very much greater size of the rest of the Canadian economy. However, the uneven flow of income received by the farm sector and the highly variable farm prices have considerable impact on certain input markets with the result that the level of employment and net income in these industries is quite unstable. This is illustrated in the following sections dealing with farm machinery, fertilizer and land.

Farm Machinery

With respect to inputs which require a long-term commitment, the usual line of reasoning is that farmers limit the use of capital out of caution when a high degree of uncertainty characterizes price and output, and that financial institutions are likewise motivated to ration the amount which they are willing to lend to farmers. However, producers also rely heavily on retained earnings to finance investments. Since earnings are positively correlated with prices, farmers tend to invest when prices and net incomes are high. This is further encouraged by high marginal income tax rates coupled with high depreciation allowances on farm equipment for income tax purposes. The result is extreme swings in investment between high and low income years.

Agricultural market and income instability significantly affects the demand for farm machinery in Canada. High positive correlations (i.e., R^2 .90) between farm machinery sales and farm incomes lagged one year have been observed. This has resulted in a cycle of three periods of expansion and two of contraction in the physical stock of machinery on farms in Canada since 1950.

The uneven demand resulting from farm income instability probably increases the overall cost of farm machinery in the longer run because peak demand following a slump in machinery sales often causes shortages and leads to higher prices of machinery. In the early 1970's when farm incomes increased sharply, farm machinery manufacturers were caught with insufficient inventories and production capacity to meet the increased demand for machinery. Since farmers with rising incomes were willing to pay higher prices to obtain new machinery, the prices rose rapidly.

The maintenance of large inventories which develop during periods when sales are low add to the costs of production of machinery and subsequently is reflected in the prices paid by farmers. The instability of the demand for machinery also has contributed to the evolution of an oligopolistic structure as manufacturers of farm machinery have attempted to offset the uncertain market by expanding, diversifying production from farm to non-farm machinery, and seeking international markets. This process has eliminated many firms and resulted in an oligopolistic structure, dominated by a few firms, which tends to keep prices higher than under a more competitive structure.

Fertilizer

Canadian farmers use over 1.2 million tonnes annually of the three primary fertilizer nutrients, i.e., nitrogen, phosphate and potash. Total expenditures by farmers for fertilizers amounted to over $485 million in 1975-76. Fertilizer use tends to fluctuate with variations in world demand for grains and oilseeds, farm cash receipts and weather. Fertilizer sales declined in 1970 as a result of depressed markets for crop products during 1968 and 1969. Stimulated by rising grain prices fertilizer use rose sharply between 1971 and 1974, especially in the last two years. World demand and prices for grain have weakened since the peak in 1973-74 and have continued to decline throughout 1976-77. Correspondingly, fertilizer use declined in 1975-76. Fertilizer use is also affected by prospects for weather conditions. Dry soil conditions this spring (1977) have created uncertainties about crop yield prospects and fertilizer consumption is expected to decline from the previous year.

Decisions taken by farmers to adjust fertilizer use in response to changes in the outlook for demand, prices of output, farm income and weather cause the volume of sales to be highly variable and have important implications for farmers and manufacturers. For farmers, the upsurge in demand leads to problems of shortages and delayed delivery schedules, higher prices and reductions in yields for those unable to obtain adequate supplies. For manufacturers, poor farm income prospects lead to high inventories, depressed prices and idle capacities, and the labor force is affected in terms of income and employment.

Land

Prices of farm land are highly sensitive to expectations of net income and these expectations in turn are greatly influenced by currently attainable net incomes. Major investments in land therefore are made during periods of high

prices, yields and net incomes. Instability in the crop producing sectors therefore tends to result in a low return to land relative to its purchased price in the longer run. In the case of an individual farmer, who has purchased land in good times financed by large mortgages, the payments of principal and interest become a serious drain on cash flow in less prosperous years which follow. These fixed commitments contracted by farmers may, in later years, impair their ability to finance the use of optimum amounts of current inputs and/or unduly restrict the income available for family living expenditures.

4.3 CANADIAN PROGRAMS FOR AGRICULTURAL INSTABILITY

Canadian agricultural policy is concerned about stability in part because the latter jeopardizes viability if short-run financing facilities, such as cash reserves and loans, are not adequate to carry farm businesses over low-income periods. More important politically is that farmers view low-income periods as burdens which they should not have to bear, while they regard the high-income phases as periods of normal profit which should be sustained. Some producers, however, do not agree that government sponsored stabilization schemes should be used to soften the impact of price instability on the indivudual producer. Those producers argue that periodic low prices and low incomes purge the industry of the inefficient farms and in the long run result in the highest net income for the producers who do survive. Furthermore, the periods of low prices force everyone to use resources more efficiently. The laissez-faire attitude is characteristic of a large number of the specialized cattle producers in Canada and some grain producers who have opted out of the grain stabilization plan. The view is supported by the economic rationale that in periods of low prices farm managers are forced to make changes which utilize resources more efficiently, i.e., move from within the boundary of the production possibility function towards the frontier.

If the manager is risk-averse, the output of a competitive firm under price uncertainty will be less than that of a firm producing under price certainty because the firm allows for price uncertainty by adding somethin to the estimate of marginal cost. Thus, in an environment of price uncertainty, lower levels of output and productivity can be expected because management prefers a smaller profit but one that is less risky.

The guiding principle for Canadian price and income stabilization programs is derived from the fact that instability is a short-run phenomenon. Therefore, stabilization programs should ensure that revenue is sufficient to cover cash costs to keep producers solvent in the short run, but should not interfere with long-run adjustments by guaranteeing a return to fixed assets. Thus, the objective of the programs is to avoid depletions of farm operating capital during the periods when prices relative to costs are too low to keep the farm business viable. On the other hand, production decisions are left in the hands of farmers, and managers who operate more efficiently than the average are not penalized. Another principle is that the smaller vusinesses are the ones that need the most protection because their financial resources are less, making them more vulnerable to a short run cost-price squeeze. Therefore limits are placed on the amount of indemnity paid to an individual producer under the price and income stabilization programs.

4.3.1 Price Stabilization

The Agricultural Stabilization Act (ASA) 1975 provides the legislative authority to stabilize prices received by farmers in Canada. The Act makes it mandatory for the Federal Government to stabilize the prices received by producers of nine named commodities (industrial milk and cream, beef cattle, hogs, sheep and lambs, corn, soybeans, and oats and barley grown outside the designated area of the Canadian Wheat Board) to a level which is at least 90 percent of the average market price over the past five years, adjusted for changes in cash production costs. These products accounted for approximately 45 percent of the farm cash receipts in 1976. The Act also provides that other commodities may be designated for price stabilization by Order-in-Council. Over the past 18 years, the prices of twenty commodities have been stabilized under the designated clause.

When the market price during a production-marketing period of a named commodity has been below the average of the past five years, adjusted for changes in production costs, an indemnity is paid to eligible producers in the form of a deficiency payment. In the case of some designated commodities, price stabilization was achieved by outright purchase of the commodity because the volume of production was small.

Any payments under the ASA are the same to all eligible producers even if the price received by that individual was above the stabilized level. The individual farmer thus has the incentive to market his production for the best price, even if he believes that a deficiency payment will be forthcoming. For the same reason, the amount of the deficiency payment and the time period which it covers are announced to apply retroactively so as not to influence production plans, marketing and prices.

The Initial Payment System of the Canadian Wheat Board (CWB)

This constitutes a floor price for grains produced in the prairie region and thus provides a modest form of price stability. The Canadian Wheat Board pays an initial price for grain delivered and subsequent payments are made on the basis of pooled revenue from sales. The initial price reflects the Wheat Board's estimate of the expected price for the grain, and the level of the initial payment is usually set only slightly below the expected price to ensure that producers receive a high proportion of the final value of the crop at the time of delivery. The government reimburses the CWB for any losses which occur if the selling price over the marketing year is less than the initial price. Thus, it amounts to a floor price for those commodities, but only on one occasion in more than 40 years of operation has the initial payment been an effective floor price.

The Two-Price Wheat Act is designed both to keep down the cost to Canadian consumers of food products which contain wheat, and to provide a floor price to farmers for wheat sold for domestic consumption. The Act fixes a price of $3.25 per bushel for wheat sold to domestic millers. If the export price is above $3.25 per bushel, the government pays the difference, up to $1.75 per bushel, to the CWB.

4.3.2 Income Stabilization

The Western Grain Stabilization Act (WGSA)

The WGSA is designed for the grain sector in Western Canada which generates about one-third of Canadian farm cash receipts. It is an instrument for achieving income rather than price stability in a sector which is subject to major yield variations and to a lesser extent price variations. Participation by producers is voluntary. The Act provides for creation of a fund into which the Federal Government and participating producers respectively contribute 4 percent and 2 percent of gross sales, with a maximum annual contribution of $500 per producer. An indemnity payment is made to participating producers in any year when the net cash flow (defined as total revenue from the six grains minus the total cash costs) derived from those six commodities in the prairie region falls below the average of the previous five years. The payment will be that amount which brings the net cash flow for that year up to the five-year average; an individual producer will receive payment in proportion to the amount he has contributed to the fund.

Because the payments are based on the combined net cash flow from the six major crops in Western Canada, the plan does not alter the market influence on producer decisions to produce those crops which they deem most profitable. Therefore producers who choose the most profitable crops gain from that decision and receive their share of any indemnity payment as well.

4.3.3 Crop Insurance

While ASA and WGSA are designed to provide protection to sectors within agriculture, crop insurance is designed to stabilize incomes of individual producers by providing protection against losses due to uncontrollable natural hazards. Crop insurance is operated on a shared-cost basis with federal and provincial governments, and producers paying premiums on federally approved, provincially administered plans. Producer premiums have covered 60 percent of program payments to producers, with the two levels of government contributing the balance. The program is voluntary, and complements price and income stabilization by insuring individual producers against losses from natural hazards.

4.3.4 Supply Management

Programs designed to achieve stabilization of a commodity sector through supply management are designed to affect the level as well as the stabilization of income. Supply management is practised by the Canadian Dairy Commission, by agencies which derive their authority from the National Farm Products Marketing Agencies Act, and certain marketing boards under provincial jurisdiction.

The dairy program under the Canadian Dairy Commission (CDC) is a comprehensive one which includes direct subsidies, prices announced at the beginning of the production period, producer levies to cover the cost of exporting skim milk powder surplus to domestic requirements and supply management achieved by allocating production quotas to individual producers and controlling the importation of dairy products.

National marketing agencies for eggs and for turkeys have been estabished under the National Farm Products Marketing Agencies Act. These Agencies set provincial production quotas and impose levies to cover the costs of marketing. Provision has been made to place import quotas, based on historical records, on commodities marketed by the Agencies but action under this legislation cannot be taken by the Agencies. The Agencies' objective is to provide stable returns to producers at levels which cover the cost of production. Therefore, producer prices are determined by cost of production formulae and quotas are established to limit output to quantities which can be sold at those prices.

Many producer marketing boards operate under provincial jurisdiction with various objectives in price and income stabilization. Most do not practise supply management; commodities under those boards which do include the fluid milk supply for many cities, some fruit and vegetable crops, broiler chicken and tobacco.

4.4 CANADA'S INTERNATIONAL INTEREST IN STABILIZATION

Government policies that increase stability for a particular region by limiting imports shift the impact of supply and demand stocks to other countries and thereby generate instability elsewhere. On the other hand, the roles of trade between regions and countries, and of stocks in the case of storable commodities, can be significant in alleviating the effects of production and price instability.

The instability of international agricultural commodity markets is a major concern to Canada whose interest has been demonstrated by Canadian participation in international commodity agreements covering wheat, sugar, coffee and cocoa.

International commodity agreements could provide contractual obligations on behalf of members as well as providing a forum for discussion and resolution of trade problems. Also rules and procedures governing international trade could be established under which tariff and non-tariff trade barriers could be negotiated. International trade could be broadened and liberalized because the same access to individual markets would be assured for all participants. Insofar as an international commodity agreement could stabilize the international market, it could provide greater stability of producer income in an exporting country such as Canada which in turn would facilitate long-term planning and the achievement of development objectives.

The success of an international commodity agreement would depend to a large extent upon general participation of both importing and exporting countries. To the extent that an agreement would cover only a proportion of world trade in the commodity, price instability in the world market would be shifted to the residual free market. If instability in the free market became substantial, it could have an adverse effect on those countries not party to the agreement, and also on the stability of the contract. Experience with international stabilization agreements for wheat showed that such arrangements were only really operable when the market was in equilibrium. Commodity agreements should not attempt to alter long-run trends and structural changes in the market.

Governments, for strategic reasons, are not generally prepared to accept international commitments which limit their freedom to choose domestic policy. However, the success of an international commodity agreement may require agreement on production, export quotas and prices inconsistent with domestic policies. Therefore, governments with policies for extensive intervention in domestic agriculture are seriously inhibited in negotiations under the international agreements.

Price provisions in an international commodity agreement might be difficult to maintain because of the very different interests of the various parties to the agreement. Moreover, changes in the values of currencies and general inflation might undermine the usefulness of an established price range.

A fundamental question is whether a commodity agreement could be designed that would not at some time interfere too much with basic market forces. Price relationships and trade patterns could change, and substitutes be developed during the lifetime of a contract. It is evident that the traditional aims of commodity agreements and the elements required to achieve them need to be reconsidered.

The use of a buffer stock to overcome abnormal fluctuations in grain prices and to assure physical stability of supplies has been proposed on many occasions but has never reached the stage of serious negotiation nor been included as part of a commodity agreement. A successful buffer stock scheme would benefit both exporters and importers. For exporters, it would provide some protection against unduly low prices in years of high world production if the stock were built up during that period. For importers, it would provide some protection against rapid price increases due to shortages in years of low world production. Therefore, the cost of maintaining an international buffer stock should be shared between importers and exporters. During the 1960's, importers were the beneficiaries of the large stocks carried by exporters at considerable cost.

A buffer stock could contribute to the achievement of price objectives in an international commodity agreement. By releasing stocks on to the market in time of tight supplies and by removing grain from the market in time of oversupply, the scheme could operate to moderate extremely sharp price fluctuations while allowing the market mechanisms to operate over an agreed upon price range.

Grains as animal feeds and human foods are highly substitutable although not always considered so. If a buffer stock is restricted to one or a small number of types and qualities of grains, it could result in side effects on the supply and prices of other grains. It follows that the market must be effective with well defined and generally recognized grades so that prices will reflect purchases and sales by the buffer stock.

Although agreeing in principle with the proposal to establish a buffer stock to bring some stability to international grain markets, Canada is concerned about the operational implications of internationally coordinated buffer stocks, particularly the price effects of releasing and replenishing stocks. Moreover, to be successful, a scheme must have the support of importing and exporting countries which represent a major portion of world trade.

4.5 FARM INCOME INSTABILITY ILLUSTRATED

The charts in this section (1) compare the stability of net farm income with the stability of the net income of unincorporated non-farm businesses and the industrial wage rate, and (2) illustrate the variability in market returns and net income over cash costs for a number of agricultural commodities.

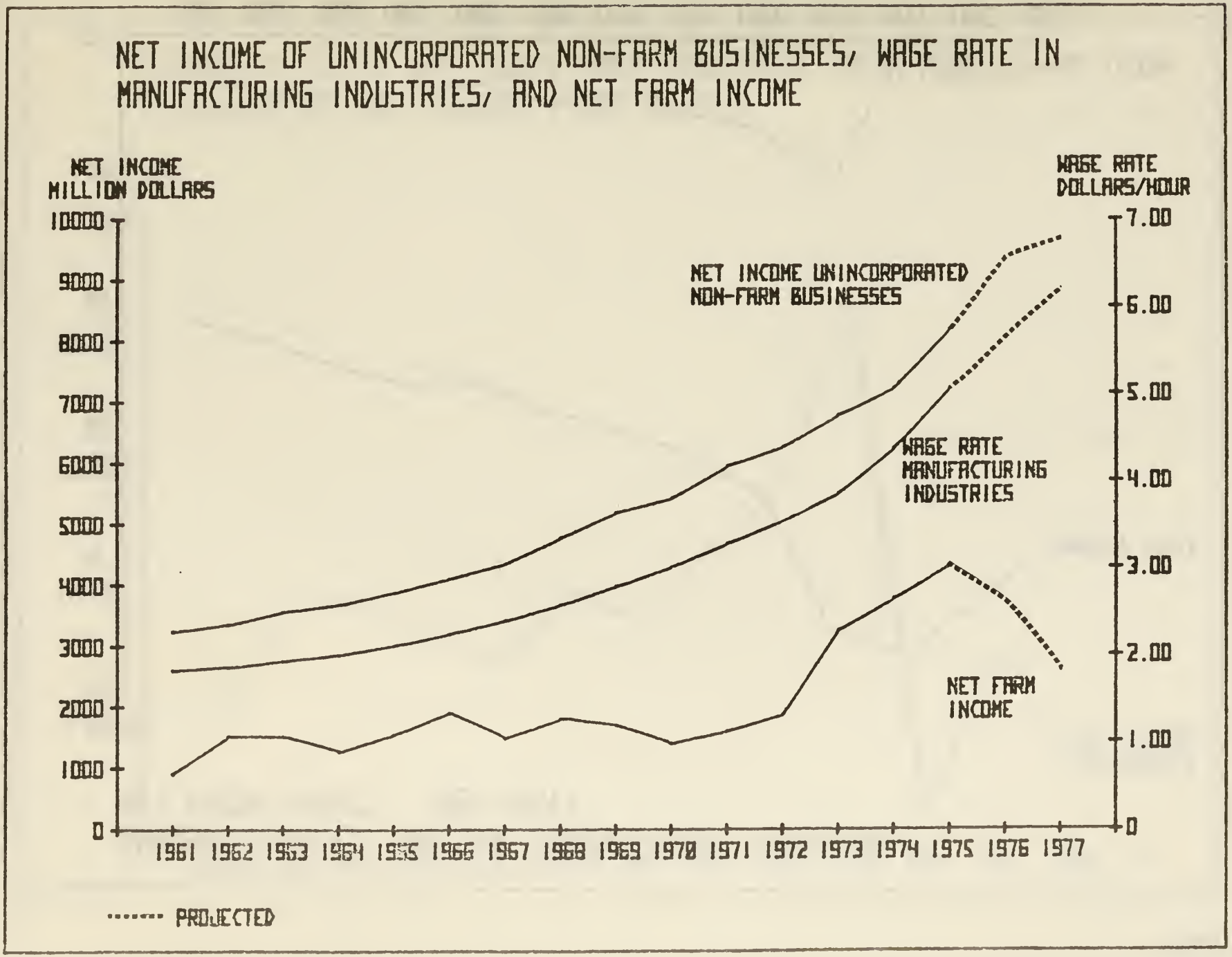
Chart 1 compares the stability of aggregate net farm income in millions of dollars with (1) the stability of aggregate net income of unincorporated non-farm businesses in millions of dollars and (2) the stability of the wage rate per hour in manufacturing industries. Both net farm income and net income of unincorporated non-farm businesses are equal to gross income less operating expenses (including interest on indebtedness) and depreciation and therefore, represent the return to the equity capital and labor supplied by the owner of the business. Since 1961, both the wage rate in manufacturing industries and the net income of unincorporated non-farm businesses have steadily increased. Net farm income, on the other hand, was much less stable and the only period of sustained growth was 1971-75. This period was followed by a substantial decline in net income in 1976 and a further decline is expected in 1977.

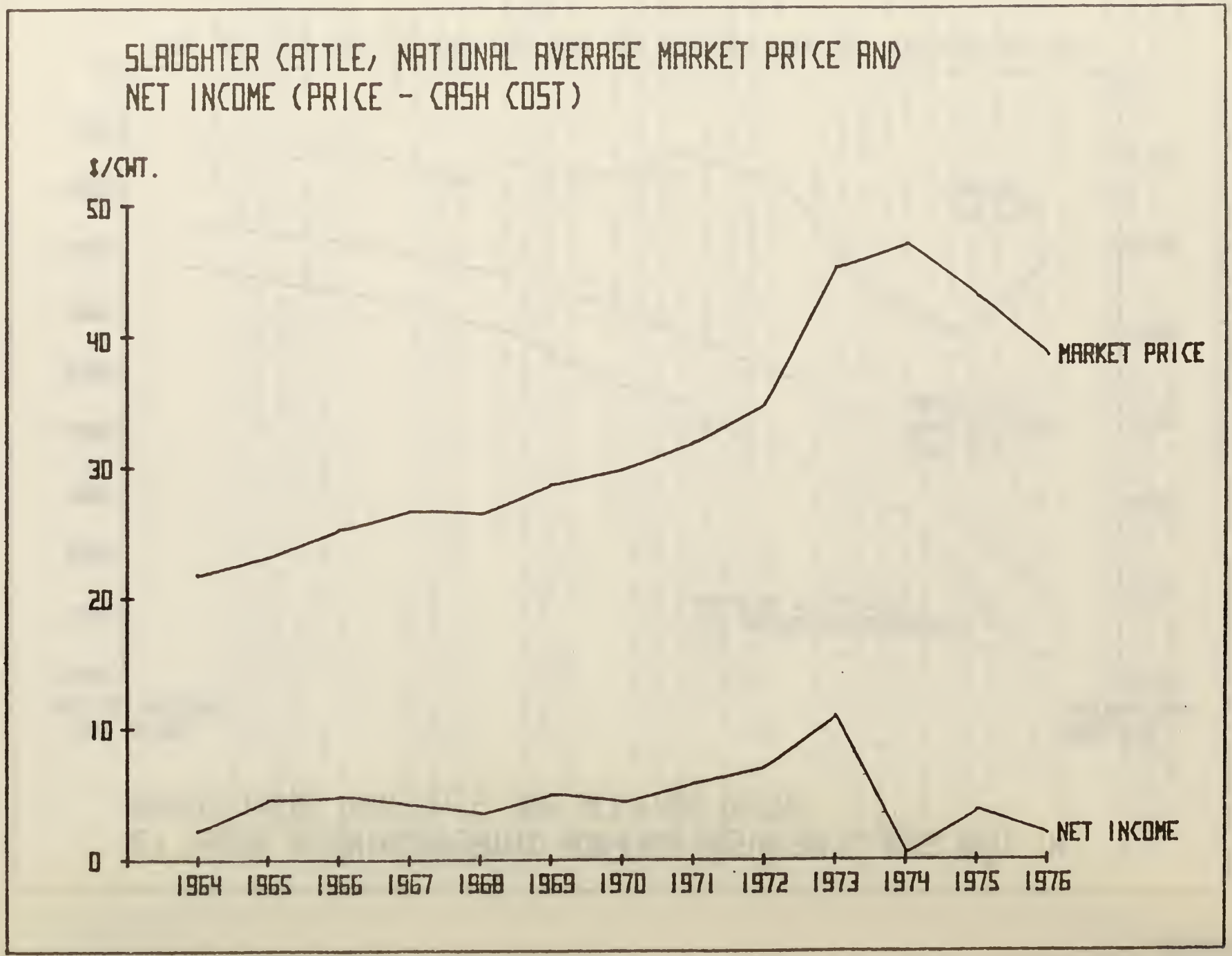
The charts for slaughter cattle, beef cow-calf, hogs, dairy and eggs illustrate the variability of market price, net income over cash costs per unit of production and net income over cash costs for a typical enterprise. Cash costs include all on-farm costs except (1) the interest and depreciation on capital items and (2) a return to the labor supplied by the operator and his family. Net income over cash costs must then cover any marketing expenses, the depreciation of capital items used in the enterprise and the return on the capital and family labor used in the enterprise.

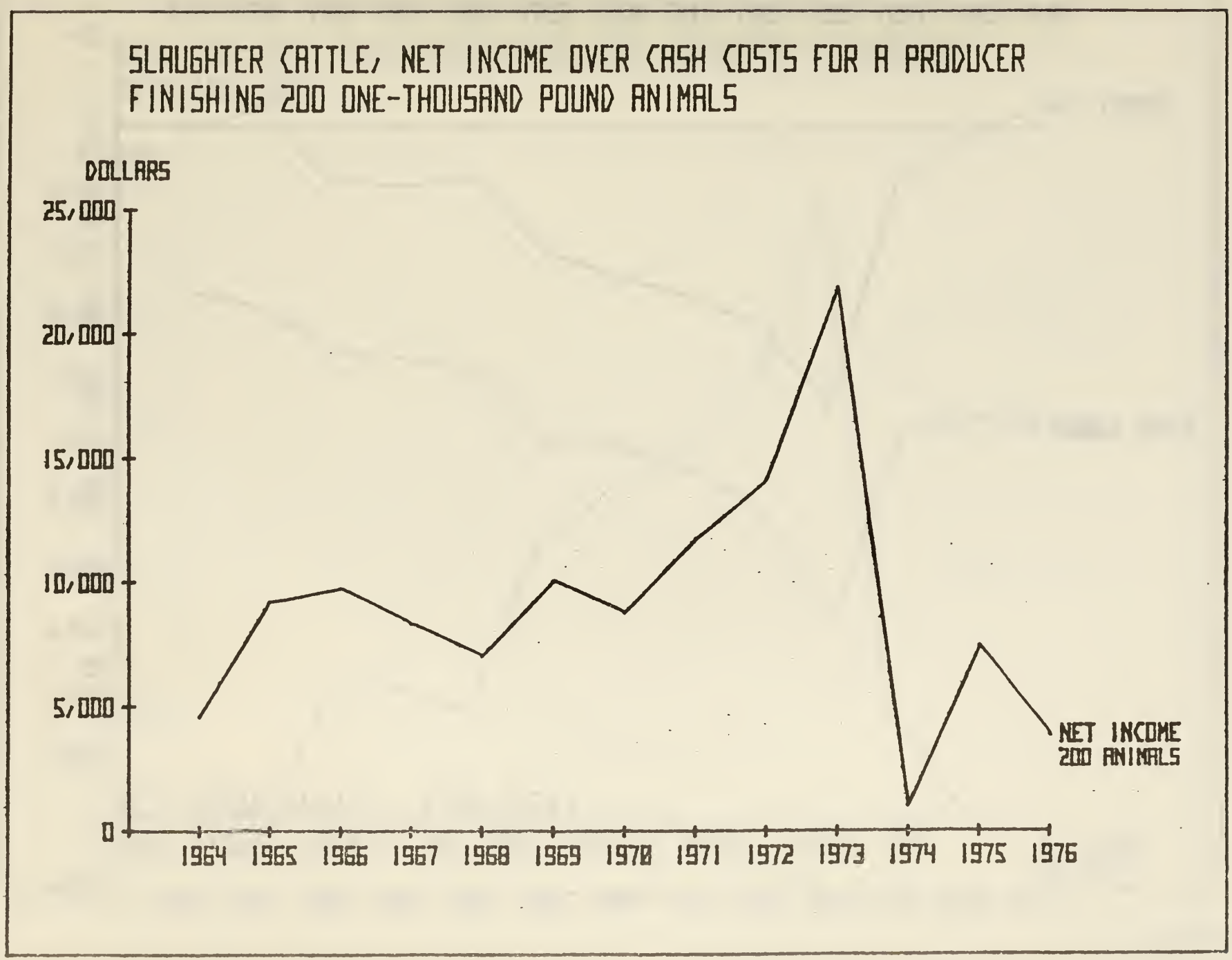
The enterprise sizes used in illustrating net income over cash costs are typical of the enterprise sizes on family operated farms. They are significantly larger than the average size of enterprises on Canadian farms but smaller than the enterprises on specialized farms.

The charts for apples, sweet cherries, early potatoes, corn and soybeans illustrate the variability of market prices and net income over cash costs only on a per unit basis. The variability in returns for typical enterprises is not illustrated.

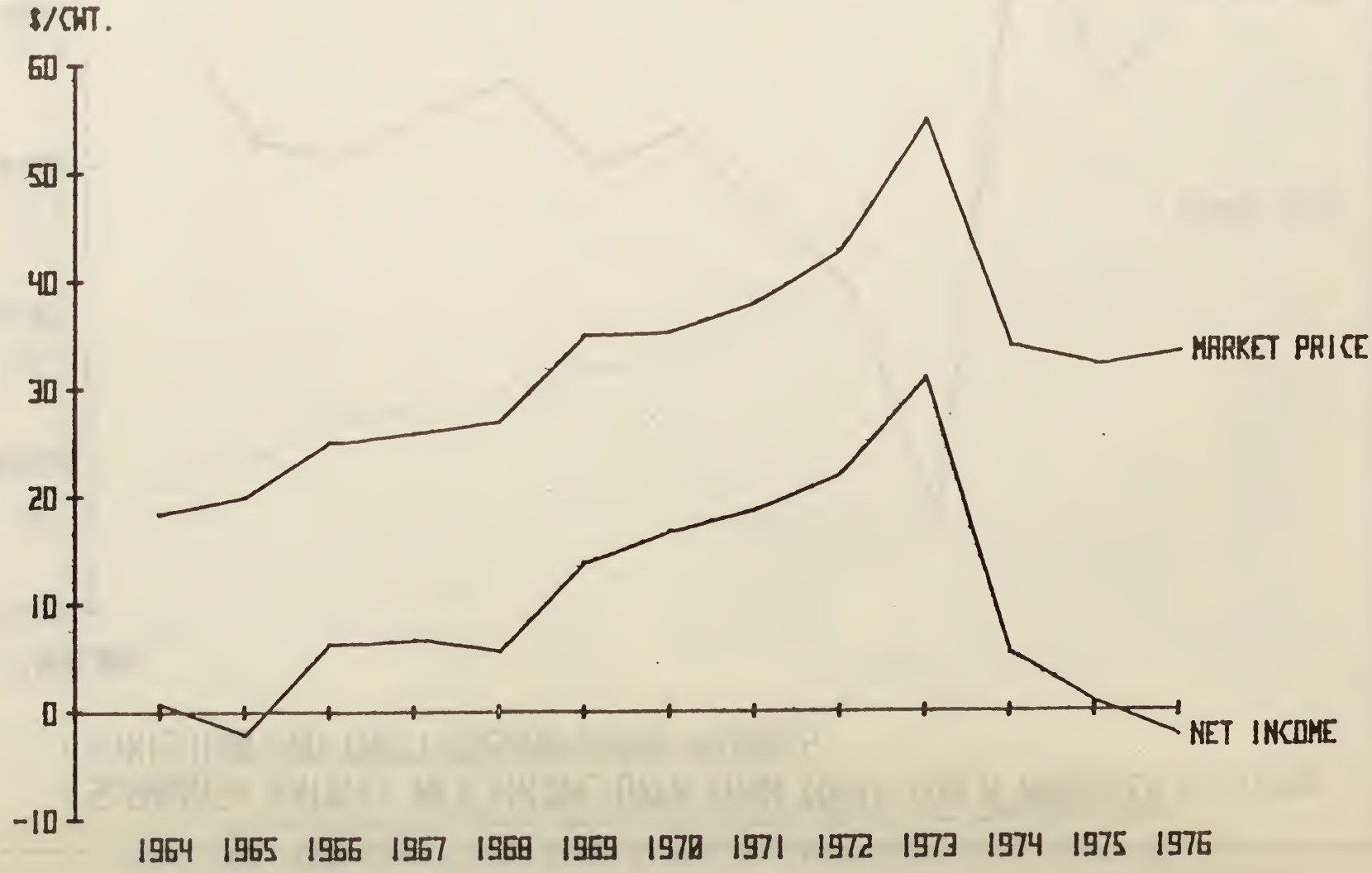
Chart 10 illustrates the variability in aggregate gross receipts and net income over cash costs for the six major crops grown on the prairies. (These are the crops covered by the Western Grain Stabilization Act.) Virtually all prairie farms grow more than one of these crops so that the variability in aggregate returns is more relevant than the variability in the returns for each individual crop. Again, the variability in the returns for typical enterprises is not illustrated.


NET INCOME OF UNINCORPORATED NON-FARM BUSINESSES, WAGE RATE IN MANUFACTURING INDUSTRIES, AND NET FARM INCOME
NET INCOME
MILLION DOLLARS
WAGE RATE
DOLLARS/HOUR
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0
NET INCOME UNINCORPORATED NON-FARM BUSINESSES
WAGE RATE MANUFACTURING INDUSTRIES
NET FARM INCOME
1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977
PROJECTED

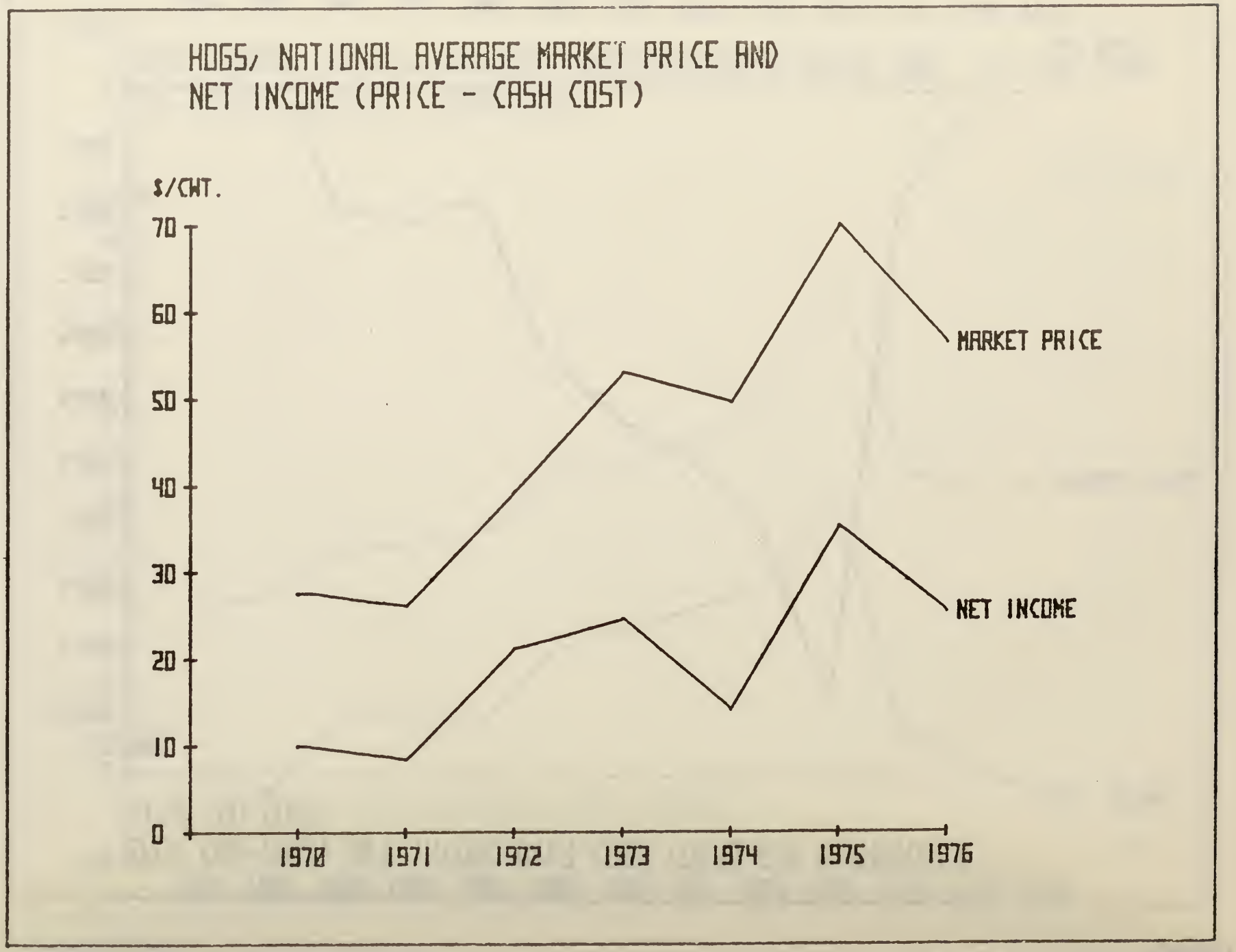

SLAUGHTER CATTLE, NATIONAL AVERAGE MARKET PRICE AND
NET INCOME (PRICE - CASH COST)
$/CWT.
50
40
30
20
10
0
MARKET PRICE
NET INCOME
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976

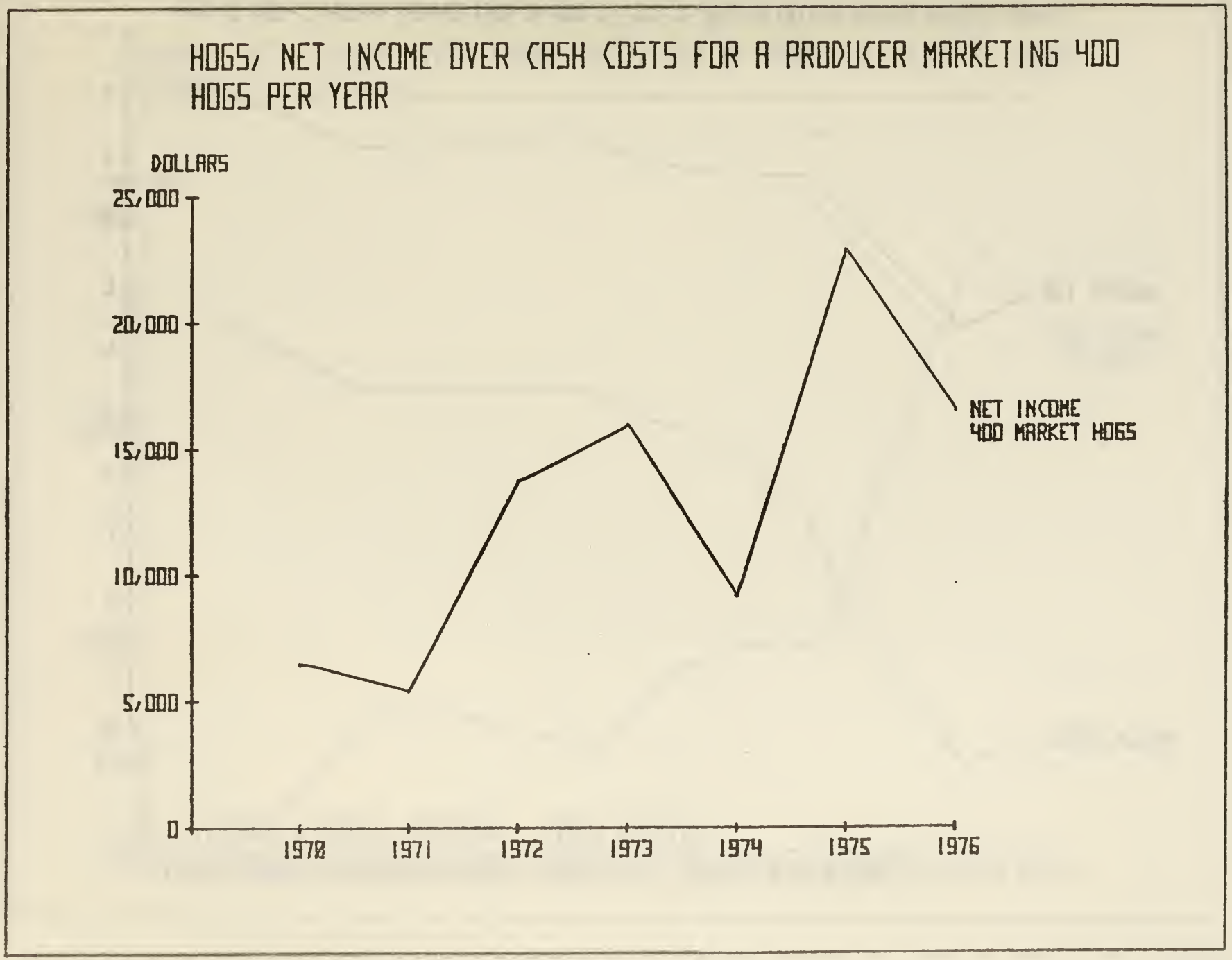

SLAUGHTER CATTLE, NET INCOME OVER CASH COSTS FOR A PRODUCER
FINISHING 200 ONE-THOUSAND POUND ANIMALS
DOLLARS
25,000
20,000
15,000
10,000
5,000
0
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
NET INCOME
200 ANIMALS

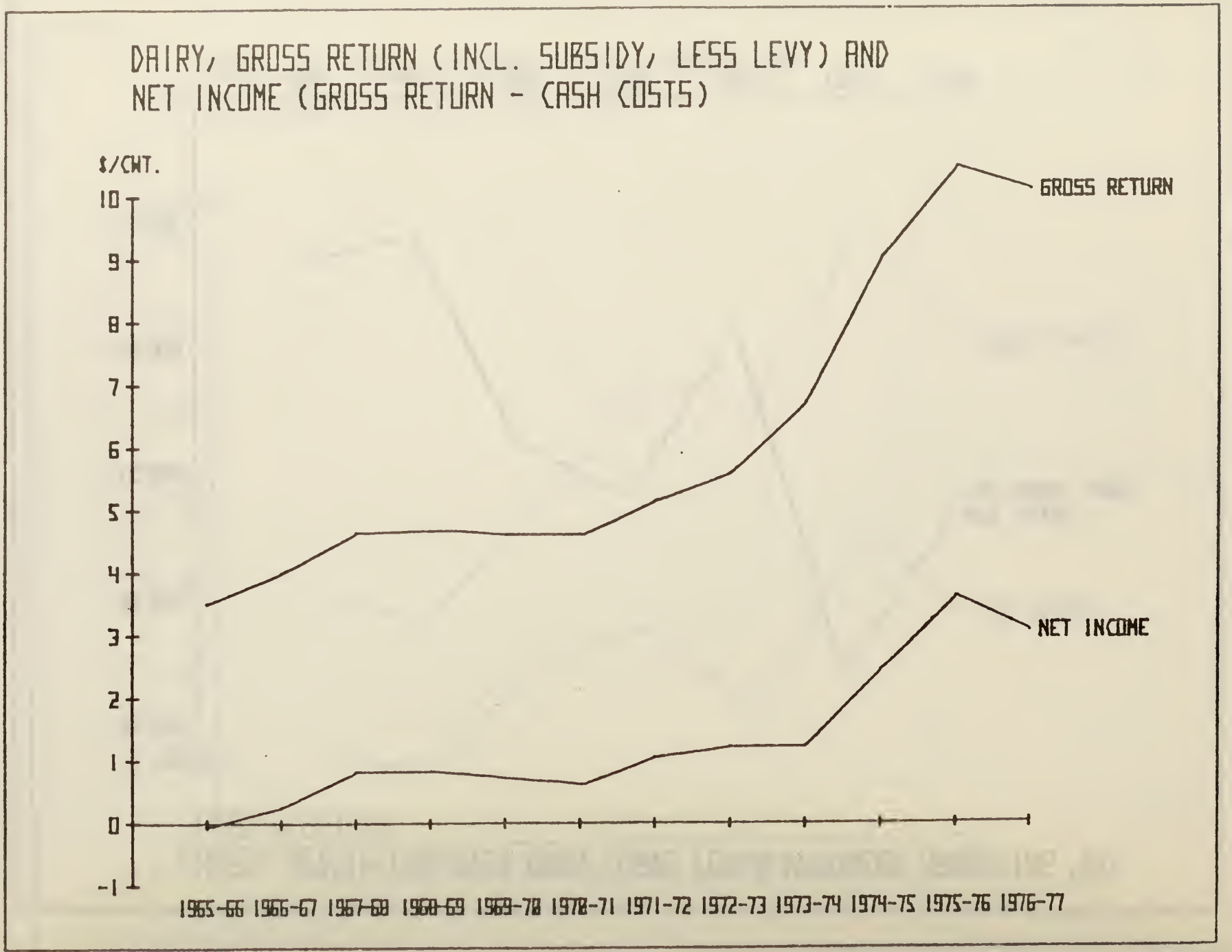
BEEF FEEDER CALVES, NATIONAL AVERAGE MARKET PRICE AND NET INCOME (PRICE - CASH COST)

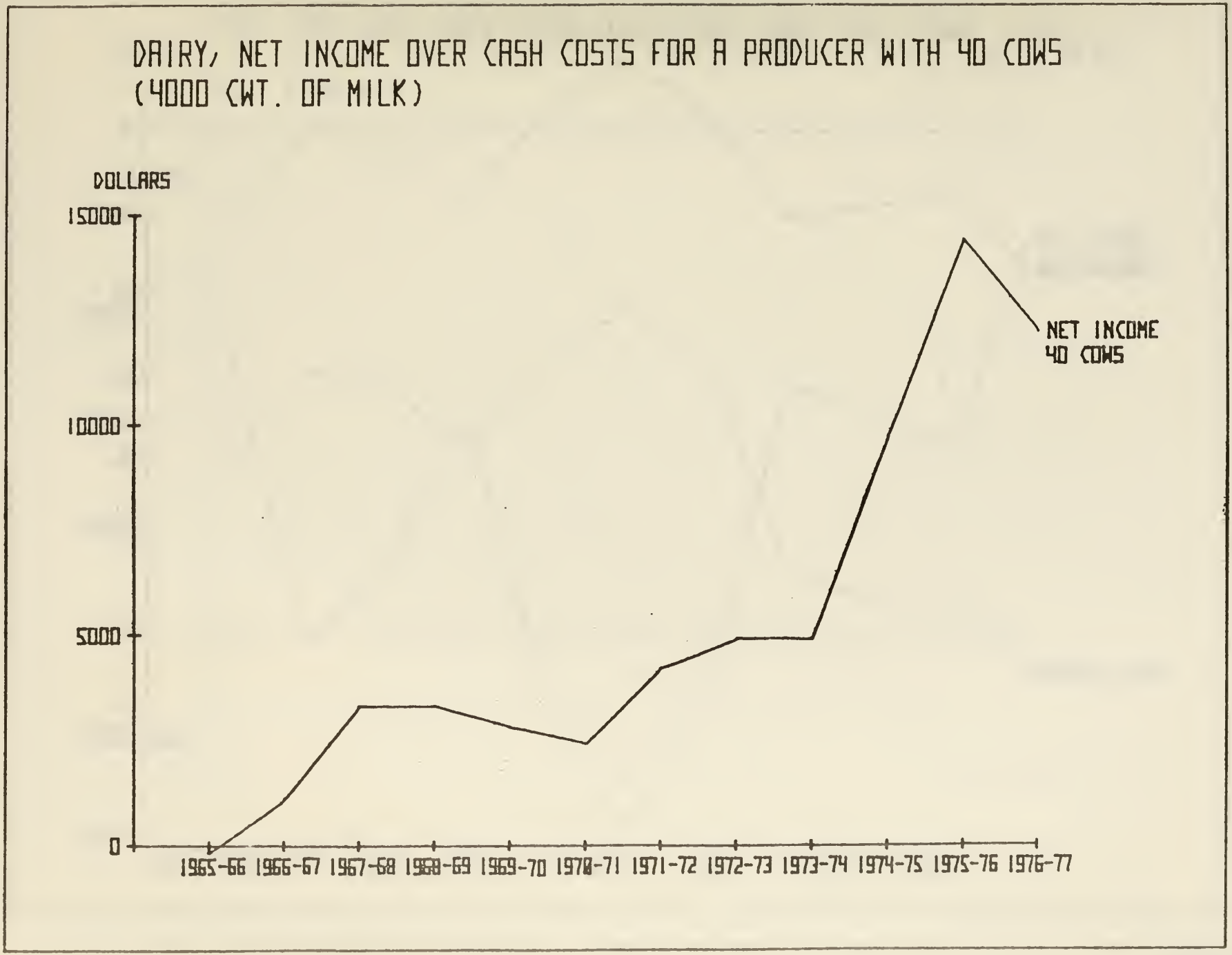


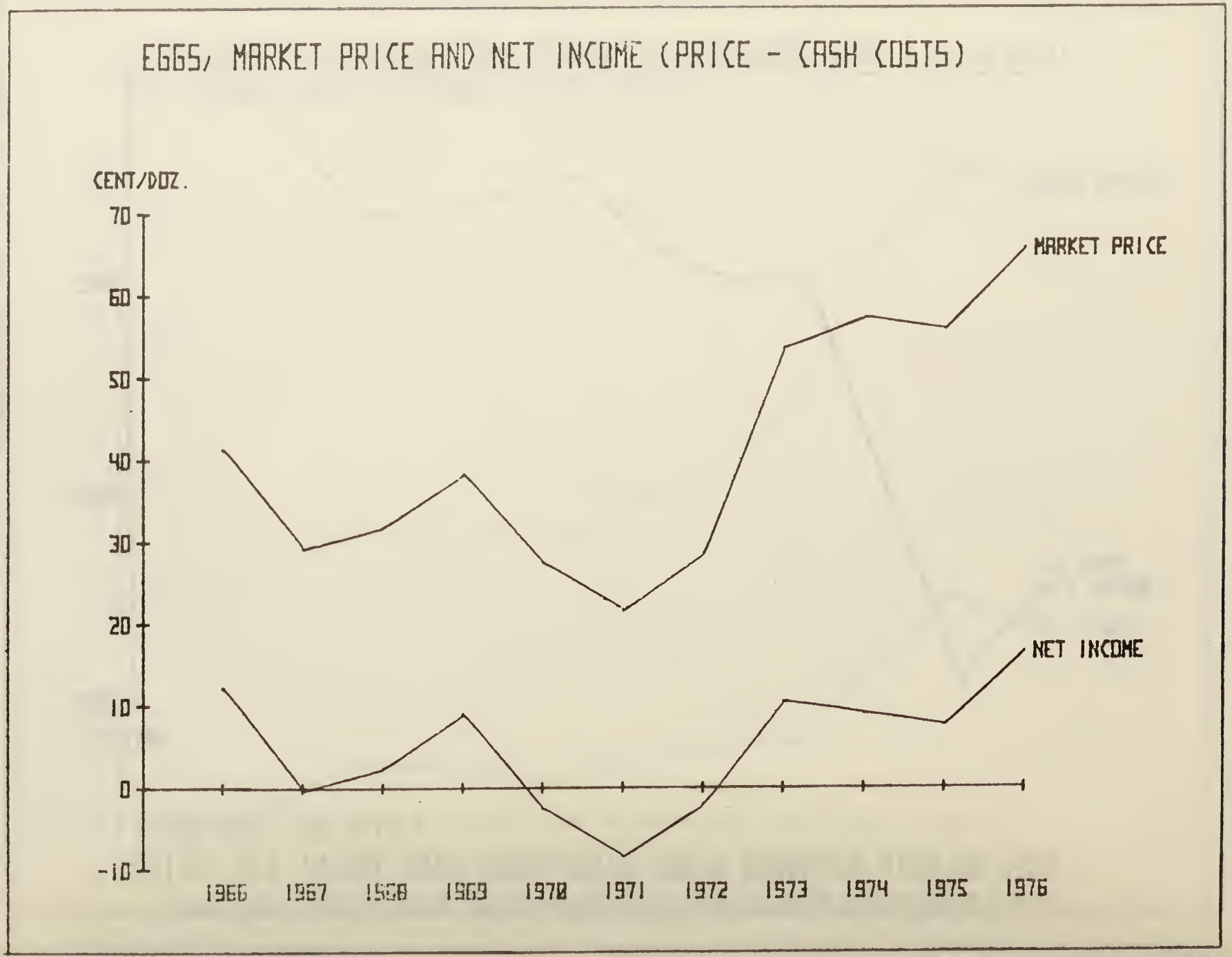

BEEF COW-CALF, NET INCOME OVER CASH COSTS FOR A PRODUCER WITH 100 COWS
DOLLARS
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-1,000
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
NET INCOME
100 COWS

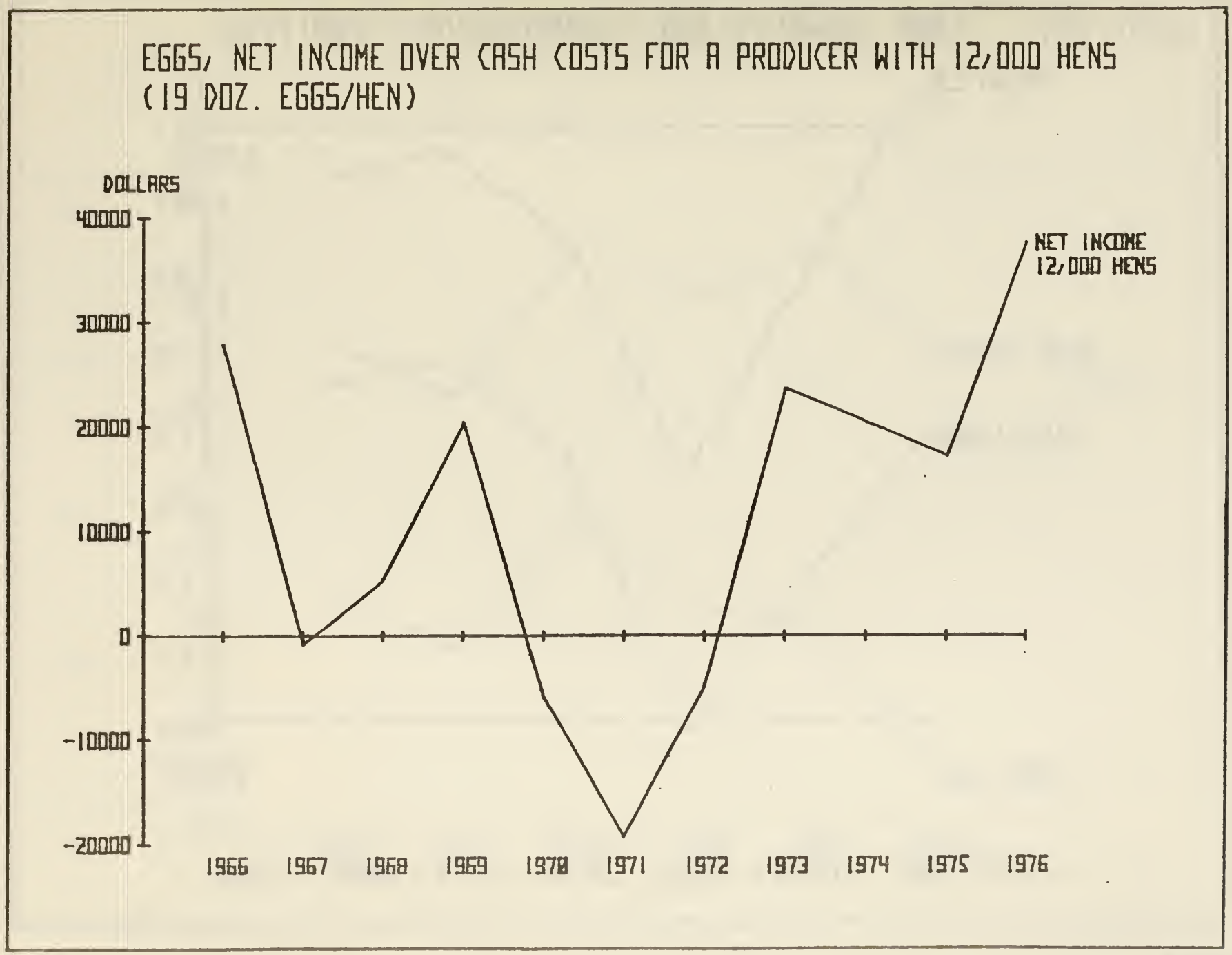

HOGS, NATIONAL AVERAGE MARKET PRICE AND
NET INCOME (PRICE - CASH COST)
$/CWT.
70
60
50
40
30
20
10
0
1970
1971
1972
1973
1974
1975
1976
MARKET PRICE
NET INCOME

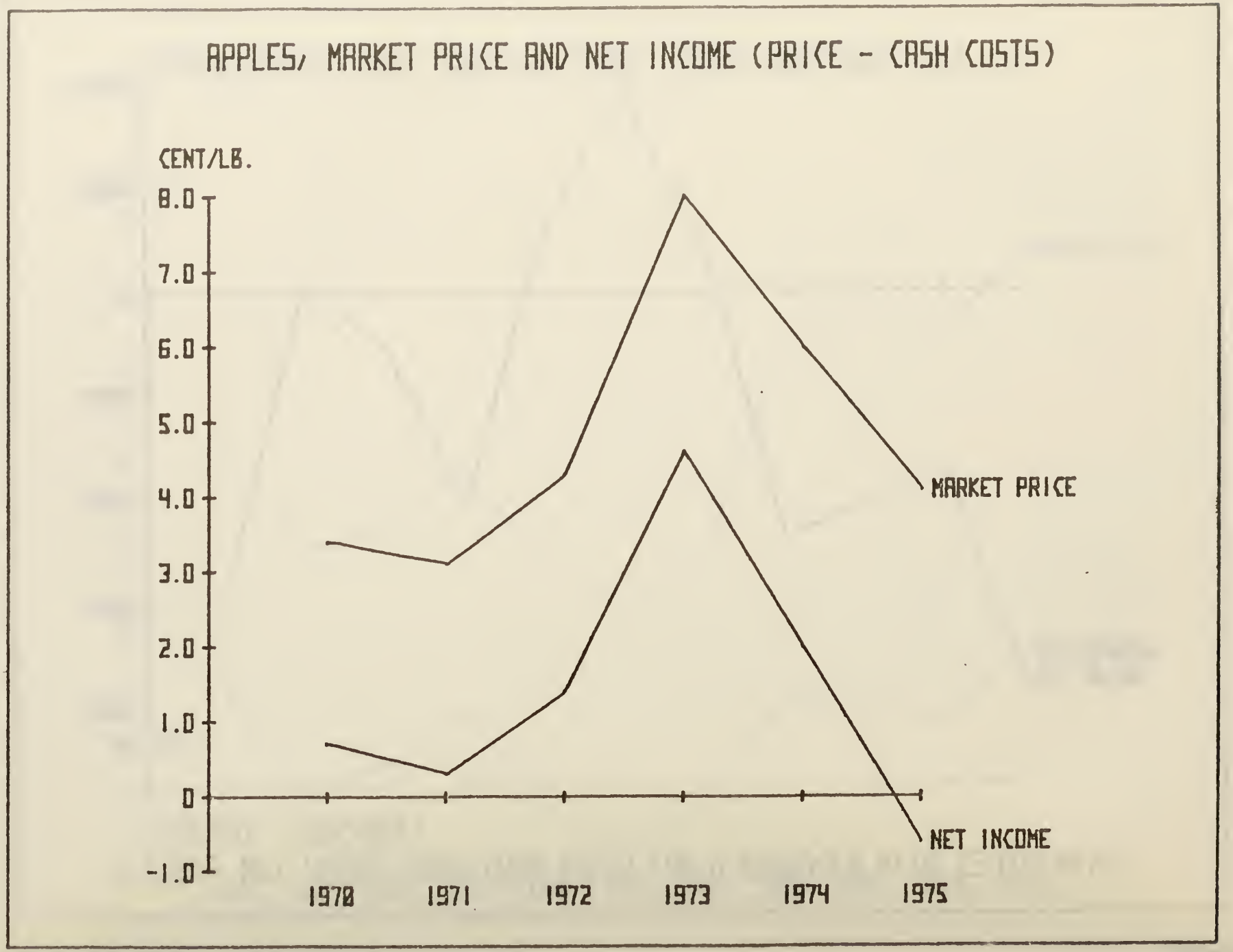

HOGS, NET INCOME OVER CASH COSTS FOR A PRODUCER MARKETING 400 HOGS PER YEAR
DOLLARS
25,000
20,000
15,000
10,000
5,000
0
1970
1971
1972
1973
1974
1975
1976
NET INCOME
400 MARKET HOGS

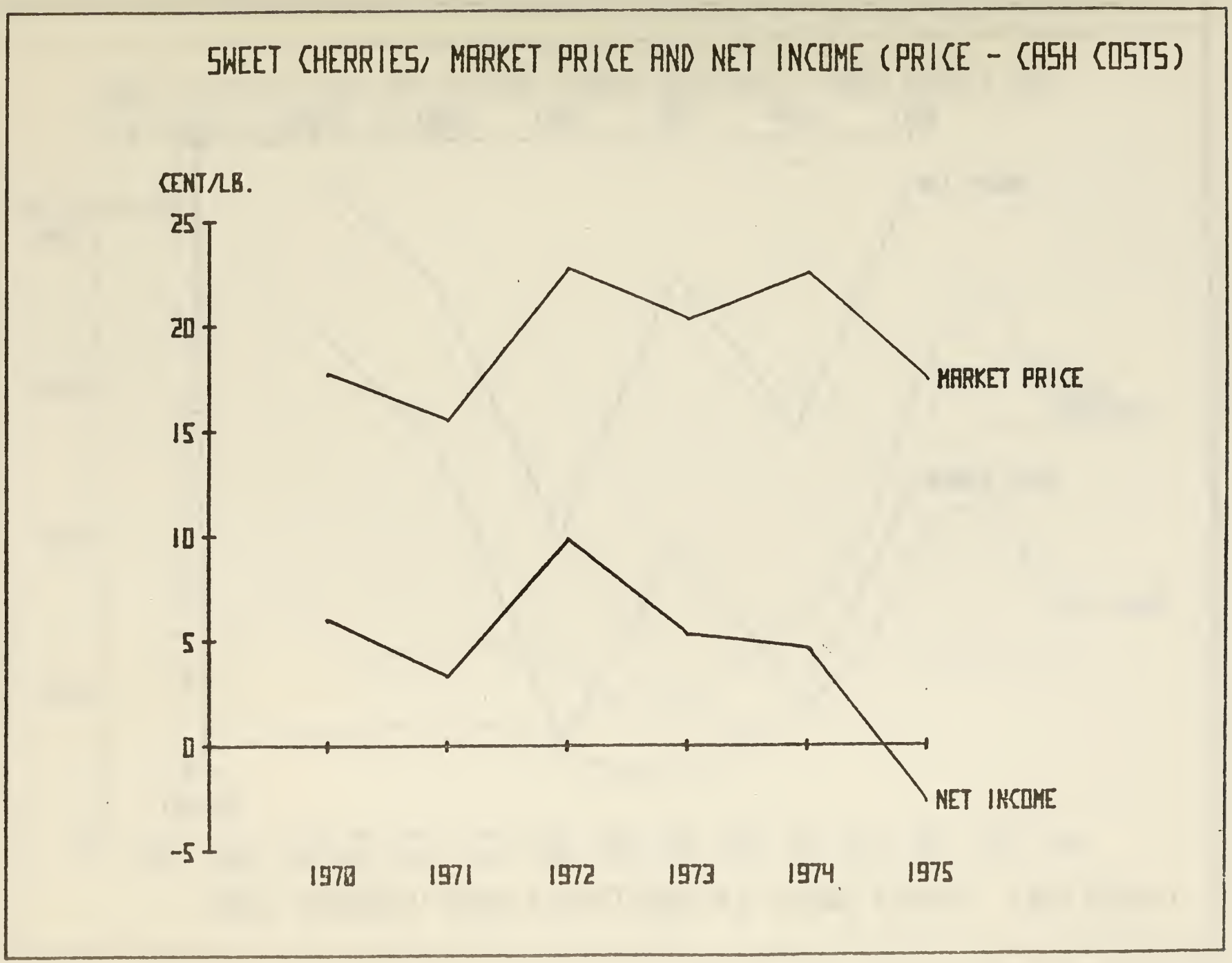

DAIRY, GROSS RETURN (INCL. SUBSIDY, LESS LEVY) AND
NET INCOME (GROSS RETURN - CASH COSTS)
$/CWT.
10
9
8
7
6
5
4
3
2
1
0
-1
GROSS RETURN
NET INCOME
1965-66 1966-67 1967-68 1968-69 1969-70 1970-71 1971-72 1972-73 1973-74 1974-75 1975-76 1976-77

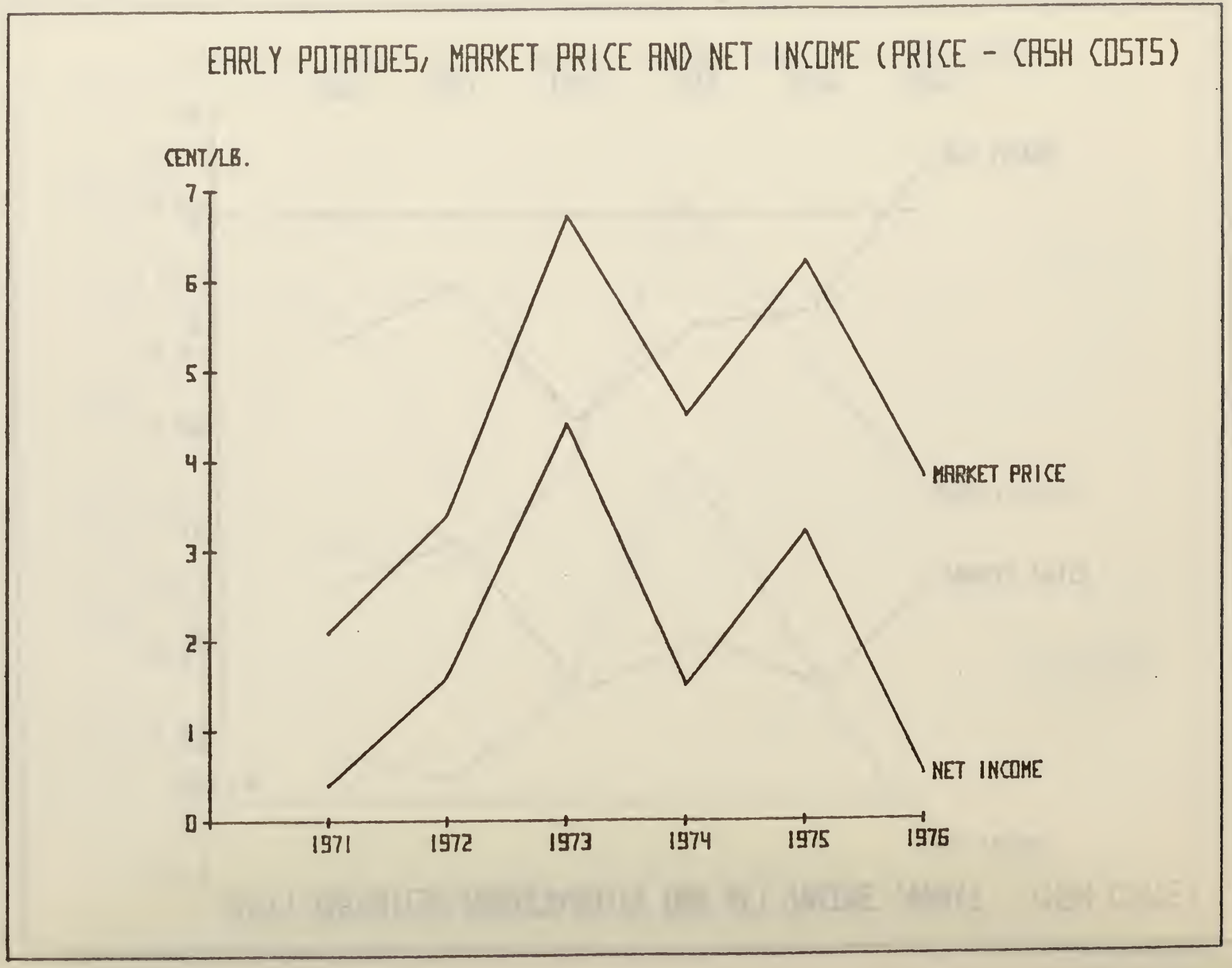

DAIRY, NET INCOME OVER CASH COSTS FOR A PRODUCER WITH 40 COWS
(4000 CWT. OF MILK)
DOLLARS
15000
10000
5000
0
NET INCOME
40 COWS
1965-66
1966-67
1967-68
1968-69
1969-70
1970-71
1971-72
1972-73
1973-74
1974-75
1975-76
1976-77

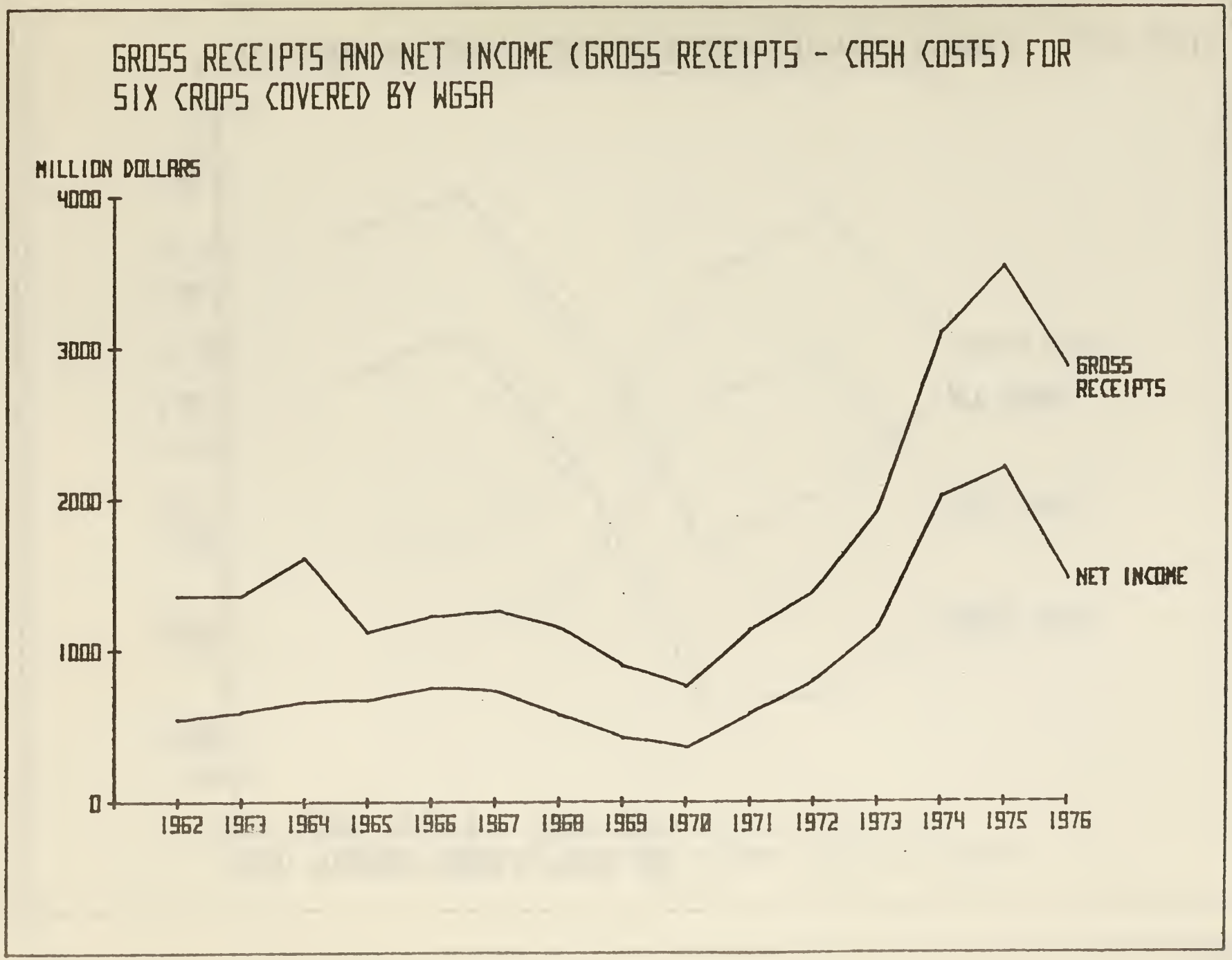

EGGS, MARKET PRICE AND NET INCOME (PRICE - CASH COSTS)
CENT/DOZ.
70
60
50
40
30
20
10
0
-10
MARKET PRICE
NET INCOME
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976

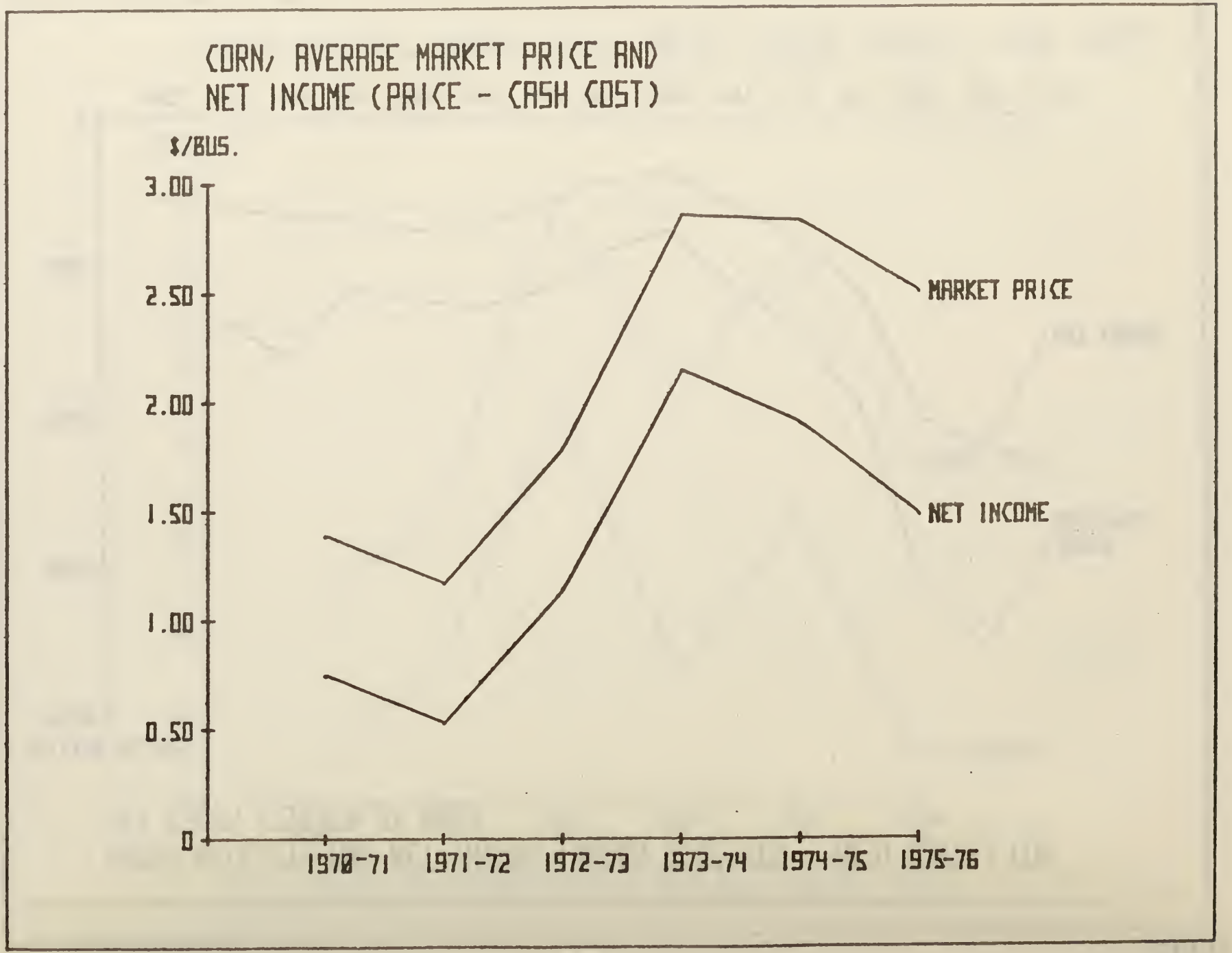

EGGS, NET INCOME OVER CASH COSTS FOR A PRODUCER WITH 12,000 HENS
(19 DOZ. EGGS/HEN)
DOLLARS
40000
30000
20000
10000
0
-10000
-20000
NET INCOME
12,000 HENS
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976

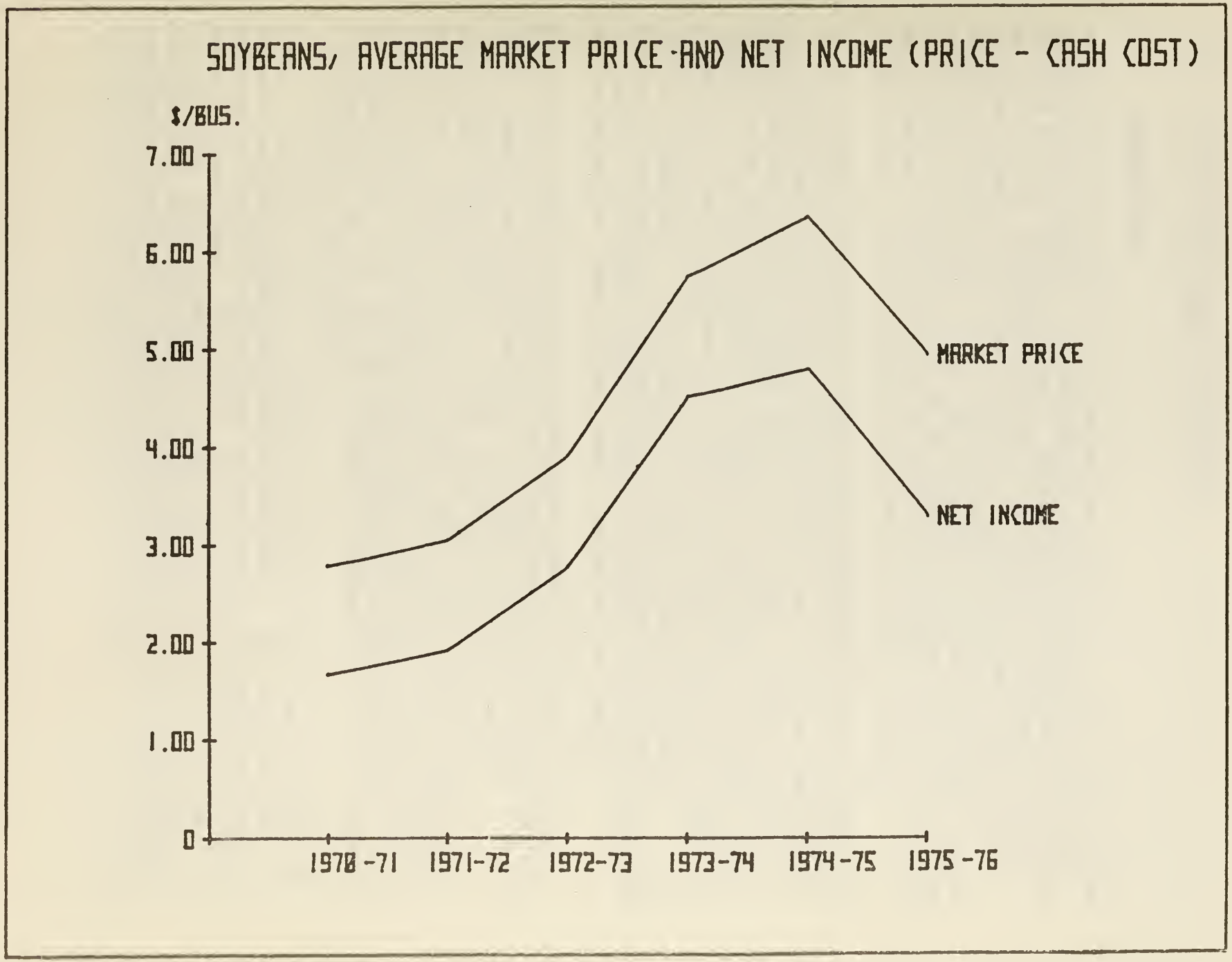

APPLES, MARKET PRICE AND NET INCOME (PRICE - CASH COSTS)
CENT/LB.
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
-1.0
1970
1971
1972
1973
1974
1975
MARKET PRICE
NET INCOME

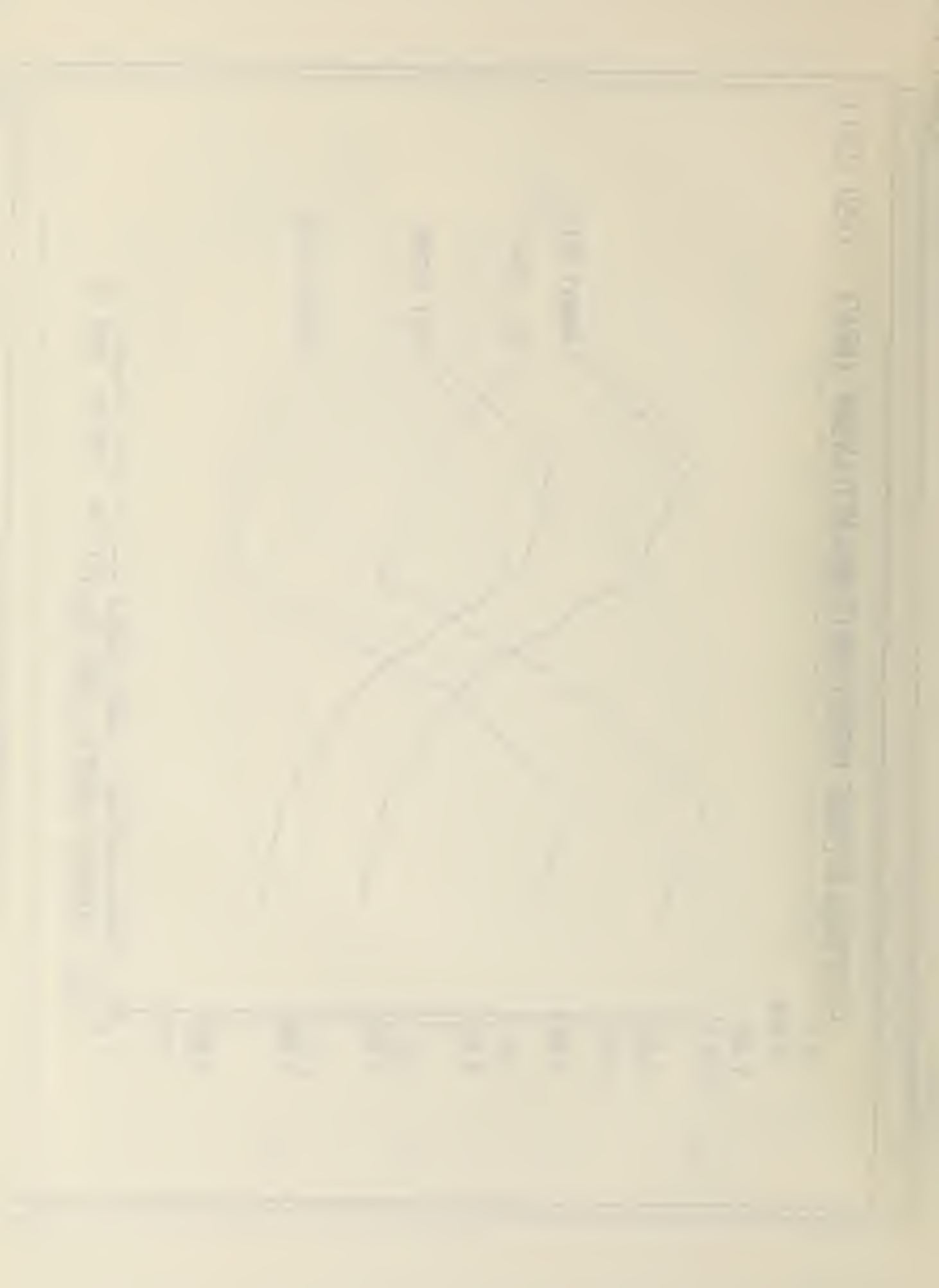

SWEET CHERRIES, MARKET PRICE AND NET INCOME (PRICE - CASH COSTS)
CENT/LB.
25
20
15
10
5
0
-5
1970
1971
1972
1973
1974
1975
MARKET PRICE
NET INCOME


EARLY POTATOES, MARKET PRICE AND NET INCOME (PRICE - CASH COSTS)
CENT/LB.
7
6
5
4
3
2
1
0
1971
1972
1973
1974
1975
1976
MARKET PRICE
NET INCOME


GROSS RECEIPTS AND NET INCOME (GROSS RECEIPTS - CASH COSTS) FOR SIX CROPS COVERED BY WGSA
MILLION DOLLARS
4000
3000
2000
1000
0
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
GROSS RECEIPTS
NET INCOME


CORN, AVERAGE MARKET PRICE AND
NET INCOME (PRICE - CASH COST)
$/BUS.
3.00
2.50
2.00
1.50
1.00
0.50
0
MARKET PRICE
NET INCOME
1970-71
1971-72
1972-73
1973-74
1974-75
1975-76


SOYBEANS, AVERAGE MARKET PRICE AND NET INCOME (PRICE - CASH COST)
$/BUS.
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0
MARKET PRICE
NET INCOME
1970-71
1971-72
1972-73
1973-74
1974-75
1975-76



5. A FAMILY-FARM ORIENTED AGRICULTURE

5.1 INTRODUCTION

The purpose of this paper is to interpret the concept of a family-farm oriented agriculture and identify, in a general way, policies and programs that would maintain such an industry in Canada. Those policies and programs so identified may or may not be consistent with ones of the present or the past. The fact that these appear to have been sufficient to maintain a family-farm oriented industry up to now does not, in itself, constitute sufficient evidence to assure this in the future. Also, the policies and programs identified in this paper may not be consistent with those intended to support other policy options being examined in the Orientation of Canadian Agriculture project, (i.e., it is not self-evident that all such policy options are mutually exclusive.)

For the purpose of this paper, a family-farm oriented agricultural industry is considered to be one in which the primary production of all farm products is, to a large extent, controlled by family farms and such businesses constitute a substantial majority of producing units in the industry. Thus, in order to assess whether or not the current industry is, in fact, a family-farm oriented industry, it would be necessary to establish clearly what is, and what is not, a family farm, and then measure the proportion of all firms falling into the family-farm category together with the share of output controlled by such units (for all commodities). Unfortunately, no clear-cut readily-accepted distinction between family and non-family units exists. Consequently, it is not possible to precisely identify either the numbers, or production levels for the two categories. Nevertheless, general indications are possible.

Part of the reason for the lack of consensus on what is, and what is not, a family farm lies in its evolution from a traditional entity, functioning as both a consuming and producing unit, to a modern, production-oriented firm with some characteristics similar to those exhibited by small industrial enterprises. This evolution is still under way and, in view of this, it is perhaps more relevant to ask, in a general sense, where Canadian agriculture has been and where it is going, than to spend a great deal of time trying to identify exactly how it deviates from being a family-farm oriented industry at the present time. It is only by identifying such current and potential deviations that one can identify policies and programs best suited to maintain a family-farm oriented industry.

Prior to embarking on such an analysis, it should be noted that this paper is concerned only with primary agricultural production. Many functions now performed by non-family agribusiness concerns were traditionally integrated in family-farm businesses. For example, work horses were traditionally produced by farmers for use by farmers. The production of tractors is not a farm enterprise nor is it organized into family businesses. This situation may, to some people, constitute a significant deviation from a family-farm oriented industry, but it is not considered to be so in this paper.

5.2 THE TRADITIONAL CONCEPT OF FAMILY FARM

The traditional concept of the family farm is largely North American in origin. In written form, it appears to have originated with Thomas Jefferson but he was very likely reflecting a set of beliefs implicit in the minds of many of the early pioneers who fled Europe to the vast, open lands of Canada and the United States. The Jeffersonian idea of the family farm included, either explicitly or implicitly, a number of characteristics or principles that have had a profound impact on the way society has viewed farming in North America for many years. It should be noted that the traditional concept of the family farm reflects what Jefferson (and others) thought a family farm should be. The fact that the actual structure of North American agriculture was never completely family-farm oriented, even in the traditional sense, is very significant for the purpose of this paper.

5.2.1 Capital Ownership

One major bulwark of the family farm is the concept of land ownership. Much of North America was surveyed in such a way as to facilitate settlement by individual farm families on their own land. Tenant farming, most common in southern United States, was frowned upon and public programs were introduced to assist tenants to become owners. Canadian farmers have always owned a large share of the land they have operated and few have chosen to farm for any extended period of time entirely on rented land, if they could possibly avoid it. This concept is in sharp contrast to the feudal systems, state-operated farms, sharecropper arrangements, large plantations or estates, and publicly-owned lands found in many other parts of the world.

5.2.2 Capital Ownership

Another integral feature of the family farm has been ownership of capital by the farm operator. North American farmers have traditionally been reluctant to borrow and quick to pay off their debts. While this idea was, in part, closely associated with the concept of land ownership, it is broader than that as it also extends to other capital items such as livestock, crops, and machinery. The 'true' family-farm operator owned these assets as well as his land. While some borrowing for these items was understandable, especially by younger operators, farmers were traditionally expected to own these assets outright before they were very far advanced in their careers. Most family farmers were anxious to free themselves of any possibility of losing their assets by not meeting payments, to build up an estate for their children, and to establish the basis for a retirement income for themselves. Outright ownership of farm business capital seemed to be the way to achieve these ends.

5.2.3 Use of Family Labour

The family farm was also traditionally viewed as a limited user of hired labour. Hiring of large amounts of labour placed the farmer in a non-family category and he often became viewed as an exploiter of others. The 'true' family farm utilized primarily family labour thereby providing farm youth with employment and a chance to build up some of their own assets, while gaining a

sense of responsibility and learning the business from their father. It was implicitly understood that hired workers were of slightly lower status and that as many people as possible should have an opportunity to get into farming for themselves.

5.2.4 Freedom of Decision-Making

Another integral feature of the traditional family farm was the freedom of decision making. Being one's own boss has frequently been cited as a highly desirable feature of the owner-operated farm. The scope of this concept has probably never been clearly defined but it undoubtedly includes the usual sort of economic choices of what inputs to use, what products to produce, when to sell and so on. For most, it included a choice as to how long or hard one would work. The reasonably direct relationship between human effort and farming success among our fathers and grandfathers appears to have had a major influence on this. A farmer who wanted to be more successful just worked longer and harder - if he chose to work less, he was reworded accordingly. This aspect of the family farm had great appeal to early North American society.

5.2.5 The Farm as a Primary Source of Income

The traditional family farm was also viewed as the primary or main source of income for the operator and his family. While some farmers have always been involved in other activities - Jefferson himself was an example - few farms were located close enough to towns and villages to permit commuting to another job. And the farm itself usually required the full-time attention of its owner if it was to be properly developed. Part of the reason for this was that farming used to include a wide variety of 'do-it-yourself' projects which may be no longer required or, if still needed are often not done by the farmer but perhaps by a skilled tradesman. Thus, there developed a general view, in rural society at least, that one was either a farmer or one was not and that a farmer was one who depended on the farm for his living.

5.2.6 Self-Sufficiency

The common view of the family farm was that it was a consuming as well as a producing unit. Not only did it serve as a place of residence for the farmer and his family, it provided them with food and to some extent clothes as well. In addition, some of the tools needed to operate the farm could be fabricated right on the farm. Thus, in its earliest days, the family farm was largely a self-contained unit, buying or selling relatively little from other parts of the economy.

5.2.7 Business Arrangements

Because it owned its own land and capital, the traditional family farm had no need for sophisticated business arrangements such as the professional partnership, or the corporation which provided the capital for industrial development, or the farming cooperative which had been tried in some countries. The traditional family farm was organized as a single proprietorship and, until recent years, has largely endured as such.

This traditional view of the family farm is important to the central issue of this paper. Observed deviations from these various characteristics of the traditional concept of the family farm have been heralded, over years, as constituting a disappearance of the family farm per se. And, in its strictly traditional sense, there is little question but that the North American family farm has virtually disappeared. It would be very difficult to find even a few farms in Canada today that fully meet all of the above characteristics. However, it is very easy to find many farms which partially meet most of these same characteristics. Such family farms appear, for the most part, to retain enough similarity with the traditional concept to make one feel quite comfortable in asserting that Canadian agriculture is still a family-farm oriented industry. But ongoing changes in the numbers of farms and the extent to which farms continue to exhibit these same characteristics make one question how long such an assertion can continue to be made.

5.3 THE FAMILY FARM IN RECENT YEARS

The last few decades have witnessed substantial changes in the structure of Canadian agriculture. Modern technology, including larger and more efficient field machinery, coupled with mechanized feeding and manure handling equipment, has permitted a major substitution of capital for labour, thereby significantly increasing production levels per man. Concurrent reduction in labour use has occurred.

During the period 1951-71, the number of farm operators in Canada fell from 621,350 to 366,128, while the number of hired labourers remained relatively stable. The average size of farm, as measured by sales, capital invested, and land area has risen substantially during this same period. Nevertheless, the large majority of Canadian farms are still family-operated businesses notwithstanding the fact that virtually all of them are, in many ways, vastly different from the family farm of Jefferson's days. Even as late as 1971, 91.8 percent of all census farms were operated by private individuals, while a further 7.6 percent were operated as partnerships or family-farm corporations. Only 0.3 percent were operated as non-family corporations.

Recent increases in the average size of farm and the corresponding reduction in farm numbers have occurred through the emergence of more and more units in the larger (established) size categories and the growth of some large units to sizes previously unheard of. For example, while the average size of farm in Saskatchewan is currently about 400 hectares, units of 4 to 8 thousand hectares are not unusual and a few of 20 thousand hectares exist. Commercial beef feeding operations of 500 to 2,000 cattle are common but there is at least one of 10,000 head close to Calgary. While the numbers of large and very large units are increasing, the numbers of smaller units are disappearing, usually with the retirement of their owner-operator. During the period 1961-71, there was a net exit of 173,360 older census farm operators from the industry coupled with a net entry of only 58,585 younger operators. This evolutionary process has created a situation where it is not at all unusual to find an older, traditionally-oriented farmer running a small operation with out-dated technology right next door to an aggressive, commercial, young farmer with a large business based on the latest farming techniques.

5.3.1 Land Ownership

Land ownership by the farm operator, one of the key elements in the traditional concept of the family farm is still a basic characteristic of Canadian farms today. However, there has been a significant trend to more leasing of land by farmers. Between 1951 and 1971, part-owner/part-tenant farms increased from 14.3 to 26.2 percent of all census farms in Canada. A comparison of the size distribution of owned farms versus partly-owned/partly-rented farms between 1951 and 1971 indicates that this trend is caused, to some considerable extent, by larger units. In 1971, more than 50 percent of the partly-owned/partly-rented farms were greater than 224 hectares in size, while only 14 percent of the fully-owned farms were in this size group. Corresponding figures for 1951 were 40 percent and 5 percent respectively.

The increased use of rented land in recent years appears to have resulted from a combination of circumstances. Urban developers and hobby farmers have acquired significant areas of land around major urban centres. Some foreign buyers have invested in Canadian farm land as a long-term hedge against inflation and perhaps risk of nationalization in other countries. Some people who inherit land from their fathers and do not wish to farm choose not to sell the land but to retain it as an investment. This land is quickly rented to aggressive commercial farmers who wish to expand their business but prefer not to borrow or use equity capital for more land at the present time. The farmer who rents land today appears to be in a far different situation than the share cropper of years gone by.

5.3.2 Capital Onwership

There has been an increased use of borrowed funds by farmers, especially those who are expanding their business. During the period 1951-71, the percentage of census farm operators reporting a mortgage or agreement for sale increased from 28 to 43 percent. The percent of farm capital owned outright by farmers declined from 87.9 percent in 1961 to 83.2 percent in 1974. During the same period, average total assets per farm increased from $30,435 to $122,554. The fact that this increase in credit use has occurred primarily among larger than average units is supported by Farm Credit Corporation (FCC) data. In the early 1970's, 12.3 percent of FFC borrowers had sales of more than $50,000 (before loan), whereas only 2.9 percent of 1971 census farms fell into this category. Smaller businesses, at least those operated by full-time farmers, are still largely owned outright. Their current income levels do not provide for repayment of borrowed capital and, if they had to 'buy in' at current prices, most could not afford to do so. Hobby and part-time farmers are also heavy users of borrowed funds but their repayment capacity usually depends heavily on non-farm income.

There are several reasons for this trend to increased reliance on borrowed funds. Modern technology has reduced some production risks substantially thereby permitting modern commercial farmers to feel more secure in using borrowed funds for expansion purposes. In addition, the marginal capital investment required to expand an existing unit often generates returns significantly in excess of the cost of borrowing. For example, returns to

Alberta farm account cooperators in 1975 showed increasing average returns to equity capital and total farm assets up to and including the maximum size category. Such a situation suggests significant marginal returns to capital. Finally, as one of the major costs of expansion is extra land, and investment in land can provide both a hedge against inflation and the possibility of capital gain, there is added incentive to enlarge an operation with borrowed funds, as opposed to relying entirely on equity capital. In recent years, a few farms have incorporated for the purpose of providing better access to borrowed funds but only a few have 'gone public' so it appears that there is little incentive to obtain equity capital by incorporation.

5.3.3 Use of Hired Labour

Relatively few Canadian farms employ more than the operator on a year-round basis. In 1971, 72 percent of all census farms could be classed as one-man farms, 23 percent required less than one-half man-year,while only 5 percent required two or more men. The latter figure changed relatively little between 1961 and 1971. However, there has been only a modest decline in the number of full-time hired workers over time, suggesting a slightly increased reliance of the total sector on hired labour. This is reflected in changes in the number of farms employing five or more workers. Between 1961 and 1971, the number of farms in this category increased from 762 to 1,049. This group, while relatively small in number, is of major significance for the purpose of this paper. Such farms are the size leaders of the industry (i.e., they are the ones likely to break previously established size records) and they control a disproportionately large share of production. (For example, one farm with 5,000 beef cows produces about one hundred times as much as the average beef cow operators.) For some commodities, a large proportion of the farms in the industry would have to disappear in order to allow only a few more of the very largest producers to emerge. For example, in P.E.I. in 1971, 3,700 farms reported a total of 106,000 cattle or an average of 29 per farm. And yet one very large farm is reported to have 2,500 head and at least eight employees.

One of the factors which may discourage such farms in the future is the unionization of farm labour. Until recently, hired farm workers in Canada could not legally unionize. However, a union has recently been given the right to bargain for 18 workers employed by South Peace Farms Limited in British Columbia. While widespread unionization of farm labour in Canada seems very unlikely, the fact that it can occur on larger farms may discourage the emergence of some such units.

5.3.4 Freedom of Decision-Making

Substantial changes have recently taken place in the farmer's freedom of choice. In the marketing of his products, the farmer has frequently found himself faced with production quotas established by a variety of product marketing boards. His choice of the amount he will produce then becomes more complicated. Should he buy more quota and expand or, if he cuts back, will he lose the quota he has? For some commodities, marketing boards can probably be credited with contributing to the maintenance of the family farm as they have tended to allocate quotas to family businesses. Vertical integration, which was at one time viewed by some as a move by business to reduce the family

farmer to the status of a hired worker, has been confined to a few commodities (e.g., vegetables) and types of contractual arrangements which still preserve most of the farmer's freedom. Marketing boards have undoubtedly contributed to this, especially in the poultry industry. Thus, while some Canadian farmers have perhaps lost some of their decision-making freedom, most still retain enough to be regarded as businessmen in their own righ.

5.3.5 The Farm as a Primary Source of Income

One area in which there has been a significant divergence from the traditional concept of the family farm is in the dependence of 'farmers' on non-farm income sources. During the period 1951-71, the number of census farmers who reported the equivalent of a full-time off-farm job increased from 36,500 to 42,100. While census farms declined by 41 percent during this period, the number of persons reporting farmer or farm manager as their principal occupation declined by 54 percent. These data reflect the increased numbers of hobby farmers in areas surrounding major urban centres and the ability of modern man to hold a full-time job, commute to work, and operate a small farm at the same time. It is significant to note that some hobby and part-time farms today generate more physical production than the same farm operated on a full-time basis only a few decades ago. The substitution of capital for labour has permitted many farms to be maintained at about the same physical size as previously while allowing their operator to devote much of his time to other activities. Furthermore, owner-operators of some larger commercial family farms are heavily involved in non-farm professions such as University teaching, agribusiness, banking, and politics.

5.3.6 Self-Sufficiency

Another area in which the modern family farm differs substantially from the traditional concept is the extent to which it is a market for its own products. With increased specialization, substantial off-farm processing, and wide availability of food and clothing through retail outlets, the modern commercial farm family functions much like an urban family with respect to most consumption goods. Housing usually is, as it has always been, located on the farm itself. (However, with farm consolidation, many rural houses are no longer farmer's homes but homes for persons involved in other activities or perhaps for the hired man who is no longer someone who is satisfied with a spare room or a bed in a bunkhouse.) Small farms typically boast a substantial vegetable garden but many operators of large commercial units often buy all of their food. The making of clothes from home-produced wool is virtually non-existent although machinery repair and maintenance is typically handled by the farmer himself (as opposed to having it done).

5.3.7 Business Arrangements

While the large majority of Canadian farms are still operated as single proprietorships, there has been an increasing interest in other forms of business organization. Partnerships and family-farm corporations are the most prevalent. These have emerged for a variety of reasons including changing tax laws, increased capital requirements for a viable farm unit, and problems

associated with intergenerational transfer of the family farm. Many are family partnerships, but a few family-farm busineses have outside partners or shareholders. There appears to be an increasing interest in these sorts of arrangements, and only an in-depth study of large farm businesses over time would reveal the extent to which this is actually emerging.

5.3.8 Incomes of Farm Operators

As Canadian agriculture has evolved over time, it has been only natural that some farmers have adopted new technology and expanded their businesses much more quickly than others. The structure of the farm industry today is such that there is substantial variability in the size of individual farm units and the way in which they are operated. While few, if any, of today's farms come close to meeting all the characteristics of the traditional family-farm concept, some come much closer than others. Their size of operation is relatively small, they have little off-farm work, they utilize technology which is perhaps ten to twenty years out of date, they rely heavily on the family garden as a source of food, they are limited users of credit for farm investment, and they typically own all or most of the land they operate. While this group of farmers perhaps comes closest to the traditional concept of the family farm, it should also be noted that farmers in this group frequently earn incomes which are somewhat inadequate by today's standards. This is partly illustrated by Table 7 which shows the relationship between level of income (adequate vs. inadequate) and sales for 215,632 farm taxfilers (1974) who relied heavily on farming for their income.[9] The existence of this situation is an important fact to be taken into account in making policy decisions relating to the number and character of family farms in Canada. It also serves to support the view expressed in the next section of this paper that current trends to fewer and larger farms can be expected to continue.

5.4 THE LIKELY FUTURE STRUCTURE OF CANADIAN AGRICULTURE

5.4.1 Short-Term Outlook

It appears highly likely that, in the short-term (up to the year 2000), the recent trends to fewer and larger farms will continue. Even if agricultural technology were to remain stagnant and returns to labour in other sectors were to remain unchanged, the process of farm adjustment already underway would probably take another decade or so to reach an equilibrium point. It seems evident that changes in these driving forces have already occurred which would make it virtually impossible to maintain farm numbers at current levels. The full adjustment response to these changes is yet to be observed. And yet, even while this adjustment is occurring, we can expect to see further changes in farming technology and (hopefully) still further increases in real wage rates. This will very likely reduce the equilibrium level for the number of farms

9. Field experience in FCC, Small Farm Development Program (SFDP), and provincial extension programs shows that full-time farms with these sales levels are frequently undercapitalized, do not use the most up-to-date technology and, obviously, have relatively low labour productivity.

Table 7 RELATIONSHIP BETWEEN SALES AND INCOME LEVEL FOR FARM TAXFILERS WITH MAJOR OR SUBSTANTIAL DEPENDENCE ON FARMING, CANADA, 1974

Gross Farm Sales	Inadequate[a] Incomes		Adequate Incomes	
Under $5,000	12,166	19.5%	8,138	5.3%
$ 5,000 - $14,999	20,599	31.1%	29,565	19.3%
$15,000 - $24,999	12,725	20.4%	31,122	20.3%
$25,000 - $49,000	11,461	18.4%	48,872	31.9%
$50,000	5,326	8.6%	35,658	23.37%
TOTAL	62,277	100.0%	153,355	100.0%

[a]Below Statistics Canada poverty levels (adjusted for family size).

still further. Changes in agricultural technology and real wages occurring in the 1970's and 1980's will therefore very likely cause further increases in farm size and reduce farm numbers in the 1980's and 1990's.

In the near future, energy price increases can be expected to put pressures on agricultural producers. Environmental regulations and scarcity of phosphate fertilizers may also have a significant impact on the agricultural sector in the next two decades. However, in the short-term, these factors may serve to hasten the exit of the smaller producer, as opposed to working in his favour. As real prices of some farm inputs rise, there are substantial substitution possibilities for the knowledgeable commercial farmer. Greater use of livestock manures and urban sewage for fertilizers, more use of crop rotations and nitrogen fixing legumes, minimum tillage programs, increased use of summer fallow, and so on, all represent ways to cut back non-renewable resource use, as prices rise. The economics of this situation appear such that the larger commercial family farmer will probably still have an advantage over his smaller colleague for some time. He is the most knowledgeable and most flexible of our producers. Only when prices shift so drastically that he finds it profitable to substitute labour for purchased inputs can we expect to find any relative advantage for small units.

Nevertheless, as the economics advantages and disadvantages of larger farms are not well documented, it is difficult to predict how large the largest farms of the future may be. It is clear that there are certain technical relationships which produce economies of size up to a point, after which no obvious economies or diseconomies attributable to technical relationships are apparent.[10] Exact levels vary by commodity, but are very likely somewhere in between the

10. USDA, Economies of Size in Farming, Agricultural Economics Report No. 107, 1967.

average and the largest farms in existence today. In addition to these technical advantages, large operations appear to have other types of advantages as well. These include access to product markets, purchase of farm inputs, and spreading the overhead cost of management. There are tendencies for increasing amounts of some commodities to be sold directly to processors or wholesalers who are not interested in purchasing small amounts if they can buy in quantity. Volume discounts on fertilizer and feed are common. The large commercial operator finds it well worth his while to spend time and effort on obtaining information and using the latest management techniques. These advantages are certainly significant enough for one to expect the trend to larger farms to continue but there is little firm evidence to suggest where it will stop.

Nevertheless, the nature of agricultural production is such that one- and two-man farms are expected to be strong competitors for some time. Thus, the trend to larger units will, in the near future as in the past, very likely be associated with a continued domination of one- or two-man farms. Substantial evidence exists to suggest that the large-scale corporate enterprise does not currently have any real advantage in farming and that it does have some disadvantages. Small corporations with five or greater employees may slowly continue to expand their share of the industry. But at current rates of expansion, it would probably take one or two decades before such units could dominate the production of any more than one or two commodities.

Current trends to increased use of rented land and borrowed capital will probably continue as well. This implies more and more non-resident ownership of farm land, and greater use of family partnerships and corporations to provide the necessary business arrangements for financing. However, it is debatable whether or not this will lead to increased involvement of non-family corporations in agriculture. Some large family-farm corporations have recently expanded into non-farm areas or vice versa. More of this will likely occur. When the current owners of such corporations retire, some of these may continue to exist using hired management. While Canadian agriculture is today largely a family-farm industry, we may only be a few decades away from a time when non-family enterprises are much more common than at present. Such enterprises are even now gradually expanding in numbers and influence while the numbers of family farms are declining rapidly.

It would appear, therefore, that any major debate about the future of the family farm would logically focus more on how many such units will exist and how the production they control will be distributed among them, than on whether or not they will exist. The large commercial family farm of today is probably as great an apparent threat to the smaller operator as is the non-family farm business. In light of this, projections of the numbers of farms[11] to the year 2000, by age group (Table 8) and by province (Table 9) have been made. These projections are based on a continuation of recent patterns in the exit of older farmers and the assumption that entrants in the youngest age cohort can be represented as a constant proportion of the total number of farmers a decade earlier. While these assumptions are intuitively appealing and consistent with foregoing arguments concerning the continuing pressures on Canadian agriculture, the projections are essentially mechanical and do not pretend to reflect any serious model of the structural adjustment process.

11. 'Census' farms using the definition which was employed in the Census prior to 1976.

Table 8 OBSERVED (1966, 1976) AND PROJECTED (1986, 1996, 2006) AGE DISTRIBUTION OF FARMERS, CANADA

Cohort	1966	1976	1986	1996	2006
under 25	9,390	12,462	7,990	6,954	6,209
25-34	56,044	50,651	67,222	43,099	37,511
35-44	102,223	73,829	66,725	88,555	56,777
45-54	118,811	93,882	67,805	61,281	81,330
55-64	92,354	72,357	57,175	41,294	37,321
65 and over	49,972	35,397	27,733	21,914	15,827
TOTAL	428,794	338,578	294,650	263,097	234,975

Source: Calculated on the basis of Statistics Canada, Cat. 96-723.

Table 9 OBSERVED (1966, 1976) AND PROJECTED (1986, 1996, 2006) NUMBERS OF FARMS BY PROVINCE, CANADA

Province	1966	1976	1986	1996	2006
Prince Edward Island	6,357	3,677	2,164	1,258	730
Nova Scotia	9,621	5,434	3,502	2,370	1,600
New Brunswick	8,706	4,551	2,646	1,633	1,036
Quebec	80,294	51,587	34,538	23,336	15,825
Ontario	109,887	88,800	75,650	65,837	56,880
Manitoba	39,747	32,104	30,404	29,552	28,971
Saskatchewan	85,686	70,957	67,488	64,448	62,576
Alberta	69,411	61,130	56,453	52,439	48,424
British Columbia	19,085	19,432	21,165	23,375	24,985
CANADA	428,794	338,578	294,650	263,097	234,975

Source: Calculated on the basis of Statistics Canada, Cat. 96-723.

The projections suggest that there may be about 250,000 farms in Canada by the year 2000, with slightly more than half of these located in the Prairie Provinces. In Quebec and the Atlantic Provinces, farm numbers may be substantially reduced below current levels, while Ontario may show a modest decline and British Columbia may actually show an increase. It is expected that farm numbers in British Columbia and Ontario will be maintained largely due to increased interest in hobby and part-time farming. In the prairies, increased livestock production may serve to allow the maintenance of significant numbers of essentially full-time farms without major increases in average farm area. Of course, some increases in average farm area will likely continue to be noted in the prairies,[12] along with modest expansions in the total land base.

If these projections are reasonably accurate, and if recent trends to part-time and hobby farming continue, we may expect to see the following composition of the farm sector[13] by the year 2000.

Farmers primarily dependant on farming - 125,000

Inadequate incomes[14]	40,000 (Full-time small farmers)
Adequate incomes	85,000 (Full-time commercial farmers)

'Farmers' primarily dependant on non-farm income - 125,000

Inadequate incomes	25,000 (Rural residents on small holdings)
Adequate incomes	100,000 (Hobby and 'part-time' farmers)

Farm production will likely, to a very large extent, be controlled by less than 100,000 farmers, most of who will operate larger units relying on significant inputs of borrowed capital and organized as farming partnerships or corporations.

There is one significant aspect of farm structure in the Prairie Provinces which is deserving of special mention here. Hutterite colonies, each composed of about 80 family members and controlling an average of about 3,600 hectares have been steadily increasing in size and numbers during the last three decades. An annual population growth of 3 percent is estimated with slightly larger increases in land area operated being observed. With somewhat over 100 colonies in the prairies at the present time, this could grow to close to 200 by the year 2000. By that time, Hutterites could control more than 800 thousand hectares of farm land and account for about 2 percent of total farm output. This type of farm business organization does not conform to the traditional concept of the family farm, and at least one farm group (Southern Alberta Agricultural Protection Association) has been formed to fight the sale of land to Hutterites.

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12. These are estimated to be in the order of 25 to 40 percent by the year 2000.

13. If one uses the 1976 Census definition of a farm (i.e., more than $1,200 in sales), estimated farm numbers by the year 2000 will likely be less than 200,000.

14. Statistics Canada poverty standards.

5.4.2 Long-Term Outlook

Discussion of the likely structure of Canadian agriculture beyond the year 2000 can be little more than speculation. Factors which are likely to play a major role in determining this structure include:

- technological innovations in primary agriculture;
- changes in prices of energy and other non-renewable resources;
- changes in institutional arrangements with respect to the farm sector (including government policies and programs);
- changes in non-farm wage rates;

The nature and magnitude of changes in these areas in the next few decades cannot be accuratey predicted. Nevertheless, these changes will determine, to a substantial degree, the structure of the agricultural sector beyond the year 2000.

Technological change in the farming sector shows little sign of slowing down. Mechanization of field operations continues, with progressive farmers quickly adopting larger and larger power units. Four-wheel drive tractors are increasing in size and probably will continue to do so. Use of chemicals permits the use of tillage programs not possible only a decade ago; and further advances in this area can be expected. Further advances in mechanized livestock feeding also appears possible. Improved disease control in swine may permit the hog industry of tomorrow to function much like the poultry industry of today.

Substantial increases in the prices of energy and phosphates will undoubtedly force farmers to use technology which is currently not profitable. This has lead some people to speculate that a return to the traditional family farm of yesteryear may be a possible scenario for the future. Whether or not this develops depends critically on the continued availability of portable energy such as diesel fuel, or suitable replacements. Fuel for the farm sector could be made available by substitution of energy sources in the non-farm sector, either based on economic incentives or government action. However, substitutes for diesel fuel (e.g., fuels from organic sources) might be used directly by the farm sector. It is clear that the economics of modern agriculture are such that the price of portable energy would have to rise drastically before a return to the traditional, labour-intensive family farm would be profitable. But, as yet, we cannot be completely sure that this event will not occur beyond the year 2000.

Institutional arrangements for the farm sector will undoubtedly have a major influence on agricultural structure in the longer term. As the farming community grows smaller, the relative weight of the farmer in public decision-making decreases. This means that public policies may permit the emergence of significantly different institutional arrangements than have existed in the past. This, in turn, may have significant influence on the structure of the farm sector.

Expected increases in non-farm wage rates will continue to make occupations other than farming attractive to many young farm people. Numbers of farmers entering the industry in the next two decades will play an important role in determining industry structure beyond the year 2000. While the good farm incomes of the last five years have witnessed a resurgence in interest in farming among Canadian youth, especially in the prairies, the prospect of this continuing over the next decade seems dim. Non-farm occupations can be expected to compete strongly with farming during the late 1970's and 1980's but, in the longer run, the ability of the Canadian economy to cope with the impending energy crisis will determine whether or not this can continue.

5.5 ARGUMENTS IN SUPPORT OF A FAMILY-FARM ORIENTED AGRICULTURE

It seems clear from the foregoing discussion that there are significant variations in the sort of family-farm oriented agriculture one might wish to maintain in Canada. The extreme alternative (i.e., an industry organized largely into large, corporate food production firms) does not seem likely to emerge, at least, not in the foreseeable future. But the existing industry seems to be gradually moving further and further away from the traditional concept of a family-farm oriented industry. There are sound reasons for this movement, and any steps which are taken to control it should be taken for equally sound reasons. A review of the arguments in support of a family-farm oriented industry may permit identification of several distinctly different kinds of family-farm orientations which Canadians might seriously consider maintaining.

The basic arguments in support of a family-farm oriented agriculture fall into five categories:

(1) economic - the family farm is an efficient and dependable supplier of food;

(2) social - the family farm provides a superior form of social organization;

(3) environmental/non-renewable resources - environmental problems and relevance on non-renewable resources are minimized with a family farm structure;

(4) maintenance of rural populations - the demise of the family farm is said to threaten the viability of rural communities.;

(5) equal rights for all groups in society - farmers have a right to organize their own industry and they prefer a family-farm structure.

The first three of the above are clearly general social concerns - enhancement of the general public good is the paramount consideration. In the first instance, the public is represented by food consumers; their interest is considered to be one of low-priced, dependable supplies of high quality food products. In the second instance, the public is less well defined but

the public interest clearly encompasses an array of social variables (e.g., crime rates, incidence of divorce, etc.) not considered to be endogenized in the process which determines the prices of farm products. In the third instance, the public of concern is, for the most part, not yet born and the variables of interest are, either, as in the second instance, not endogenized in the pricing of farm products or not 'appropriately' discounted to take into account the interest of future generations. The last two categories focus on the relative well-being of particular groups in society, but are only general social concerns in that it is somehow of importance to society as a whole that all groups within it are satisfied with their lot. In the fourth instance, the rural non-farm population is the group of greatest concern; in the fifth, the farm community itself is the group deserving special attention. These five arguments are developed in more detail below.

5.5.1 Economic Arguments

The traditional economic arguments in favour of the family farm (and hence a family-farm oriented industry) have proclaimed it as an efficient and dependable producer of food. Contrasts have been made between North American agriculture and that in other parts of the world where collective farms, landlord-tenant systems, and other forms of organization have failed to achieve the goal of low-priced, dependable food supplies. It has been pointed out that the housing in one unit of production (including production of some inputs and intermediate products) and significant amounts of consumption (as in the traditional concept) reduced transportation and transaction costs. However, these arguments have broken down with the advent of modern technology, our ability to substitute capital for labour, and the relative cheapness of modern transportation. It has also been argued that concentrating control of labour, land, capital, and management in one individual minimizes decision-making and communication costs which are often significant in large industrial enterprises. And the modern, commercial family farmer of today also retains fairly direct control of these four factors of production, (even though he may hire some labour, rent some land, and borrow some capital). Thus, perhaps the most significant and enduring argument in favour of the family-farm business as an efficient producing unit, is the natural tendency of the farm manager as an individual, in control of the production enterprise, to act in the best interest of himself and his family and thereby provide a direct link between production decisions and price signals. Not only does this feature of the family farm (modern or traditional) work effectively towards low cost production, but it also works towards assurance of food supplies. It is well-known that farmers are reluctant, because of their own economic interests, to cut back production drastically when prices fall, but quick to increase production when product prices rise.

Thus, this argument for maintaining a family-farm oriented industry is an exceptionally strong one. However, it is insufficient if the industry in question is threatened by other, apparently more efficient forms of food production or if the structure of the industry appears to be undergoing massive changes in order to improve production efficiency. If efficiency were the sole rationale for maintaining a family-farm oriented industry, policies for doing so would not concern themselves with numbers of farms, forms of farm organization, and similar topics which are frequently public issues related to

discussions of the family farm. Instead, such policies would only provide for public interference if non-family businesses emerged for reasons unrelated to efficiency, or if such business developed to the extent that they gained oligopolistic or monopolistic power.

5.5.2 Social Arguments

Social arguments in favour of the family farm are both implicit and explicit in much of the writing on this topic. Jefferson referred to farmer's as God's chosen people, pointing out that "... corruption of morals in the mass of cultivators is a phenomenon of which no age nor nation has furnished an example". It appears generally believed that lower crime rates and less stress are characteristic of farming communities. Some of the problem of concern to modern industrial society (e.g., physical fitness, job satisfaction) have not generally been regarded as problems among the farm population. However, recent studies have shown that farmers often do not have ready access to social services, find difficulty coping with retirement, and have greater incidence of some types of accident and health problems than their urban counterparts. While such points are sometimes considered in debating the merits of the family farm (and hence a family-farm oriented agriculture), there seems to be no clear way, outside of a very extensive and expensive study, of making comparisons of a family-farm society with alternative forms of social organization. And even if one were to do so, the meaningfulness of such comparisons would be questionable. For example, if one were to conclude that a family-farm oriented rural society is definitely superior to an industrially oriented urban society, the action one would take as a result is quite unclear. After all, we are not faced with the possibility of rural Canada becoming an industrially oriented urban society.

However, if one were to attempt to contrast social features of a family-farm society with alternative forms of farm organization, one would very likely be looking at alternatives involving different degrees of freedom of choice or equality of income and opportunity. The major alternatives in the world are usually socialistic in nature (e.g., Russia, China) or entail a substantial concentration of wealth (e.g., Latin America). The form of farm organization Canadians have known in the past has apparently provided an acceptable balance between these two extremes. Perhaps this, more than anything else, is why the family-farm oriented agriculture found in North America has been so acceptable from a social point of view.

Thus, if one wishes to maintain a family-farm oriented agriculture for social reasons, one may very well wish to emphasize equality or equity considerations among farmers, while attempting to ensure that individual initiative and enterprise are not stifled and also ensuring that extreme alternatives to the family farm do not emerge. A rural society in which a small number of large-scale family-farm businesses dominate may, technically, be a family-farm industry. But if such large businesses are substantially better off than their smaller colleagues, its value as a social organization will very likely be substantially reduced. And if the industry were composed of only that small number of large-scale family-farm businesses, one might likewise question its worth as a social form of organization by simply asking "Couldn't the industry

accommodate more farmers?" - not an uncommon question. And yet, there is no turning back the clock. Even if we were to decide we wanted to maintain the current number of farms, this would involve substantial economic costs which society would very likely be unwilling to bear.

It should be noted that the social structure which is emerging in communities where large-scale commercial family farms dominate does not, in and of itself, appear to be undesirable. Indeed, it appears to be very much like those existing social structures dominated by small town businessmen. Community activities are important, incidence of crime does not appear to be high, and young people appear to have a good chance of becoming trained for a variety of careers. The key point appears to be that, in a large-scale, commercial family-farm agriculture, the number of participants in the farm-based social structure is relatively few and, in the process of creating such an industry, many others will fail to survive. In the course of this process, substantial income differentials among farmers continue to exist.

5.5.3 Environmental/Non-renewable Resources

Recent concerns with respect to environmental problems and possible shortages of non-renewable resources have prompted much discussion in North American society within the last decade. This discussion has naturally lead some people to point to the traditional family farm as a means of minimizing these problems and concerns. Organic gardening, wood heating, use of horses and windmills for power, and many similar items have become topics of keen interest among conservationists and 'back-to-the-land' types. These discussions have caused some people to speculate that a return to the family farm of yesteryear may be in the offing; they have caused others to advocate that public efforts be put forth to not only facilitate but also encourage such a change. In a sense, this can be considered as an argument in support of a family-farm oriented agriculture, albeit of a sort much different from that to which we have grown accustomed.

However, proponents of this sort of an argument overlook three crucial points. Firstly, the traditional family farm of yesteryear was neither pollution-free nor pest-free. Modern chemicals, which themselves may be pollutants, were often used to limit or eliminate pollution or health hazards of other sorts, as well as in controlling pests. Selective control and licensing of individual chemicals appears to be a much better answer as far as environmental problems are concerned. This may require the reversion of some technical processes to their earlier state but it need not require the abandon of all technology with environmentally-related problems. After all, the problem which the new technology solved may have been much more serious than the problems it created. Secondly, the traditional family farm of yesteryear, while a relatively low user of energy based on fossil fuels, required a very high labour input. Conversion of Canadian agriculture to farming practices based on non-renewable energy sources may, in the long-run, be necessary. But, this does not necessarily mean that horses and human power will be the best answer. A variety of possible approaches exist. Rationing fossil fuels in other sectors to ensure that they are available for use in food production is one of these. Thirdly, the price mechanism will provide a useful guide for some adjustments

among different technologies. For example, very high prices for nitrogen fertilizer will very likely result in a shift from corn to alfalfa for forage in parts of southern Ontario. Thus, to some extent, resource scarcity and associated price changes naturally serve to bring about some of the changes being advocated. It will also serve to sort out which of these changes are the most advantageous to make.

Thus, while these sorts of arguments may be advanced for the purpose of supporting a family-farm oriented agriculture, it would not appear wise to take them seriously. Nevertheless, further research into the economics of energy, non-renewable resources, and environmental concerns within the agricultural sector would appear appropriate.

5.5.4 Maintenance of Rural Populations

The fourth argument for maintaining a family-farm oriented agriculture is based on the assumption that a large number of family-farm businesses are better for rural communities than a few large farm businesses. However, it is difficult to find conclusive supporting or contradictory evidence. The existence of economic linkages between farming and related economic activities in rural communities is well-documented. These linkages have been measured by regional input-output studies. But, to some significant extent, such relationships exist independently of the number of farms. They are determined by levels of farm economic activity (i.e., sales and purchases) and labour required to generate this activity. These could be organized as few or many farm units. Thus, perhaps level of economic activity is more important than number of farms. Those who despair over the disappearance of family farms appear to be simply identifying a regrettable symptom as opposed to zeroing in on the real problem of concern. In fact, some of the more prosperous communities in the Prairie Provinces have a relatively low population density because farming enterprises in those areas are organized on relatively large areas. On the other hand, there is little doubt but that the creation of a farm sector with average farm size of, say 200 hectares in the Atlantic Provinces would cause substantial disruption in rural communities. (Indeed, this appears to be essentially what is happening.)

It should be noted that the depletion of economic advantage for an area or region based largely on agriculture will certainly have profound and serious effects on associated rural towns and villages. Parts of Eastern Canada already bear witness to this phenomena. However, this situation, while regrettable, is not especially relevant to a discussion of family-farm agriculture. And depletion of economic advantage is perhaps no more common or serious in agriculture than in other resource-based sectors (e.g., mining, forestry, fishing).

However, the development of a few large-scale corporate farms would, in many rural communities, seriously alter the local power base and convert such communities into virtual company towns. The problems associated with these are well-known and, therefore, such situations are to be avoided, if possible. Indeed, this is perhaps one of the reasons why a family-farm agriculture is considered to be superior, on social grounds, to alternative forms of farm organization.

5.5.5 Equal Rights for All Groups in Society

This argument exists because of two essential features. Firstly, Canadians appear to accept the right of individual minority groups in society to have a significant voice in their own destiny. The existence of labour unions is a case in point. The sorts of concessions which such unions have won further strengthens the case. And most governments are strongly committed to consulting with and considering opinions of the farming community prior to initiating programs or modifying policies. The second key feature of this argument is that the farming community has already come out firmly in support of a family-farm orientation for Canadian agriculture. These two features combined serve to provide a compelling argument for the family farm.

5.5.6 Alternative Family-Farm Orientations

The foregoing discussion suggests four alternative family-farm orientations which might be considered for Canadian agriculture. These four alternatives are derived from two distinctly different approaches to each of two policy issues. The issues are:

- non-family farm businesses

- numbers of family farms (or structure of the family-farm sector)

The first of these issues is one which most governments would be reluctant to tackle directly as it involves preventing, prohibiting, and/or discouraging specific types of farming enterprises. Nevertheless, some activity in this area has already taken place and more seems likely to occur, although this activity has usually not been by means of direct, overt action. The second issue is one on which most governments are willing to take a clear stand in principle but for which they find it difficult to implement programs entirely consistent with their basic position. The two main alternative policies with respect to non-family businesses are:

- policies to discourage, but not prohibit, non-family businesses in order to enable family businesses to continue to dominate as has been the case in the recent past.

- policies to specifically prohibit non-family farm businesses from developing further than at present and perhaps even forcing those which already exist to go out of business.

The first of these policies would permit the continued emergence of some non-family businesses and would surely involve a continued monitoring of these businesses to determine the extent to which they control production of specific commodities. The second would completely reserve the farm sector for family enterprises.

The two main alternative policies with respect to numbers of family farms (or structure of the family-farm sector) are:

- specific policies to encourage and assist low-income operators of small-scale family farms thereby increasing their capability to compete with larger family-farm enterprises.

- policies to encourage and assist all family farms equally,[15] thereby further accentuating the relative position of larger family farms in the industry.

The first of these policies obviously permits smaller operators to obtain public assistance and encouragement not available to their larger, commercial colleagues while recognizing that some public programs would probably continue to be available to all farmers. The second would provide no special assistance to smaller operators and would not discriminate in public programs in any way as long as a farm business qualified as a family-farm unit.[16] The first course of action is believed to be one which would (1) reduce income disparaties within the agricultural sector and (2) make it possible for an increased number of family farms to exist. The second would do neither.

In summary, the four alternative family-farm orientations are as follows:

1. Discouragement of non-family businesses and special assistance for smaller-scale family farms.

2. Discouragement of non-family businesses with no special assistance for smaller-scale family farms.

3. Prohibition of non-family businesses and special assistance for smaller-scale family farms.

4. Prohibition of non-family businesses with no special assistance for smaller-scale family farms.

Alternative 2 is obviously the weakest and 3 the strongest of the four scenarios. Orientation 1 is perhaps closest to current policies.

5.6 POLICIES AND PROGRAMS TO MAINTAIN A FAMILY-FARM ORIENTATION

The concluding comments of the previous section outlined four alternative family-farm orientations in terms of alternative policies regarding (1) non-family businesses and (2) numbers of family farms (or industry structure). This section considers these policies in more depth and discusses program mechanisms for their implementation.

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15. This, in fact, is an oversimplification of reality. Programs which are equally available to all farmers are usually accessed first and most effectively by larger-scale farmers, if the programs are useful ones. Thus, equally available programs tend to favour larger units.

16. This policy can be effective in discouraging non-family units.

5.6.1 Policies re Non-Family Businesses

An essential requirement for implementing policies in the first area is the identification of what is, and what is not, a family-farm business. As noted at the outset of this paper, there is no readily-accepted, fully-specified definition in existence. There are many cases which obviously fall into one class or another. There are also many cases which are not so obvious such as hobby farms, Hutterite colonies, and family corporations which are involved in other activities as well as farming. Additionally, various types of contracting arrangements have been considered that render the farmer who uses them more like a hired labourer than a businessman. One of the key points considered by governments in designing agricultural programs is determining who will be eligible to participate. Such discussions often result in the exclusion of some types of non-family units. Thus, governments appears willing to discourage at least some such units. However, this does not imply that a clear, acceptable definition of family versus non-family farm business can be arrived at. The current ad hoc, highly variable approach may be preferred.

Another factor to consider in relation to the issue of non-family businesses is the overall Canadian philosophy of free enterprise and encouragement of individual initiative. Both of the two alternatives suggested would essentially require an adoption of the position that agriculture is somehow different from other sectors. (Because of the positions already taken in agricultural programs up to now, this position has alreay been partially established in a de facto way.) Most non-family businesses of the sort which might be discouraged or prohibited would be acceptable in other parts of the economy. An exception might be Hutterite colonies (if they were considered to be a non-family business), but this is simply because their entire existence is agricultural. This factor alone would probably make the alternative of prohibiting non-family businesses unacceptable as an element of government policy. The strategy of attempting to use the discouragement approach, while reserving the prohibition approach as a fall back position, seems to be more appropriate.

5.6.2 Programs re Non-Family Farm Business

The appropriate method(s) to use in discouraging or prohibiting non-family farm businesses would require substantial analysis before a decision could be reached. To some extent, some such businesses are now discouraged by being declared ineligible for public agricultural programs. (On the other hand, farm organizations have maintained that current income tax policy encourages hobby farms at the expense of full-time family farmers.) However, this is a passive type of discouragement which will simply place such businesses at a modest disadvantage. (For example, corporate farmers who are not eligible for FCC loans will simply borrow from private sources at a slightly higher rate.) The primary program instruments which could be considered under the discouragement alternative include:

- restricted eligibility in public agricultural programs (grants, credit, advisory services, etc.);
- limited tax advantages for non-family farm businesses;
- limited availability of product marketing quotas to non-family businesses.

If this policy option were to be implemented, an initial step (after the decision regarding family versus non-family businesses) would be to itemize all public agricultural programs, marketing board policies, and taxation regulations of relevance. Each could then be checked as to its applicability to non-family businesses. (Indeed, if a clear set of definitions of non-family farm businesses were established, levels of participation or involvement in each of these areas could be set.)

The prohibition of non-family businesses is a substantially different policy option which could be effected by regulation on either the ownership of essential resources or the marketing of agricultural products. Agricultural land is a prime candidate for the first possibility.[17] However, as this is an area of provincial responsibility and some provinces are already experimenting with restrictions of this sort, it would not seem appropriate to attempt to work this way. By making non-family businesses ineligible for product quotas, it might be possible for the federal government to prohibit non-family businesses in many commodity areas.

Out of the seven key characteristics of family-farm businesses outlined at the beginning of this paper, almost all have been, or are currently, the focus of some public programs which are heavily oriented to encouraging family versus non-family farms. Land tax policies sometimes favour family farms; public credit policies usually favour family farms; agricultural training programs are often oriented to fit in with family labour utilization; marketing boards often favour family businesses; income tax regulations limit losses to hobby farmers; and special arrangements are considered appropriate for family-farm corporations. Perhaps the most significant feature of the set of policy instruments now in place is that there is no commonality with respect to what is and what is not, a family farm.

5.6.3 Policies re Farm Numbers (or Industry Structure)

At present, there is no specific federal policy in Canada concerning the appropriate number of farms or the distribution of income and/or production among them. Several provincial governments have specific policies to 'maintain farm numbers' and/or provide a 'stay option' for rural residents. In the early 1970's, it appeared as though the federal government would adopt a policy of speeding up farm consolidation and reducing farm numbers. However, the program intended to do this (SFDP) was substantialy modified before implementation.

Nevertheless, it would appear generally accepted that, ceteris paribus, most people would prefer more family farms to less, and would prefer a more equal distribution of income to a less equal one. The problem arises in identifying what one has to give up to get to this state of affairs. This discussion does not deal with the question of what one has to give up. It merely tries to clarify the difference between:

(1) a policy to promote greater equality and greater numbers of farms;

(2) a policy which is indifferent as to equality and numbers of farms.

17. Water has been used for a similar purpose in some of the western states of the United States.

It is implicitly assumed that programs directed to assisting smaller, low-income producers will (1) enable them to earn greater incomes and compete more vigorously with their commercial colleagues and (2) thereby work towards increasing the total number of farms in the industry (over and above what would have existed otherwise).

These assumptions may not necessarily be correct. There has already been a substantial public investment in Canada in programs directed at low-income farmers. Many of these do not appear to have had significant impact on improving the incomes of target clientele. Some have functioned largely as transfer payments; others may have contributed somewhat to farm consolidation. Thus, the extent to which public programs can help lower income farmers become more competitive is not well established. Furthermore, it is not clear that this sort of assistance, if effective in helping target clientele, will necessarily improve equality of income distribution within the agricultural sector and increase the number of family farms. For example, one of the results of the Manitoba Farm Diversification Program appears to be that some people find out sooner than they otherwise would that farming is not their best alternative. Thus, a program designed to assist in farm development may, in fact, be contributing to farm consolidation.

Nevertheless, if one is interested in greater equality and more family farms, the alternative to assisting small-scale, low-income producers is to discourage larger-scale family farms. This has not been considered as a feasible option although some changes in current policies made possible as a result of assisting small-scale farms, might work in this direction. For example, changes in the federal farm credit program to focus attention on small-scale farms might involve raising interest rates to competitive levels for larger-scale units. This would very likely attract more private capital into the farm credit field and free public funds for assistance to the low-income sector.

It is clear that implementation of any policy to promote greater equality and greater numbers of farms (than would otherwise exist) would require substantial analysis before deciding on the appropriate set of programs for implementation purposes. One of the key considerations in such an analysis would be the necessity of keeping Canadian agriculture competitive in both Canadian and foreign markets.[18] Thus, this policy should be oriented towards assisting farmers to develop to sizes which would attain very close to maximum possible economies of scale. In other words, programs to assist smaller farms and make them more competitive would certainly have to be oriented to increasing their volume of business. This gives rise to the concern voiced earlier that such programs may, in fact, decrease, as opposed to increase, farm numbers. However, to the extent that markets can be expanded or that small farmers can bid resources away from larger ones - presumably only very large ones - this may not occur. Either of these circumstances could contribute to greater equality of incomes as well as increased numbers of farms.

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18. This is also one reason why a specific policy of discouragement of large-scale family-farm units was not considerd as a feasible alternative.

It should also be noted that the second policy option (i.e., one which is indifferent as to equality and numbers of farms) is different from the current policy implicit in some government programs. Indeed, current policies implicitly appear to lie between the two alternatives identified in this paper. For example, large-scale family farms are currently ineligible for assistance from the Farm Credit Corporation under regulation 12(2). In addition, some requests for product quotas to marketing boards are apparently refused because they are too large. Furthermore, eligibility for assistance to producers under some provincial and federal stabilization programs is curtailed at certain levels of output. Thus, in some sense, small producers are favoured under current policies.

5.6.4 Programs re Farm Numbers (or Industry Structure)

Programs to assist small-scale, low-income producers to become more competitive should be designed to zero in on the root causes of their current lack of competitiveness. These include:

- limited managerial ability reflected in:
  - use of out-dated technology
  - poor business organization;
- lack of capital; labour-saving is not a primary consideration);
- limited land area or quality;
- limited access to markets.

Programs currently available to the industry (e.g., extension, credit, training) are a potential answer to the problems of many low-income producers. However, for those with poor natural resources (soil and climate) and/or access to markets, these programs would be insufficient.

For the group of low-income producers who can be assisted via extension, credit, and training programs, the answer seems to be to find ways and means of getting them effectively involved in these programs. One way of doing this is through an integrated farm development program such as that being planned for Manitoba. While this program involves development incentive assistance in the form of grants, the grants are only a small element of the total program as opposed to some of the development programs which have been put in place in the past. Modifications to existing extension, credit, and training programs may be required to make them more effective with this group of clients.

For the group of low-income producers who face natural resource or market limitations, existing programs focused on these areas may require modification. For example, soil and climate have limited potential for agriculture throughout many parts of Eastern Canada. Assistance to maintain family farms in these regions would have to be heavily oriented to soil and water conservation and development as well as research to develop new technology for producing under

these conditions. Earlier projections of farm numbers for Quebec and the Atlantic Provinces illustrate this point. Maintenance of farm numbers in these areas will depend critically on the quality of the land base currently occupied and the technology available to use this land base competitively.

Some market limitations faced by low-income producers are created by public policies. Production quotas are typically allocated to producers initially on the basis of production in the recent past. Small producers are then faced with a constraint on expansion or the alternative of buying more quota. One way around this dilemma would be to consider allocating all producers equal quotas or introducing multi-stage quotas (i.e., second and third stages would command lower prices but everyone would have equal-sized stages). Substantial analysis would be required before a design on the appropriateness of such possibilities could be made.

6. DEMAND AND SUPPLY MANAGEMENT

6.1 BACKGROUND

6.1.1 Introduction

Canadian farm policy developments over the post-World War II period may be understood only in terms of the agricultural and general economic conditions of the period. It has been a dynamic and very productive period, but generally economically painful for farmers. The dynamic character of Canadian agriculture is clearly revealed by the fact that improved land in the industry increased by only eight percent over the period 1951-71, while the total volume of production increased by more than 50 percent, most of it from improvement in yields. For instance, average wheat yields in the Prairie Provinces increased by 24 percent from the average of the crop year period 1950/51 - 1954/55 to 1970/71 - 1975/76; corn yields in Ontario rose by an average of 47 percent from the 1950-54 period to 1970-76; barley yields in the prairies averaged an increase of 39 percent over the period from 1950-54 to 1970-74; and milk production per cow increased from an average of 2,172 kilograms in 1950 to 3,762 kilograms in 1975 - or by 73 percent. The yield increases cited above were accompanied by a large-scale substitution of fertilizer, machinery, gasoline, electricity and other purchased inputs for human labour and land. Actually, the Canadian agricultural labour force decreased by 340,000 or 42 percent between 1951 and 1975.

6.1.2 The 1960's

The net farm income of Canadian agriculture in the decade of the 1960's ranged from $926 to $1,813 million with a median figure of $1,520 million. This represented the average of the returns to farm family labour, management, and farmer-owned assets. Over the decade, the median figure of farmer-owned investment is estimated at $13,424 million. Employing a seven percent interest rate, the average accounting cost of using that capital or keeping it in agriculture was some $940 million. Thus, it is evident that on the average the agricultural labour force of some 600,000 was working for very low returns, the above not accounting for returns to management. If one were to impute a wage as low as $3,000 per worker per year, then there would be negative returns to capital and management.

In the United States (US) during this period, a very large excess of resources existed in agriculture. Most research workers ascribe this to the rapid gains in productivity in the 1950's and 1960's. In the later 1960's, the US Government was paying farmers to place nearly 24 million hectares of crop land in land retirement and land conservation reserves. The economic situation which led the US Government to such drastic action generally can be said to have prevailed in Canada as indicated by the low level of net farm income. Prices received by farmers increased by only 16 percent while the cost of purchased inputs rose more than twice that rate over the decade. This is a measure of the cost-price squeeze in the 1960's. The volume of agricultural production increased by 20 percent over the decade. This increase fell on

demands characterized by low price and income elasticities of demand. Expansion of exports of agricultural products were adversely affected by the restrictive policies of the European Economic Community (EEC) and the aggressive surplus disposal programs of the United States.

6.1.3 Policy and Policy Development in the 1960's

In comparison to the agricultural policy development of the United States, the European Economic Community and Britain, that of Canada was low-keyed. Those countries or areas either had comprehensive programs in place at the beginning of the decade or took strong initiatives during the 1960's. The commitment of important sectors of Canadian agriculture to export trade acted as a deterrent to the adoption of comprehensive programs aimed at supporting farm incomes. There was continuing price support program for the dairy industry, and a few commodities (e.g., hogs and sugar beets) were afforded modest price supports under the Agricultural Stabilization Act.

While direct interventions for the improvement of farm incomes were not of great importance or broadly based in the 1960's, the institutional structure was significant in providing services of great importance to the industry. Thus grain marketing was dominated by the Canadian Wheat Board; the trade was regulated by the Canadian Grain Commission and its predecessor; the movement of feed grains from the prairies to Eastern Canada and British Columbia was subsidized; and western grain growers were provided with limited income insurance through the Prairie Farm Assistance Program.

A well developed agricultural credit program operated throughout the decade; however, the maximum loan to an individual farmer during most of that period was $40,000. Federal policy was in support of provincially organized producer-marketing boards. The Crop Insurance Act, legislated in 1959, provided for the Federal Government to underwrite some of the costs of provincially operated plans. Amendments through the 1960's resulted in the plan becoming quite comprehensive by the end of the decade. Improvements in farm production technology and in the food processing industries were to a considerable extent the result of a moderately large and generally well conceived research program.

6.1.4 The 1970's

Overall, during the years 1970-75, the cost of goods and services purchased by farmers rose by 64 percent. (The corresponding increase during the decade of the 1960's was less than 40 percent.) Granted that farm level prices increased by 96 percent in the first five years of the current decade, they have since receded sharply giving rise to real hardship for some farmers. One of the most serious challenges to policy development over this next decade is to develop a combination of policy options which would protect the income position of farm families who will be forced to face an 'intolerably' high cost structure.

The most visible sectoral distortion of the 1970's is that between feed grain producers and the livestock farmers who depend on purchased feed grains. For the 1970 period, the following tabulation presents (1) an index of feed grain costs; (2) the weighted average price of 'good steers' at Winnipeg; and (3) the weighted average price of hogs (score 100) at Winnipeg.

Table 10 PRICES OF FEED GRAIN, STEERS AND HOGS, CANADA, 1970 TO 1975

Year	Feed Grain 1961 = 100	Steers-dollars per hundredweight	Hogs-dollars per hundredweight
1970	98.5	30.26	29.20
1971	102.3	32.40	22.85
1972	102.1	35.07	34.00
1973	155.6	45.14	51.31
1974	230.3	48.76	46.12
1975	236.6	43.80	62.55

Source: Statistics Canada, Cat. 62-004 and 23-203.

In contrast to the situation in cattle and hogs, Canadian farmers cash income from the sale of grains and oilseeds rose from a level of $875 million in 1970 to $3,680 million in 1975; and realized net income from $1,345 million in the former year to $4,176 million in the latter.

6.1.5 Performance in the Processing/Marketing Sector

There is a very great interest and concern about the economic performance of this sector, and particularly its role in the inflationary period of the 1970's. However, there are little hard data to analyze. Thus, perhaps the most useful conclusion is the need for careful research in this area. This would at least reduce the confusing statements reported in the press.

Nonetheless, one fact is clear. The productivity of the major groups in the processing/distribution sector tended to decline in 1972, 1973 and 1974. Indeed, the Food Prices Review Board reported in 1975 that:

> "It can be concluded that the recent record of productivity in the food industry is poor. The analysis in this report shows that constant dollar sales per employee have fallen dramatically for all but one of the industry groups. For the group which recorded an advance in 1974 (dairy products), the rise was much less than had been recorded earlier. An increase in the remuneration of labour or of capital without a commensurate productivity advancement will contribute to higher prices."19

19. Food Prices Review Board, Food Company Profits and Prices, II, p.37.

6.1.6 Conclusion

The extreme instability of income, which agriculture has endured, throughout the world has resulted in numerous methods (some proposed, some adopted) of managing demand and supply in order to reduce the instability and protect the returns to producers. In the following section, a number of these methods are described.

6.2 DEMAND MANAGEMENT

A variety of programs have been used to influence the demand for agricultural commodities. These have included programs which may be divided into three broad categories: domestic consumption subsidies, sales promotion and multiple price plans.

6.2.1 Domestic Consumption subsidies

Domestic consumption subsidies take the form of government payments designed to lower the cost to domestic consumers of specified products. These payments may be paid to consumers directly, or indirectly through producers, wholesalers or retailers. In theory, the subsidy allows an expansion in effective consumer demand for the product. In the fall of 1974, the Federal Government introduced a consumer subsidy on fluid milk (5 cents a quart), and on instant skim milk powder in consumer-sized packages (20 cents per pound, equal to 5 cents per quart reconstituted). The fluid subsidy continued for one year and was then phased out over a brief period. The skim milk powder subsidy is still in effect and the per pound subsidy has increased from 20 to 34 cents. During the four fiscal years 1973-74 to 1976-77, over $40 million has been paid to skim milk powder processors in subsidy payments by the Federal Government. Canadian experience in consumption subsidies has been very limited. The United States, by comparison, has employed a wide range of programs of this nature.

Large scale food consumption subsidy programs in the United States began in the 1930's. At that time, the primary reason for their adoption was the desire to increase farm incomes; nutritional improvement and welfare were secondary considerations. But by the end of the 1960's, the latter considerations had become of primary importance, even though farmer interests continued to dominate in the kinds of programs which were established.

The types of programs which have been employed include: direct distribution of food to needy families; food stamp plans, i.e., selling stamps good only for the purchase of food, the price of the stamps being adjusted in accordance with the recipient's income; school lunch, school breakfast, special milk and other programs for school children;[20] assistance to institutions - hospitals, homes for the elderly, etc.

20. Almost 80 percent of the schools in the uNited States and nearly to percent of the students participate in the school lunch program. One third of the lunches are free or sold at a reduced price.

Cochrane and Ryan show that over the period 1970-72, expenditures on the above food assistance accounted for about 26 percent of the cost of all farm and related programs; in fiscal years 1971 and 1972, the above expenditures exceeded $2 billion annually.[21] In addition,[22] local governments contribute one-half or more the administrative costs.

The European Economic Community (EEC) has general food subsidy programs as well as assistance for special disadvantaged groups. A subsidy is paid on 520,000 tonnes of imported sugar. Dairy products, beef, veal and sugar are provided to welfare organizations as well as to certain other groups receiving social security assistance. The subsidy on dairy products alone cost about $70 million in 1974.

Recognizing the importance of food imports, a condition for British entry into the EEC was a contingent payment by the Community of subsidies on butter, beef, veal and sugar. With the high world prices of 1974, the subsidy paid by the British on butter alone was about $250 million; butter actually sold in Britain for less than half the price which prevailed in the continental countries of the EEC.

Direct distribution of food, which the United States practiced for many years, was an accommodation to particular agricultural programs which led to the creation of surpluses. Thus, it had some effect in terms of changing consumption patterns. The subsidies of the food stamp plan tend to increase food consumption and presumably nutrition of the poor.

While food consumption subsidies were widely favoured in the 1940's and 1950's a study in 1959 concluded: "There is little possibility that the surplus problem in agriculture can be fully alleviated by lifting the income restriction on food consumption for low-income families".[23] That study justified subsidized food distribution entirely by the welfare of the poor and this is the accepted position today. However, there continues to be considerable criticism of the food stamp program in the context of its not realizing the improvement of nutrition which might be achieved under alternative methods of food distrubution.

While the nutritional benefits from the school milk and school lunch programs are widely agreed upon, other programs appear to have had limited results either in terms of nutrition or of providing assistance to farmers. It is necessary also to add that there are abuses arising out of the administration of the food stamp program.

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21. Cochrane W.V. and M.E. Ryan, American Farm Policy 1948-73, Minneapolis, University of Minnesota Press, 1976, pp. 350-2.

22. The New York Times, January 17, 1977, reported that the cost of the Food Stamp Program in 1977 was $5.6 billion and aided 17.2 million people.

23. Westmore, J.M., Abel, M.E., Learn, E.W. and W.W. Cochrane, Expanding the Demand for Farm Food Products, Minnesota Agricultural Experiment Station Technical Bulletin 231, p. 98.

A recent Gallop poll found, in response to the question: "Does your family have enough money for food?", that the negative responses in the United States were 14 percent and in Canada six percent. This fact alone and the fiscal difficulties confronted by most governments in Canada, lead to the conclusion that it is not prudent to adopt such schemes.

6.2.2 Sales Promotion

In Canada

Canadian agricultural exports include wheat, wheat flour, barley, rapeseed, flaxseed, tobacco, livestock, potatoes, apples and dairy products.

Through most of the 1960's, direct expenditures for export promotion by all governmental and private agencies are estimated in the range $1.0 - $1.5 million per year.[24] Under the pressure of the EEC's and Japan's protectionist policy, the changing technology of the milling industry in Britain and Europe, growing competition from the United States, Australia, Argentina and France, the Canadian Government and the grain and oilseeds trade developed organizations to promote exports of wheat and rapeseed. Subsequently, federal and provincial governments together with farmer organizations undertook sales promotion of tobacco, dairy products, fruits, vegetables, hogs and poultry. Most of these products have governmental support. The Report cited notes that, in the late 1960's, the Federal Government began a many-fold expansion of its program for foreign market development in order to regain lost wheat markets and to win new outlets for the expanded output of barley and rapeseed. Gradually, the program was extended to other farm products.

Market promotion by the Canadian Wheat Board has concentrated on sales of high quality wheats, including durum, with emphasis on the varietal needs of each market area. Since about 1970, sales of barley have been in competition with United States corn on world markets. The Board's offices in Brussels, London and Tokyo collect information on customers' requirements and preferences, outlook on crop conditions and on competitive forces operating in each market

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24. This section draws heavily on: USDA, Canada's Export Market Development for Agricultural Products, Foreign Agricultural Economic Report, No. 107, 1975, p. 21.

    The Report lists the following activities under the general control of the Department of Industry, Trade and Commerce: (1) the Market Development Fund for Agricultural Products ; (2) trade fairs and missions and other traditional programs of the Department; (3) the Program for Export Market Development which concentrates on assistance to usually small companies. It further lists the programs of the Canadian Wheat Board, the Canadian International Grains Institute and the Canada Grains Council. It deals with the work of Agriculture Canada in providing technical support for programs of other agencies and in taking a major responsibility for providing the research and information required by all agencies, public and private. The Report also describes the export promotion work of the national marketing agencies, of credit programs for promotion of exports to the developing and communist countries, and finally the activities involved in improving export grain handling and transportation facilities.

area. Sales missions are sent out either on the initiative of prospective buyers or on the decisions of the Board. The basic promotion scheme is the distribution of crop and milling information to foreign buyers identifying the major characteristics of Canadian products and emphasizing the superiority of Canadian wheat and barley. Private companies have had no major role in promoting sales until recently when the Board sold a large quantity of wheat to private trading companies for sale on their own account.

The Department of Industry, Trade & Commerce (IT&C) handles an estimated 95 percent of the Federal Government's expenditures on market development for agricultural commodities.[25] Its role in the promotion of agricultural exports was expanded manifold in 1972 when it was charged with overall administration of the Market Development Fund for Agricultural Products.

The fund provides assistance to private firms, associations, universities and similar entities which prepare programs for sales expansion, conduct research on market potential and investigate possible new markets.

The IT&C is responsible for arranging trade fairs and trade missions. In the past, these have been devoted mainly to non-agricultural product sales; however, recently an increasing number of them have been devoted to farm products both in fresh and processed form. These are designed to extend the scope of private initiative by assisting projects that would not otherwise be undertaken. The program applies to domestic and export marketing and Agriculture Canada makes an important input into the trade fair program.

Rapeseed is a special case of sales promotion. The Rapeseed Association of Canada (RAC) operates an export promotion program by means of trade missions and disseminating information on the quality and modes of utilization of Canadian rapeseed and its products. It receives financial aid and cooperation from the Federal Government. The recent and present success of this promotion is dependent on the outstanding research which led to the new low-erucid acid variety. The RAC has a role in organizing the research and a very major one in securing the rapid adoption of the new variety. The RAC promotes both domestic and export sales. In the former, there are problems associated with the relatively small capacity of the Canadian crushing industry and the location of the crushing industry relative to transportation. These are difficult problems but not totally intractable. For instance, if the RAC encouraged the development of rapeseed producers cooperative, which could contract with existing elevator systems to receive and forward the product, it might well be possible to negotiate forward contracts with crushers. On the export side, sales are concentrated on one customer; Japan purchased 83.9 and 89.5 percent of all exports in 1974/75 and 1975/76 crop years respectively. However, through the influence of the RAC, the EEC import tax on rapeseed, introduced in July 1967, was dropped in February 1972.[26] But even so, the competition is very severe due to the rising supplies of palm oil and to the entrenched market position of United States soybeans and soybean meal in Europe. About 15 years ago, the United States obtained a concession from the EEC during the Dillon Round of trade negotiations to bind its tariffs on imported soybeans and soybean meal at zero.

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25. Ibid, p. 22.

26. Ibid, p. 57.

Under provincial government programs, the Alberta Export Agency was established in 1973 to negotiate export sales and/or to provide credit, insurance, and other services for exports of certain products. It has negotiated or assisted various groups in completing export transactions. Trade missions have been used by the Alberta government, and the province maintains permanent trade offices in Tokyo and London.

The Manitoba Export Corporation, created in 1963, is associated with the Provincial Department of Industry and Commerce. In cooperation with the Manitoba Hog Producers Marketing Board, the Corporation is engaged in sales promotion of hogs in foreign markets, especially Japan and the United States. Cattle and other farm products' sales have also been promoted.

The Ontario Food Council, a branch of Ontario's Ministry of Agriculture and Food, has a large program for promoting exports of Ontario farm products. Roughly 20 percent of its total budget has been for export promotion.

The Ontario Flue-Cured Tobacco Growers' Marketing Board regulates production and marketing of the province's flue-cured tobacco. In 1972, the Board approved the establishment of an export development fund, which is used to subsidize exports of Canadian tobacco. The Board's activities include the use of missions and organizing trade fairs in several countries. While the greatest effort has been directed at Britain, in 1973 Canadian exports of flue-cured tobacco to China accounted for 0.6 million kilograms out of total flue-cured tobacco exports in 1975 of 34.5 million kilograms.[27]

During the 1960's, 85-9[illegible] percent of Canadian hog exports went to the United States. As the eating habits and incomes in Japan changed, Canadian pork exports to Japan increased from 16.8 million kilograms in 1971 to 47.2 million kilograms in 1975.[28] The Manitoba Hog Producers Marketing Board, the Alberta Hog Producers Marketing Board and the Saskatchewan Hog Marketing Commission have taken an active role in selling pork to Japan. These organizations operate in close cooperation with their respective provincial governments and with private export companies. Also, they conduct promotion work in the United States, the largest export outlet for Canadian pork. The Manitoba and Alberta Boards have three-year export agreements with Japan. These efforts meet with competition from the United States, Australia and Taiwan; however, Canadian exports have come to account for an average of some 20 percent of Japanese imports.

The British Columbia Fruit Board, through its agency British Columbia Tree Fruits Limited, controls all commercial tree fruit sales in the province. Based on demand and supply assessment, British Columbia Tree Fruits Ltd. develops a market strategy. It accounts for three-fourths of Canada's apple exports. Promotional efforts are focused on many countries including potential new markets such as Hong Kong, Singapore and other Asian areas. Even New Zealand and Australia which export a substantial quantity of apples to Canada have purchased Canadian apples following trade mission visits. The Horticultural Council of Canada commissioned research to assess the new

27. Agriculture Canada, Canada's Trade in Agricultural Products, 1973, 1974, 1975, p. 6.

28. Ibid., p. 8.

situation on the traditional British market after Britain entered the EEC. In cooperation with the IT&C, the Council also carried out promotional activities in the Caribbean.

The Ontario Bean Producers' Marketing Board concentrates promotional activity on the EEC market since Britain was the traditional buyer of Canadian white beans. It also sends missions to Europe, North Africa and the Middle East and these efforts have been attended with success.

The three prairie grain handling cooperatives and the United Grain Growers established an export sales and promotional company with the name Excan Grain Limited (Xcan). The primary objective of this new company is to expand exports of Canadian grains and oilseeds. It now handles perhaps 20 percent of Canada's grain exports and a large share of rapeseed exports,[29] and its share of total grain and oilseed exports is increasing.

In the United States

The Federal Government as well as private companies engage in several export sales promotions of agricultural products. In the Caribbean, private firms collaborating with the tourist industry have put United States food into major resort areas and have built up a very strong market position. In Japan, United States companies have carried out aggressive market promotion by means of mobile bakeries. Here, the focus was on the Japanese milling and baking industries as well as on institutional buyers and householders. This was extended to include other United States produced raw and processed foods.

The United States exported 3.0 million and Canada 1.5 million tonnes of wheat to Japan in 1975.[30] Those of the United States trebled from 1956 to 1970 and trebled again from 1970 to 1975. United States farm products have found a broad market in the OPEC countries while Canadian agricultural sales are practically non-existent. United States agricultural exports to these markets in 1975 reached $169 million or almost triple the value of three years earlier. Saudi-Arabia, the leading food importer in the area, imports about two-thirds of its food supply.[31] Canada has no agricultural exports to that country. United States agricultural exports to Iran increased from $43 million in 1971 to $757 million in 1975.[32] Canadian farm exports to Iran were close to zero.

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29. Canada's Export Market Development for Agricultural Products, op. cit. p.71.

30. USDA, Foreign Agricultural Trade of the United States, March 1976, p. 31.

31. USDA, Foreign Agricultural Trade of the United States, October 1975, p. 54.

32. USDA, Foreign Agricultural Exports of the United States, September 1975, p. 4

The relative success of actual product promotion by the United States food industry shows what achievements are possible. And it should be emphasized that the success is largely a result of private initiatives. The role of the United States Government was largely limited to (1) identifying foreign market areas where success might be achieved, e.g., the rapidly expanding economy of Japan in the late 1950's and 1960's; (2) providing a continuous flow of excellent information regarding the economies of various areas, their food consumption habits, etc.; (3) organizing activities such as food fairs and contacting relevant parties, e.g., food import companies, wholesalers, buyers for hotels and hospitals; and less important, (4) providing some surplus United States farm products purchased at support prices in excess of competitive world levels. The programs are actually very largely the work of some hundreds of individual food processors, processor associations, farmer commodity groups and, in some cases, state governments.[33]

If one is to attempt to account for the greater scope of the United States effort compared with that of Canada, one must consider the more aggressive approach of United States management, the higher state of development of American food technology, the very size of the United States food processing industry, and the fact that it operates in a more competitive climate.

Schmitz and McCalla are critical of the low profile sales and promotion policies of the Canadian Wheat Board in its failure to acquire new commercial markets which they ascribe to Board policy.[34] While they concede that the Canadian wheat industry enjoys an international reputation for its strict regulation in quality control and trade practices, they note that Canadian production and exports of grains have not risen significantly above levels achieved 50 years ago. On the other hand, United States grain production has trebled in the last 35 years, and exports have trebled in the last 15. They assert that the United States marketing system is more flexible and adaptive. They also show that during the period 1971-75, United States wheat exports increased from 17.2 to more than 29.9 million tonnes while Canadian wheat exports decreased from 13.7 to 11.9 million tonnes in the same period. Not only do the above data reflect the marketing system of the Canadian Board, but also the limited areas in Canada adapted for wheat production. Nonetheless, they do point to the need for further examination of promotion policies to adapt them to the highly competitive markets which Canada will face over the next decade.

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33. According to USDA Foreign Agriculture, Vol. 14, No. 44, 1976, pp. 8-9, three food fairs in as many cities brought 700 key British food industry people to sample some 500 products of 76 US companies. Of the 500 preparations, 300 were new to the market. The results were described in exciting terms, but there was agreement among the US participants that they were selling American technology much more than selling American farm products.

34. Schmitz, A. and A. McCalla, Comparison of Canadian and U.S. Grain Marketing System, mimeo.

On an International Scale

International agreements for wheat, cocoa and coffee as well as for certain metals were among the first attempts to bring some degree of stability to world commodity markets. The International Wheat Agreement (IWA), and later the International Grains Agreement (IGA), represented a contract between signatory groups of exporting and importing countries. The contract was based on a guarantee by each exporting signatory country to deliver, and each importing signatory to accept, specific quantities of wheat within the price range provided in the Agreement. Not all of the importing countries were signatories and even the signatory countries did not commit themselves to purchase all of their requirements through the Agreement. Non-member countries were free to sell at prices below the minima in the Agreement, and sometimes did. It was frequently alleged that some member countries were not adhering to the terms of the Agreement; when it came up for extension in 1971, exporting countries were unable to agree on price provisions or on the obligations to be imposed on exporters and importers.

Throughout the period in which the Agreement was operational, world prices seldom moved outside the established price range and only for limited periods of time. However, the world agricultural market situation which prevailed from 1972 to 1975 did not provide a favourable climate for negotiating a new wheat or grains agreement, or generally for developing strong international initiatives respecting farm commodities. The Common Agricultural Policy (CAP) of the EEC was a formidable barrier in this area while the United States extolled the free market, particularly in the area of international trade. At the same time, the OPEC countries demonstrated what could be done by exporters in terms of pricing a primary product through concerted cooperative action by major suppliers.

The food situation in the developing countries was given full exposure at the World Food Conference (WFC) in Rome in 1974. While the major item on the Conference agenda was stabilization of prices and supplies of food grains, its major achievement was securing a pledge on the part of importing and exporting countries to provide 4.5 million tonnes of wheat and/or feed grains or the equivalent in cash per year for three years. Canada's commitment was one million tonnes. The World Food Council was also established at the WFC. Meanwhile, the United States has signed five-year flexible contracts to provide wheat and feed grains to the USSR, and wheat, feed grains and soybeans to Japan. While the United States has indicated a readiness to negotiate another IWA comparable to the one in effect through most of the 1960's, it has avoided any commitment toward the development of an international plan involving carrying large stocks of food grains. This is understandable in consideration of the uncertain impact of maintaining large stocks on the structure of world prices and the costs of maintaining large grain reserves.

Looking to a world population which could approach seven billion by the year 2000, there is no way that the developed countries could fill the gap in the food requirements for the developing world. Further, it is inconceivable that a plan for financing such large requirements could be developed. The food deficit of the non-communist developing countries has been estimated to range from 70 to 100 million tonnes by the year 1985. The only means by which tragedy can be avoided is through programs of agricultural and marketing assistance to developing countries and/or through population control. Most of

the developing countries have the land for a large increase in food grain production. Some have the potential to make the shift from being food grain importers to exporters. Assistance in agricultural production and marketing should be given the highest priority by the developed countries in their aid program.

6.2.3 Multiple-Price Plans

Two-price or multiple-price plans usually are discussed in agricultural marketing literature in the context of maximizing revenue through export disposal programs or internal marketing plans such as are used for milk and for some fruits or vegetables. Segregation of markets on a geographic or other basis is essential to achieve maximum returns and the elasticity of demand must be different in each of the segregrated markets.

A classified price plan for milk eligible for fresh consumption in a given area establishes a high price for milk sold for fluid use and essentially accepts whatever lower price is necessary to move production in excess of fluid use into manufacturing uses. The demand for fluid milk is distinctly inelastic and the demand for surplus milk of one particular area in the nation's manufacturing milk supply is elastic. Thus, gross income of the producers of one given area is increased by two-pricing or multiple-pricing. However, local fluid milk markets are virtually unique in having the national market for manufacturing milk as a large secondary outlet.

The almost standard case of price discrimination is in pricing some agricultural products higher in the domestic market than in export markets. This is based on the well-estabiiched fact that for the products of any one country, e.g. Canada, the elasticity of demand is higher in the export markets. While marketing boards or other agencies which have control over the entire production of a given area do not publish the prices they receive from export sales, it seems safe to assume that export sales of flue-cured tobacco, Ontario white beans and British Columbia apples by the various boards or agencies controlling these products adhere to the practice of discriminatory pricing.

The federal domestic sales policy for wheat represents a somewhat different use of two-(or multiple-) prices. Sales in the domestic market remain within the range of three to five dollars per bushel, regardless of the level of prices in world markets. Within export sales, the Canadian Wheat Board probably negotiates different prices on large contracts in accordance with the bargaining power of the buyer, e.g., contracts with the USSR or Mainland China.

Discriminatory pricing earns the strongest disapproval when it causes injury to producers in the importing country and is then usually called dumping. This is clearly the case with certain fruits and vegetables being shipped from the United States into Canada at certain times of the year. As practiced by Canadian boards or marketing commissions, the practice appears to be above reproach, and should be continued. In fact, Canadian farm exports might well be expanded by a more sensitive use of this practice, accompanied by stronger promotional measures.

6.3 SUPPLY MANAGEMENT

6.3.1 Current Trends

Confronted with production expanding faster than the growth of demand, agricultural interests naturally consider redressing the imbalance by any method which is administratevely feasible and acceptable within the norms guiding a nation's economic policy. One of the most obvious methods is the adoption of programs which reduce inputs or which limit production and/or marketing. This is often compared to the widespread practice of the manufacturing sector adjusting output in accordance with the business cycle and even shorter fluctuations in demand. One should expect such output restrictions to have a much greater appeal to agriculture than to manufacturing because the generally lower price elasticities of domestic demand for farm products would result in greater price and income responses from the successful use of such restrictions. However, because of the differences in the structure of the two sectors, agriculture requires the use of more complicated mechanisms for the application of controls than do manufacturing industries. It is not easy to apply controls on quantities of inputs used or volume of output or sales of an agricultural commodity when dealing with large numbers of producers.

The purpose of this section is to explore the mechanisms employed, the operations of and the results arising from the use of various types of controls over input, output and amounts marketed.

In the United States

The most thoroughgoing and systematic programs to restrict output as a means of improving farm income have been those of the United States. There was a serious farm income situation in the early 1930's to which the Roosevelt Administration reacted with the Agricultural Adjustment Act of 1933; the Act provided: (1) a land rental scheme aimed at reducing production of major storable crops; and (2) a marketing orders program aimed at restricting the volume of perishable crops going to market. Along with the general economic recovery of the late 1930's, both are given credit for improving the income position of United States farmers; but both severely constrained the individual farmer's ability to employ his resources in a market context. These commodity program thus generated many distortions in the farm economy.

During World War II, farmers in the United States were again free to take independent decisions regarding the use of their resources. However, the high prices and incomes led farmers to invest in new technologies and larger scale operations which increased output and returned the farm sector to the depressed conditions of the 1930's. The United States Government responded with high levels of price support; serious surplus accumulation was avoided because the Korean War expanded the demand for farm products.

Because it is generally agreed that the 'land rental' provisions of the 1930's did not work well, most farm economists in the United States opposed a return to it after World War II. During the first decade of the post-World War II period then, emphasis was on price supports employing the Commodity Credit Corporation (CCC) purchase program rather than strict area allotments. In the Agricultural Act of 1948, Congress came up with a slightly flexible price support scheme: the restriction of land input was effected by giving access to

non-recourse commodity loans dependent on cooperation with the area control program. With yields per hectare increasing and exports of basic products falling, the level of government stockpiles rose to unacceptable heights by 1954. This situation brought on passage of P.L. 480, the surplus disposal measure allowing for concessional sales to developing countries. At this point, really flexible price support became a reality. But even this did not stem the increase in production, and the Soil Bank program was introduced in 1956. It contained two provisions: (1) an area reserve program under which no crops could be harvested from 'reserved' land; and (2) a conservation reserve designed to transfer land from cash crops in surplus to long-range conservation uses. By the late 1960's, more than 24 million hectares of land were in these 'reserves'.

Area allotments and/or area reserve programs served to reduce supply while P.L. 480, other export programs, and the food stamp programs served to expand demand. Nevertheless, even these massive programs did not clear the market; surpluses mounted during the 1950's and much of the 1960's. Cochrane and Ryan ascribe this situation to a fairly rapid shift in the supply function arising from yield and other technologies.[35]

There is a general consensus that the totality of major farm programs in the United States in the 1950's and 1960's (price supports, area diversions, export subsidies and domestic food consumption subsidies) led to net farm incomes ranging from 20 to 50 percent higher than in the absence of the programs.[36] Cochrane and Ryan take the position that an overall benefit-cost approach to assessing the contribution of the farm programs to the economy of the United States may not be relevant. They simply ask the question: "How many farmers could have survived - remained financially solvent - for an extended period in the absence of the programs?"

In Canada

The 1970 LIFT program of the Canadian Government was a striking example of land input restriction. This program was undertaken because carry-over stocks had become excessive - they had a price depressing effect, and carrying charges were exceedingly high. Under the LIFT Program, wheat area was reduced from 9.7 million hectares in 1969 to 4.8 million in 1970; the total carryover (July 31, 1969) of 27.5 million tonnes of wheat declined to 20 million tonnes one year later; summerfallow increased from 12.0 to 14.8 million hectares; rapeseed area increased from 0.8 million in 1968 to 1.6 million hectares in 1969 to 2.1 million in 1970. The cost of the LIFT program has been estimated at about $200 million in terms of public funds. As an emergency measure, it was highly effective in reducing wheat area and production; its largest impact was on reducing storage costs and financing inventories. Thus, the economic cost was likely less than the public financial outlays. The impact on summerfallow was a natural consequence, since the program provided $15.00 per hectare for

35. Cochrane, W.V. and M.E. Ryan, American Farm Policy 1948-1973, Minneapolis, University of Minnesota Press, pp. 96-101.

36. Ibid., Chapter 9, p. 374. The dynamic force of productivity is indicated by the fact that the index (total output over total input) rose 28 percent in the 1950's, and by another eight percent in the 1960's.

additions to summerfallow and only $10.00 more for additions to perennial forage area. The latter involved investment and the assumption that the program would last for several years. Yet, as farmers expected, the program was terminated after one year and now, five to six years later, no specific results in terms of land use can be observed.

The way in which Canadian public grain programs evolved out of the difficult situation of the 1930's, the requirement for very strong controls in World War II, the serious world surpluses of the 1950's and 1960's, and the limitations of Canada's grain storage and transport facilities clearly combined to necessitate the use of delivery quotas.

6.3.2 Marketing Boards

The creation of more than 100 marketing boards, authorized under provincial legislation, was an understandable move by Canadian farmers to gain for themselves the bargaining power long enjoyed by some groups of organized labour, by many professional groups and, in varying degrees, by the manufacturing and service industries. In these situations, competition vastly differs from that of the free market of classical economics and from that under which most of Canadian agriculture developed. The economic structure and mechanisms which characterize these non-agricultural sectors bring about higher and more stable prices and incomes than under free competition; it is only natural for farmers to seek the same outcomes.

One route farmers had available to join the non-competitive world was provincial marketing board legislation. This route was opted for first in the 1920's after two or three decades of farmer attempts to solve some of their felt needs in the areas of prices, incomes and stability through the cooperative movement. These efforts, which yielded fairly limited results, involved the provinces giving boards rather sweeping powers to use restrictions on inputs, outputs and/or sales under marketing board legislation.

It is estimated that less than one-half of the more than 100 boards now operating use some form of restriction on inputs, outputs or sales. The others generally regulate marketing so as to overcome abuses which existed in the free or competitive markets, the best example of which is the Ontario Hog Producers Marketing Board which eliminated rampant irregularities in hog marketing. It is worth noting that this board rendered hog marketing more, not less, competitive. It is praised by all parties in the marketing chain - not least by the packing industry which was relieved of living in a market where abuses abounded.

The boards which employ restrictions have almost always opted for restrictions on inputs. Thus, the flue-cured tobacco board in Ontario restricts inputs of land by the use of area quotas. Other boards employing land restrictions are those bargaining for producers of vegetables for processing. Once a price bargain is struck, it can be made applicable only for a specific area, which is then rationed among growers by the board, or by the processors under control of the board.

The dairy program under the Canadian Dairy Commission (CDC) is a comprehensive one which includes direct subsidies, prices announced at the beginning of the production period, producer levies to cover the cost of exporting skim milk surplus to domestic requirements and supply management achieved by allocating production quotas to individual producers and controlling the importation of dairy products.

National marketing agencies for eggs and for turkeys have been established under the National Farm Products Marketing Agencies Act. These agencies set provincial production quotas and impose levies to cover the costs of marketing. Provision has been made to base import quotas on historical records of commodities marketed by the agencies, but action under this legislation cannot be taken by the agencies. The agencies' objective is to provide stable returns to producers at levels which cover the cost of production. Therefore, producer prices are determined by cost of production formulae, and quotas are established to limit output to quantities which can be sold at those prices.

Some claim that the activities of marketing boards which employ restrictions are largely self-defeating, because quota values are capitalized and thus become an element in fixed costs. Public authorities should not permit any part of quota values to enter into any cost guidelines on which prices may be based. Under marketing board schemes where restrictive quotas are employed, it is generally desirable that they be saleable. But public authorities have a clear responsibility to insure that quota values be maintained at low to moderate levels. Thus, a measure of flexibility could be retained in the industry, and entry of new producers would not be unduly restricted.

A criticism levelled at marketing board policies is that many are inward-looking and represent in effect a denial of the essential importance of international trade to Canadian agriculture. And an even more unfortunate aspect is the orientation of some boards toward provincial self-sufficiency. This denies the gains from the dynamic qualities of the agricultural industry because society benefits if agriculture is free to shift production from one area to another as technology and markets dictate.

Finally, there is the point made by Johnson that higher prices do not, ensure higher incomes in the long run.[37] Costs rise because the net incomes resulting from higher prices are capitalized into land values or other quota values which then become part of the production costs of producers who enter the business.

In order to provide a full perspective on marketing boards, it is necessary to recognize that they have clear and important benefits. For example, the Ontario Hog Marketing Board plan led to real improvements in marketing, and the British Columbia Tree Fruits Marketing Board did outstanding work in improving physical handling, grading, and particularly sales promotion. More generally, the constructive area for boards lies in improving market structure, standardizing products and the terms of sale for producers. Boards have an important role in achieving income stability through their objectives of greater price stability, and reducing seasonal fluctuations in prices by storage and other means. Marketing boards have contributed to stability through export sales and through the use of effective bargaining techniques. For some products, marketing boards have achieved a forward price for farmers through contract negotiations before planting the crop. Marketing boards have also made constructive contributions in sales promotion in both domestic and external markets.

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37. Johnson, D. Gale, World Agriculture in Disarray, MacMillan, London, 1973, Ch. 9.

In what respects are the issues respecting marketing boards of significance to the development of Canadian agricultural policy? First, marketing boards exist and are needed. The issue for policy making is to accentuate their constructive aspects. Great emphasis, perhaps too much, has been placed on their disadvantages, but policy development should be directed toward overcoming them.

6.3.3 Variable Levies

Employing a structure of agricultural policy goals quite similar to the Canadian ones, the EEC developed very different agricultural pricing programs. The Common Agricultural Policy (CAP) of the EEC represents an attempt to integrate nine farm economies of fundamentally different structures, social complexions and efficiencies. As Weinschenck states: "... it seems realistic to assume that the future agricultural policy, like the present policy, will have to be established in an institutional framework which is dominated by strong and diverging national interest".[38]

The most important element is the use of variable levies as the basis for price supports. These are applied to imports from non-member countries so that the EEC captures the differences between the 'open market' or world prices and the generally much higher internal EEC prices. Simultaneously, the CAP provides for strong intervention in the domestic market in an attempt to resolve the income problems of the farm community, and to maintain an equilibrium between supply and demand on the domestic market. Promotion of exports is also used. The major instrument through which these policies are implemented is the European Agricultural Guarantee and Guidance Fund (EAGGF). The former represents funds derived from variable levies and the latter makes payments for the purpose of adjusting the structure of the agricultural industry.

The most visible result of this price system has been to increase grain and dairy production. Self-sufficiency in grain has reached 95 percent with a surplus of soft wheat and an unsatisfied demand for feed grains. Many wheat varieties grown do not meet the requirements of the milling industry. Since the milling industry is not prepared to purchase this quality and the uniform price of wheat is unrealistically high, very costly wheat has been widely used as feed. This has increased the cost of intervention tremendously.[39] Thus,

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38. Weinschenck, G., Issues of Future Agricultural Policy in the European Common Market, European Revue of Agricultural Economics, Vol. 1 (1973) 1, Paris, p. 34.

39. Uhlmann, F., Die Markte Fur Getreide und Kartoffeln (The Markets for Grain and Potatoes) Agrarwirtschaft. Vol. 24 (1975): 12, Hannover, Germany, pp. 343-350.

in 1974/75 out of 45 million tonnes of wheat harvested, 26.3 million were used for food and 11.6 million for feed. There is no apparent solution to this problem forthcoming. It is noted that while wheat surpluses developed, maize imports have increased steadily.

The EEC price policy for the dairy sector created a growing market disequilibrium, particularly in skim milk powder. Stocks of this product in store at the end of September of each of the last seven years were as follows:

Table 11 EUROPEAN ECONOMIC COMMUNITY SKIM MILK POWDER STOCKS, 1969 TO 1975

Year	1969	1970	1971	1972	1973	1974	1975
			- 000 tonnes -				
Skim milk powder	393	121	33	29	161	319	1,027

Source: Ramm, G., Die Markte fur Milch und Fette (The Markets for Milk and Fats), Agrarwirtschaft, Vol. 24: (1975): 12, pp. 355-368.

There is a concensus that the price policy is the major cause of the above surplus accumulation and the immense increase in intervention costs. (The expenditures of the EAGGF for dairy support increased from US $1,586 million in 1975 to US $2,732 million for 1976.)[40] The surplus production was not generated by the nature of the marketing scheme but by the inappropriate use of price supports.

The CAP, which is based primarily on price regulations, has not solved either the problem of income disparity between agriculture and other sectors of the economy or that between various sectors of the farm community. Incomes in the agricultural sector have increased during the past decade but more slowly than those in other sectors of the economy.[41] The German Ministry of Agriculture and Forestry states: "Income disparity within the agricultural sector has increased between farms under favourable and unfavourable natural conditions, between large and small operators, as well as between efficiently managed and poorly operated farm units. This disparity cannot be eliminated by means of the price policy."[42]

Critics have condemned the CAP as a costly yet impotent program which imposes a double burden on taxpayers by subsidizing exports while generating high food prices in the community. In 1973 and 1974, total national and community expenditures in support of the agricultural sector is put at about 11.5 billion

40. Uhlmann, F., Ibid., p. 363.

41. Background Note/Agriculture, No. 2, April 1975, European Community, p.3.

42. Analyse der EWG Agrarmarktpolitik und Vorschlage zu ihrer Kunftige Gestaltung. Berichte uber Lanwirtschaft, VOl. 53 (1975), p. 30.

EUA (European Unit of Account).[43] The larger part, some 70 percent in 1974, of total expenditure on agriculture comes from national sources while the EAGGF makes up about 30 percent. The following tables shows the increasing cost of the CAP.

Table 12 EUROPEAN AGRICULTURAL GUARANTEE AND GUIDANCE FUND, 1970 TO 1975

Year	Guarantee Section	Guidance Section
	- million EUAS -	
1970	2,603	202
1971	1,571	242
1972	2,339	167
1973	3,815	183
1974 (estimates)	3,402	285
1975 (budget)	3,980	325

Source: The Agricultural Situation in The Community, op. cit.

Three commodity sectors receive a very large share of expenditures. For instance, in 1973, the dairy sector received 39 percent, the grain sector 26 percent and the oils and fats sector about 10 percent. At the inception of the CAP, it was thought that the levies on imports would cover the EAGGF expenditures. Yet in 1973 and 1974, they accounted for 556 million and 374 million EUA respectively and have been estimated at 564 million for 1975.

The distribution of the EAGGF contribution has generated regional controversies. Since agricultural exporting countries receive the larger part of expenditure, the contributions of Germany, Britain and Italy constantly increase while France and Netherlands' shares of the allocations grow accordingly.

After more than ten years, the CAP has not achieved its original goals. Agricultural incomes vary widely between regions and between farms and, in general, lag behind those realized in non-agricultural pursuits. The CAP failed to increase productivity to target levels. Food prices are higher in Western Europe than in almost any other region and there are growing surpluses. The isolation of the EEC market from the world market has contributed to internal fiscal and monetary problems, and has generated considerable tension on the international scene. The currency fluctuations of the 1970's have added another serious burden to an already strained situation. Monetary compensation is given to weak currency countries as a means of avoiding potentially disastrous increases in food prices.[44]

43. The EUA equalled US $1.21 on June 28, 1974 and changes slightly over time. Data in this section were quoted from The Agricultural Situation in the Community, published by the Directorate-General for Agriculture.

44. New York Times, October 25, 1976.

Although variable levies should not be considered as an option for future Canadian agriculture policy, one feature of the CAP, employed in an entirely different context than it is within the community, may be relevant. This is the use of variable levies in the context of an anti-dumping measure. Presently, Canada depends on Section 8(2) of the Customs and Tariff Act which provides for the application of a surtax when dumping has been established. However, the procedures employed are unwieldy and time consuming; often, the problem has disappeared before the remedy is applied. This is particularly true with such a crop as early potatoes. The trade in the United States dumps the final harvestings of early potatoes just as the first of the Canadian crop is reaching the market. But the problem is more general than fruits and vegetables. The solution to the problem of dumping is crucial to the whole issue of reducing the extent of price instability which the agricultural industry has traditionally faced. Few policy areas are more important than achieving some measures of price stability.

The proposal made here is that variable levies be applied, with the moderate intervention level to provide instant anti-dumping mechanisms. For commodities to which explicit support prices apply, such levels would be used to determine intervention. For other commodities, average prices over the past three years might be employed or the intervention level might be determined by a committee of producers and Federal Government. With very low tariff protection, Canadian farmers are vulnerable to imports and highly vulnerable to dumping. So long as measures of the type proposed are visibly anti-dumping in character, and not protective, no signatory of GATT could reasonably protest them.

6.3.4 Export Disposal Plans

The term export disposal as used in this paper applies to exports which move outside regular market channels including shipments under foreign aid programs and disaster relief, and the export of surplus commodities at lower prices than those which prevail in the domestic market.

Canada has supplied food aid for developing countries since these programs became part of the international food scene soon after World War II. In 1970/71, Canadian exports of grains and flour in aid operations totalled about 1.25 million tonnes valued at more than $90 million. The quantity supplied declined in the following years and in 1973/74 was less than one-half of the above figure or about five percent of total wheat and flour exports. At the World Food Conference, Rome 1974, Canada pledged an average of one million tonnes of food grains annually for 1975, 1976 and 1977. The food grains supplied are preponderently wheat and some barley. The pledge also included non-grain food such as fish, skim milk powder, rapeseed, beans, etc. to a total value of approximately $45 million annually. Canada has also made a supplementary pledge of cereals for the year 1977 to bring its total contribution to the Food Aid Program to 400,000 tonnes with the possibility of a supplemental pledge for 1978.[45] Evidence from past experience indicates that when the price of food grains declines the volume of grain exports under export disposal plans will increase for the next year or two.

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45. Honourable Eugene F. Whelan, in an address to the United Nations Assembly, 4th February, 1976.

Canadian food aid and disaster relief programs have been used to a modest extent to accommodate domestic agricultural programs, e.g., the Canadian Wheat Board, the Canadian Dairy Comission and the Canadian Egg Marketing Agency. Unlike in the United States, this accommodation has never been an explicit part of Canadian policy and Canadian shipments in this category have therefore been small compared to those of the United States.

With a large excess capacity in American agriculture in the early 1950's and with price supports on major commodities at 90 percent of parity, government stocks were accumulating rapidly and net farm incomes were sagging. By 1954, something had to be done and the result was passage in mid-1954 of the Agricultural Trade Development and Assistance Act, known as P.L. 480. Cochrane and Ryan state:

> This act, which provided authority for disposing of surplus agricultural products through sales for non-convertible foreign currency and other concessional means, became a powerful instrument for increasing exports of agricultural commodities. Exports under P.L. 480 and other government programs increased from $449 million in 1952 to $1.9 billion in 1957, and averaged well over a billion dollars a year from 1955 to 1973. In short, P.L. 480 turned out to be a powerful mechanism for increasing the total demand for American farm products; it may well have saved farmers and their programs from complete disaster in the late 1950's.[46]

Nonetheless government-owned stocks of farm commodities grew from $1.3 to $7.7 billion between 1952 and 1959.[47] Thus, while P.L. 480 was a "powerful mechanism", it was no solution to the United States farm problem as the build-up of government stocks indicates. Improvement in the situation occurred in the 1960's but this is attributed to programs which kept an expanded number of productive areas out of production.

From 1955 through 1976, total shipments under P.L. 480 were valued at $25.1 billion or 14 percent of all agricultural exports.[48] Of particular interest to Canada is that shipments of wheat ranged from 50 to 70 percent of the total value. This fact lends strong substantive support to Canadian marketing specialists who took the position that the volume of United States 'giveaway' transactions not only deprived Canada of export markets but also softened the wheat price structure. They asserted that much of the volume of P.L. 480 wheat could have moved through commercial channels. This was clearly the case with Brazil which imported $1.5 million of United States financed agricultural exports in 1955; this total, mostly comprising wheat, averaged almost $85 million in the period 1961-65.

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46. Cochrane W.V. and M.E. Ryan, American Farm policy, 1948-1973, Minneapolis, University of Minnesota Press, 1976, p. 77.

47. Ibid., p. 14.

48. USDA, The World Food Situation and Prospects to 1985, FAER Report No. 98, page 55.

A serious consequence of P.L. 480 grain shipments has been the lessening of incentives to developing countries for producing their own grain requirements. Thus, many poor countries which were grain exporters in the early 1960's became regular grain importers - some on a large scale. This has impeded agricultural development of the poor countries, and has given rise to serious overall import financing problems. This is particularly true as United States assisted wheat exports in 1975 fell to less than 3.5 million tonnes from previous levels which were as high as 15.4 million tonnes in 1965.

As a food deficit area, the EEC has never felt the need to develop explicit food export disposal plans. However, it has made ad hoc subsidized exports, particularly of wheat and dry skim milk as surpluses arose under the (CAP). Because of the protectionist stance of the Community, these sales have been regarded very unfavourably by major regular export countries.

While it has been impossible to secure price quotations on these transactions, they are reported as being very low. The shipments have been directed very largely to North Africa and to the Near and Far East. The magnitude of the wheat and flour exports are indicated by the following sketchy data: from 1970 to 1974, $600 million, $567 million, $822 million, 12.5 million tonnes and 12.4 million tonnes, respectively.

The EEC joined the food aid program which was developed by the 1974 World Food Conference in Rome. It made a one-year commitment (renewed in 1975/76) to provide the developing countries with 1.3 million tonnes of cereals. The Community's own programs for 1975 provided for 55,000 tonnes of skim milk powder, 45,000 tonnes of butter oil, 6,100 tonnes of sugar and about $1.25 million in cash for the purchase of foods.[49] On the average, from 1962 to 1972 EEC food aid was two-thirds dairy products and one-third cereals.

In the latter half of the 1960's, the United States accounted for about 90 percent of total world food aid. Since 1970, the food aid programs of other developed countries have grown substantially. Australia and Sweden have made specific commitments in view of achieving the target, set by the World Food Conference in Rome, of ten million tonnes of grain a year. Sweden pledged that during each of the three years beginning in 1975/76, it would supply 75,000 tonnes of Swedish wheat to the developing countries and a further 40,000 tonnes annually for disaster relief operations. Australia pledged assistance of $443 million consisting of grains and cash.

It is a reasonable expectation that the Rome Conference target of a minimum ten million tonnes of grains annually may be realized. If grain prices continue to decline, however, concessional or non-commercial supplies might increase in volume. In this event, such shipments might again displace possible commercial transactions.

Canadian agriculture would be the first victim of gifts and concessional sales, if they should return on a large scale. This possible threat would appear to render advantageous the development of an international understanding to

49. EEC Commission, The Agriculture Situation in the Community, Brussels, 1976, p. 17.

insure agreement that (1) disaster relief should be met in full and promptly, (2) the 10-million-tonne target agreed at the 1974 Rome Conference should be honoured, and adjusted in future years in the light of the changing food situation in the developing countries; however, there should be an explicit understanding that some very large fraction of the target amounts should go to the one-third to one-half of the poorest among the developing countries; and (3) other free or concessional grain shipments should be made only under conditions agreed by major exporters so as to insure that they are not being made to accommodate bad domestic agricultural policies. Moreover, it must be recognized that the greatest need of the developing countries lies not in food aid but in technical agricultural production and marketing assistance.

6.3.5 Compensatory Pricing Proposal

In the late 1950's, Cochrane[50] articulated a comprehensive supply management proposal. The basic concept was to provide farmers with a 'fair price' for their product and to secure an 'adequate income' for them by means of supply management. Fair or parity prices would be established for major agricultural commodities. Negotiable marketing certificates would give each farmer his pro rata share of the national sales quota for each commodity produced. Under this proposal, all products would be sold on the open market. Cochrane's plan would control the total quantity of each commodity marketed commercially but would allow for free sale in 'non-commercial transaction', e.g. farmer to farmer. Products not covered by an explicit quota could not be moved legally. In the case of meat animals, for example, all slaughterers would be required to report to the government the amount of livestock slaughtered and to present evidence of quota.[51] Feed grains would not be under control and Cochrane recognized that land resources taken out of 'controlled' products would be used in feed grains. He suggested area controls on feed grains, and direct payments to cooperating farmers.

Cochrane admitted the complexity of the proposed scheme and that farmers might reject this kind of control.[52] While the short-run objective of supply control would be the absolute contraction of aggregate farm output, this could be in conflict with the long-run need of United States agriculture, namely, obtaining a rate of output expansion equal to, or in balance with, demand expansion.

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50. See: Cochrane W.W.: (1) An Appraisal of Recent Changes in Agricultural Problems in the United States, in Journal of Farm Economics, Vol. 57, 1975, pp. 279-298; (2) Farm Prices-Myth and Reality, Minneapolis, University of Minnesota Press, 1958 pp. 172-173 and (3) Some Further Reflections on Supply Control, Journal of Farm Economics, November 1959, pp. 697-715.

51. Some Further Reflections on Supply Control, Op. Cit., p. 714.

52. In his article Some Observation of an Ex-Economic Adviser: or What I Learned in Washington, Journal of Farm Economics Vol. 47, May 1965, p. 454, Cochrane Stated: "It is perfectly clear that farmers will not accept effective mandatory controls. They might, if the controls were permitted to result in much higher prices... Farmers will not, however, except in a few commodities, accept mandatory controls as means of effectively limiting production at a minimum cost to the government."

Gilson has advanced this proposal for Canadian agriculture[53] under which farmers would receive a payment equal to the difference between the support price, i.e., the 'fair price' determined by the government and the market price in accordance with the value of his certificate. Sales in excess of the designated value of the certificate would be sold at free market prices. Since Gilson's certificates would cover only 50 to 75 percent of a farmers' historical production, all decisions respecting resource use would be taken in a free market context. Further Gilson and Cochrane would have the certificates freely negotiable to give every incentive for the individual farmer to produce efficiently.

It must be recognized that the concept of 'fair price' may be misleading. There are significant differences in the structure of Canadian agriculture; a national aggregate is unable to provide a reliable assessment of factor costs in view of the very large natural, social and labour differences in different parts of the country. Essentially, these should determine the pattern of production and the allocation of resources.

Cochrane acknowledges that "the argument is easily made that control program tending to freeze resources into place and impede resource adjustment tend also to impair productive efficiency". Yet he concludes "that the rate of increase in efficiency in agriculture would be exceedingly rapid under comprehensive supply control."

Cochrane stresses that supply control of the kind envisaged in his scheme would bring difficulties in the area of exports. Gilson maintains that his proposal would "provide every encouragement for the promotion and expansion of export sales". But he fails to elaborate on how his proposal would relate to the quota and pricing problems of the Canadian Wheat Board

Both the Cochrane and the Gilson models are producer oriented. If implemented and food prices were to increase, Canadian consumers might have a further legitimate complaint in view of the fact that the cost of the program would be borne by the taxpayer who would also be confronted with higher food prices. And two last questions must be raised: How much in the way of controls would farmers be prepared to accept? Would not either the Cochrane or Gilson proposals give rise to nightmarish administrative problems?

A criticism of supply control and a very severe one, lies in the negotiability of quotas. The cost of quotas would be built into the cost structure. Then one would encounter the problems which were noted in 6.3.2 as arising from limiting inputs or outputs. There is also the point that these plans are based on an annual price determination, and this fails to meet reasonable criteria respecting stability. In net terms, the disadvantages which would accompany comprehensive compensatory pricing plans seem to outweigh any advantage.

53. Gilson, J.C., National Policy for Agriculture, Agrologist, Vol. XVI, 1972, pp.5-7.