House of Commons
Canada

THE PATH

to

Sustainable Agriculture

REPORT OF THE STANDING COMMITTEE ON AGRICULTURE

May 1992

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Le mardi 5 mai 1992

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Minutes of Proceedings and Evidence of the Standing Committee on

Agriculture

RESPECTING:

Consideration of the draft report on sustainable agriculture

Future business

INCLUDING:

The Second Report to the House

Procès-verbaux et témoignages du Comité permanent de l'

Agriculture

CONCERNANT:

Étude de l'ébauche du rapport sur l'agriculture viable

Travaux futurs

Y COMPRIS:

Le deuxième rapport à la Chambre

Third Session of the Thirty-fourth Parliament,
1991-92

Troisième session de la trente-quatrième législature,
1991-1992

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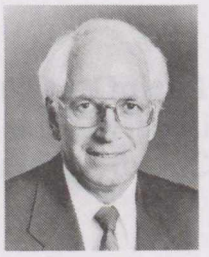

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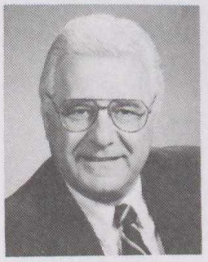

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The Standing Committee on Agriculture

has the honour to present its

SECOND REPORT

In accordance with its mandate under Standing Order 108(2), the Committee has examined what sustainable agriculture represents and how it fits into the long-term direction and goals of agriculture. This Report contains the Committee's findings and recommendations.

Table of Contents

Chairman's Remarks

This is a study that, in my view, is timely and important. The less secure our economic climate becomes, the more at risk is Canada's rich heritage of natural resources.

Time and again we heard from witnesses that they would be good stewards if they could afford to be. We are already affected by the degradation of our resources. If it is not turned around, we will ultimately put at risk the survival of our farmers.

Some farmers are already aware of the problems and are doing their share to ensure this country maintains its productive capacity. I hope you will find that these pages reflect the optimism behind many witnesses' statements.

You will notice that one or two other important subjects that must be considered in the context of sustainable agriculture are not covered in this report. One is global climate change. On April 23 and 24, 1990, as Chairman of the Agriculture Committee, I hosted a parliamentary forum on this subject. There were very intense discussions, involving eight committees of the House of Commons. The objective was to raise awareness of the issues and put a multidisciplinary focus on global climate change. The forum provided a snapshot of current thinking on the energy, transportation, fisheries, agriculture and other sectors. It helped to bring out that agriculture is not only a contributor to greenhouse gases but is also likely to be affected by the increasing and unpredictable variability of growing conditions.

One way in which agriculture contributes to greenhouse gases is through its consumption of fossil fuels. Primary agriculture accounts for approximately 3% of Canada's total energy consumption. A considerable amount of work is being done in the agriculture sector to replace fossil fuels with alternative energy sources. Biotechnology will possibly help reduce costs which at present make fuels like ethanol uncompetitive. The use of alternative fuels has been investigated in other forums; in the Committee's view, their use in relation to agriculture has sufficient importance to warrant a separate study.

The Committee has limited its investigation of the impacts of other activities upon agriculture to loss of agricultural land to urban development. The study has a particular objective to the fostering of a better dialogue between the rural and urban communities. If this is to come about, sources of conflict, such as competing land uses, must be resolved equitably.

Genetic diversity is another subject of great importance to environmental sustainability. We did not receive substantive evidence on this subject, though more than one witness stressed the need to preserve genetic resources. This is another field that needs to be further explored in the future.

In this report, we have covered the subjects where the bulk of testimony resided and which were emphasized by the majority of witnesses. Many common themes emerged and these have been developed in the following pages.

I would like to take this opportunity to thank all the witnesses for their thoughful evidence, which helped direct the Committee's Report. My appreciation also goes to the members of the Committee staff for their support — the Clerk, Carmen DePape, for her administrative arrangements, and the Research Coordinator from the Library of Parliament, Sonya Dakers, for her dedicated research in putting together our report.

Finally I'd like to thank my Steering Committee, Mr. Vic Althouse (Mackenzie), Dr. Maurice Foster (Algoma), and Mr. Gabriel Larrivée (Joliette) for their invaluable input.

Harry Brightwell
Chairman
Standing Committee on Agriculture

Foreword

It is now twenty years since the United Nations Conference on the Human Environment in Stockholm focused world attention on the fact that our deteriorating planet is being shared unequally by a global community in which too many people are placing too much pressure on finite resources. Since then, a number of reports have documented the need for global action to reverse environmental degradation and move toward what *Our Common Future*, the report of the World Commission on Environment and Development, calls sustainable development. To quote from that report "...sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs." It is in this context that we must examine agricultural practices to ensure that, in Canada, our agriculture and food industry is passed on with an undiminished resource base to future generations.

In the one hundred and twenty five years since Confederation, Canada has developed a remarkable agriculture and food system. It is a highly complex system, with gross regional differences reflecting our geography, our climate, our resources of soil, water and nutrients and the distribution of our people and our industries. It is a highly interdependent system, sensitive to world markets, labour and capital supply, transportation, government policies and a host of other man-made and natural conditions. Within this complex system, the primary engine of productivity is the producer. It is the farmers upon whom we depend to ensure sustainability; yet these farmers are now facing difficult times. World market prices are so low that, particularly in the grains sector that makes up most of our cultivated lands, farmers are not receiving sufficient returns to sustain their operations or to farm their land in a manner consistent with good stewardship of the soil resources. While governments have intervened to provide financial assistance through a wide range of programs, the development of long-term policies to ensure the kind of sustainability needed for the Canadian agricultural sector is frustrated by uncertainties in world trading practices and by a lack of a clear vision of what Canadians expect from the agricultural industry. These issues must be addressed thoroughly and thoughtfully.

There is an urgent need to involve Canadian society in a debate on its expectations for Canadian agriculture and the food system, and on the price Canadians are prepared to pay to achieve them. Do Canadians expect the agriculture and food system to:

- provide a safe, indigenous food supply?
- provide a viable livelihood for 300,000 farm families? 150,000 farm families?
- be a sustaining part of the rural community?
- provide a substantial contribution to our trade balance?
- play a major role in preserving a healthy and attractive rural environment?

— contribute to wildlife habitats?

— provide an inexpensive food supply?

A number of other questions could be raised to ensure that not only farmers, but the entire Canadian population will decide on objectives for this major part of Canadian activity, and go on to develop policies to bring them about. During the 1960s Canadians publicly debated objectives for a health system and, having agreed on a vision, put in place a system that is truly Canadian and the envy of the world. Is the food system any less important?

The timing for such a discussion could not be more opportune. Global attention will be focused on the United Nations Conference on Environment and Development to be held in Rio de Janeiro in June, 1992 and it can be expected that world agriculture will be high on the agenda. Canada is blessed richly in both its human and natural agricultural resources and it can make its own decisions on how these should be deployed to serve society in the global context of sustainable development. We must define social, political, environmental and economic aspects of agricultural sustainability by Canadian standards, so that we can achieve a "made in Canada" set of objectives, providing a vision to which all can subscribe.

F.L. McEwen
President
Agricultural Institute of Canada

Executive Summary

WHY SUSTAINABLE AGRICULTURE?

We have been fortunate in this country to enjoy an abundant, nutritious and inexpensive food supply. We have tended to treat this privilege as a right, yet there are many in this world who do not share such good fortune. We have taken our ability to produce food for granted and until recently have not questioned the pressures we are placing on the natural resource base on which this bounty depends. Farmers find themselves suddenly caught in the cross fire of consumers' changing demands regarding food preferences, health and safety, and environmentalists' edicts on the quality of the environment. Farmers are being asked to respond to these challenges in a time of economic duress.

In what follows, the Committee examines what sustainable agriculture represents and how it fits into the long-term direction and goals of agriculture. This leads the Committee to explore the framework necessary for a sustainable food system. The next challenge is to define the path to sustainability, who needs to be involved, and what are their roles. Finally, what kind of information is needed to make the transition to sustainable agriculture? What barriers and incentives hinder or promote the adoption and adaptation process? Some general conclusions are then offered.

It was very evident in the testimony that there is confusion over what we mean when we talk about sustainable agriculture. The term means different things to different people. The Committee was told that we must define what we feel is important enough to invest in now so as to ensure we will have it in the future. Yet definitions won't necessarily tell you what's sustainable. If use of a chemical increases yields in the short term but produces an increased health risk in the long term, is such a production system sustainable? "Sustainable" obviously has something to do with being able to live with long-term consequences and what we are willing to preserve for future generations.

The Committee believes it is essential to encourage a model of food production that is profitable to the producer and, at the same time, beneficial to the long-term sustainability of agriculture. The Committee was told in various ways that farmers are naturally good stewards if they can afford to be. In the following pages, the Committee hopes to show that this is not an unachievable task.

Until we start defining the agriculture we want in the future, there will continue to be a dialogue about what sustainable agriculture means. To the Committee, agriculture is at a crossroads, where what one Member called the old philosophy of "grow, grow, grow," is outmoded, but where the debate on its replacement has just begun. The debate has to be much more broadly-based and has to go beyond the farm-gate to help define where we want to go with the Canadian agriculture and food system. The result would be a national policy expressing what agriculture is supposed to provide for Canada and into which all sectors could buy.

1. **The Committee recommends that sustainable agriculture be recognized as an essential part of Canadian life. (p. 6)**

2. **The Committee recommends that recognition of sustainability include meeting farming needs for economic, social and environmental stability. (p. 6)**

TOWARDS A LONG-TERM STRATEGY

This need for a long-term vision of agriculture was a frequent refrain among the witnesses. For the Canadian Federation of Agriculture(CFA), this long-term vision is inseparable from an understanding of sustainable agriculture. "What we are essentially talking about is the long-term stability of the industry — the maintenance of a viable rural infrastructure and a healthy environment" (Issue 16:4, 26-11-91).

The issue of sustainability can provide the focus needed for questioning the type of agriculture Canada wants and the direction it should take. As a society, we have to decide whether farming is a way of life or just a business like any other; whether food is seen as what sustains life or as merely a commodity to be bought and sold; whether farming with its rural community values has intrinsic value or is not worth preserving.

Consumers may not be aware of the monetary or environmental demands they are placing on producers, and may be surprised at the latter's reaction. That is why there has to be a continuing dialogue within Canadian society on the value of food production and what part society plays in the survival of this sector, in order to ensure that all parties understand the others' points of view.

3. **The Committee recommends that the federal government develop long-term national goals for a sustainable agri-food system. (p. 13)**

4. **The Committee recommends that the federal government involve all segments of Canadian society in a dialogue that will recognize the intrinsic value of food production and promote the formation of a long-term policy for agriculture. (p. 13)**

"CHEAP" FOOD OR SELF-SUFFICIENCY?

Farmers know that Canada produces some of the lowest-priced and the safest food in the world; in Canada, only 10% of average disposable income goes on food consumed at home, compared to between 15% and 20% in most western countries. Farmers are concerned, however, that the urban population does not necessarily appreciate these advantages. Farmers need to hear, ". . . we as Canadians are willing to support you in the business of producing food for us, and if you are going to produce food for us, we are willing to pay you what it costs" (Issue 11:48, 22-10-91).

Alternatively, if low-priced food is the preferred policy, are we willing to take the consequences of losing self-sufficiency? For instance, there have been suggestions that because we cannot produce certain crops as cheaply as can be done elsewhere, we should stop producing them. How impervious are we to a discontinuous food supply if we depend on a

global market? We have seen what happens in a disrupted oil market. In relation to our dependence on U.S. imports, one witness pointed out, "If there is a frost in Florida, the first thing the governor does is close the borders. He doesn't worry that Canada might be depending on him for that particular commodity" (Issue 13:31, 5-11-91).

Should food be regarded as a necessity of life of which we should have a secure supply, or is it just another commodity to be produced only in those areas where costs are low enough to make a profit? It is acknowledged that food security needs can be met without a country having to be completely self-sufficient. However, a significant dependence on food export and import commodities could leave Canada vulnerable to international market shocks. The priority we, as a society, place on preserving prime agricultural land and on supporting those who farm that land says a lot about how we value food self-sufficiency. The Committee believes that agriculture should be in a position to supply our basic food needs. The federal government has an important role to play in setting priorities to meet this goal.

5. The Committee recommends that one of the goals of the food strategy should be domestic food security. (p. 13)

THE EXPORT TRADE

The new world trade order appears to be moving away from protectionism and food self-sufficiency towards global free trade.

As a world trader, especially in wheat, Canada's engine of growth in the modern agriculture industry has been its exports, but these have not brought stability. Compensating farmers to ensure they can continue to compete on world markets has also been costly, reaching over $3 billion annually in recent years.

Do we have a responsibility to feed people across the globe? A food policy might make it clear that food was important — both to feed one's own people and the hungry elsewhere.

We are obviously looking for the kind of mix of exports and imports in agriculture that will bring some security, resiliency and stability to the industry. In the grain and red meat sectors, there is optimism that the Uruguay Round of the General Agreement on Tariffs and Trade(GATT) will provide such a framework, prices will rise, and the subsidies and support programs will gradually diminish. There is, however, a downside to placing undue emphasis on exports.

In the Committee's view, export policy should not compromise this country's ability to keep a sustainable domestic agricultural sector viable into the next century. Export production should also adhere to sustainable principles. How farming is structured is crucial to this endeavour.

6. The Committee recommends that production for export should not compromise agriculture's ability to meet future food production needs on a sustainable basis. (p. 14)

THE FUTURE STRUCTURE OF FARMING AND THE STEWARDSHIP ETHIC

The family farm and its future promoted discussions on the structure of farming. These covered the essential role in sustaining agriculture played by vibrant rural communities with viable farm families. The survival of a farm structure based on an intimate knowledge of the land was also considered as an integral part of responsible stewardship. The Committee was reminded that farmers work long hours, they feel pride in their work and take responsibility for what they do. It was pointed out that growing a good crop must be rewarding, otherwise, why would farmers be willing to work so hard.

One witness took exception to the suggestion that the family farm could not be efficient in view of the adjustments farming had had to make to cut costs over the last decade. Another witness felt that the family farm could outcompete the corporate farm because of the farm family's willingness to take a reduction in income in order to maintain a way of life. He was optimistic about the survival of the family farm, as agriculture moves to sustainability.

If sustainable agriculture requires a more careful tending of the land, surely the logical steward is the person who hopes to pass on the land to the next generation. If food exists to sustain and nurture life, surely its primary producers, who carry out this difficult function for society, should be rewarded. In the past, producers were encouraged to produce. Good stewardship should not have to mean a reduction in farm income. Now that we realize the folly of emphasizing production to the detriment of our natural resource base, there should be incentives to help farmers adapt to the new demands in an environmentally acceptable way.

7. The Committee recommends that, to assist farmers in their stewardship role, the federal government offer significant on-farm incentives to develop effective sustainable practices. (p. 14)

THE MANAGEMENT CHALLENGE

The Committee heard testimony on very different types of farming systems in an attempt to establish the components of sustainable agriculture.

The Committee certainly learned from its study that sustainability has features unique to each farm. It is not just a collection of techniques but a way of approaching the farm as a whole system. "High tech" and "organic" are examples of two methods along a continuum of farming approaches outlined to the Committee. The common element is the quality of the farming. What is interesting is the span of methods and how they differ to meet varying economic, soil and climatic conditions.

Agronomic practices need to be tailored to individual needs. The more the new technologies can be packaged with this in mind, the more sure will be our path towards sustainability.

In its Report, the Committee does not wish to play the role of advocate for any one particular cropping practice but believes it may be useful to describe a selection of approaches in order to show the present wealth of information and breadth of thinking.

Committee testimony confirmed a growing preference for crop rotation. One example given was corn. The Committee heard that when environmental problems became apparent by the early 1980s, Ontario farmers began shifting away from continuous corn to crop rotations. Present crop rotations commonly include soybeans, winter wheat, and either red clover or alfalfa.

Another dominant trend of the past decade reported by Mr. Daynard of the Ontario Corn Producers' Association and the Ontario Soil and Crop Improvement Association was a major decrease in the amount of soil tillage used in production. According to a University of Guelph study, reduced tillage is more important than crop rotation in improving soil organic matter levels. An increasing number of Ontario farmers are now growing corn and other crops using conservation tillage methods.

The most detailed explanation of this tilling method came from a group of farmers in Manitoba, who have been pursuing no till for the past 10 years or so. Their organization, the Manitoba-North Dakota Zero Tillage Farmers' Association, is dedicated to preserving the soil resource for future generations by promoting a system of crop production that drastically reduces soil erosion and builds up organic matter.

Wheat can be planted in flax stubble and soybeans in corn stubble. Other crops typical in no till are field peas and canola. Conservation of soil moisture, elimination of soil erosion, retention of organic matter, wildlife diversity, fuel savings and increased yields are reported benefits. Several studies confirm a yield advantage for wheat, barley, canola and flax from zero tilling, especially in dark brown soils, and more efficient use of nitrogen fertilizer.

Saskatchewan Agriculture and Food has been using a variety of techniques in its incremental or gradual move to sustainable agriculture. These include direct incentives and demonstrations to bring about changes in management techniques. It has been encouraging the return of shelterbelts and the conversion of fragile, erodible soil back to permanent cover.

Mr. Zilm, Assistant Deputy Minister, Saskatchewan Agriculture and Food, stressed that, despite the economic hardship that most Saskatchewan farmers were experiencing, there had been tremendous enthusiasm and collaboration between the agricultural sector and other groups in working towards environmental objectives. He felt that although financial incentives were important, the willingness to work together and achieve common goals made progress possible.

Several witnesses informed the Committee about the advantages of integrating livestock and crops. Cattle add economic diversity to crop farming operations, making such operations less vulnerable to weather and market risks. Cattle provide economic incentive to include forages in a crop rotation system. Their pasture land often provides habitat for wildlife. In summation, the Committee was told that livestock production is part of the equation in moving to a sustainable agricultural system.

One of the greatest advantages of cattle is their ability to convert the solar energy trapped in forages into food energy. According to the Canadian Cattlemen's Association(CCA), forages account for about 80% to 85% of the total feed needed to produce a pound of beef.

This benefit is being explored at the University of Guelph from the environmental point of view; crop rotations involving grasses and forage legumes are one way of checking soil erosion.

The problem was that forages could not compete as a feed with low-cost grain. The witness felt that forages would become an economical proposition only if they were also seen as a conservation measure worthy of some special incentive. Grain price trends would of course also remain relevant.

This raises an interesting point that was brought to the attention of the Committee a number of times. Forage is not included in the recently introduced government safety net program, the Gross Revenue Insurance Program, usually referred to as GRIP. GRIP committees are looking at problems associated with applying the program.

It was suggested that a move in the right direction would be to expand GRIP to give basket coverage to all commodities on a farm; thus, total farm receipts would be insured rather than the price of any one particular commodity. This would prevent the producer from taking a signal from any one commodity on future production. It would also tend to encourage a more diversified crop base.

8. The Committee recommends that federal agricultural support programs should be market and production neutral. (p. 24)

A CONSERVATION FARM PLAN

Each farm has its own micro-climate, and each farmer considers his or her own situation unique. In Alberta, individual farm plans are being developed with the intention of conserving and sustaining the resources for future generations.

Saskatchewan is carrying out on-farm planning on a field-by-field basis. It is a pilot program under Save Our Soils and the Canada-Saskatchewan Agreement on Soil Conservation. The pilot is designed to determine affordable ways to deliver soil conservation plans on a field-by-field basis.

A farm plan is also part of Ontario's Land Stewardship Program, which provides financial incentives to adopt conservation farming practices. This is a program run and evaluated by farmers.

A conservation plan has considerable appeal for the Committee, since it initiates the individualized regime that most producers need to contain soil and water degradation on their farms. It would also provide the producer and the farming community with the base information required to set and monitor realistic conservation and other goals.

Recent action by farm groups themselves reinforces the Committee's view that this is not an unrealistic or unacceptable goal. In January 1992, members of 50 Ontario farm organizations came out in support of farm plans as part of their environmental agenda. As farmers, they feel that they are in the best position to encourage farming activities that respect

the environment. Plans would include documentation on the quality of the farmland, site-specific commitments to improve the land and environment, peer review, exchange of technological advances, and a commitment to include farm plans as an eligibility requirement for new farm environmental programs. The last is already being done in Ontario and Alberta, as described above. Indeed, these farmers identify the Ontario Land Stewardship Program as a model.

Such types of grass-roots initiatives are very encouraging and, from what the Committee has heard, have the greatest chance of success. It is interesting to note that federal funding can play a very crucial role in helping the individual to adjust to changing requirements in agriculture. Farming in the future will be looking to government not only for positive and corrective solutions but also to ensure that there are no roadblocks in the way of desirable directions.

CROSS-COMPLIANCE

If, as discussed in a previous section, Canadian society agrees we should have an indigenous and sustainable food supply, and if revenue assistance is felt to be a necessary part of such a goal, it will be up to governments to ensure that their programs are not contributing to a deteriorated environment. One way of doing this is through cross-compliance, a concept introduced by the U.S. *Food Security Act* of 1985, whereby commodity benefits were denied to those farmers who converted wetlands or highly erodible land to crop production.

Cross-compliance would mean that certain programs were available to producers only if they conformed to good agricultural practice.

At the hearings, the concept of cross-compliance was supported in certain situations, namely to bring poor-quality land out of production. It was the method of implementation that aroused the most discussion. Several witnesses also had concerns about taking a regulatory rather than a cooperative path.

A cooperative system of cross-compliance has already shown signs of success, according to Mr. Paul King, Agricultural Fieldman with the Camrose, Alberta Agricultural Service Board, where management practices are a consideration in farmers' claims for livestock losses from predation. Provincial compensation is refused where management practices have contributed to these losses. Mr. King explained the effectiveness of the program in terms of the few repeat requests for compensation in the absence of improved management practices.

The Committee applauds what is being accomplished by a cooperative approach. It would take this a further step. Farm groups are already suggesting farm plans should be a requirement for new environmental support programs. These plans would provide the information needed for gauging whether each farm was meeting its environmental objectives. The Committee would apply eligibility criteria to all support programs. As mentioned, the U.S. denies financial subsidies to producers who do not meet certain conservation criteria.

9. The Committee recommends that producers qualify for federal financial assistance when they have met environmental practices that are part of an approved conservation farm plan. (p. 24)

EXISTING POLICIES AND PROGRAMS

This action would make no sense unless government rationalized existing programs to ensure that they did not detract from environmental goals. A report delivered to Ministers of Agriculture in November 1991 set out guidelines on how this might be accomplished. Proposed criteria would cover the review of existing policies and programs, principles of environmental assessment, and coordination mechanisms for environmental reviews.

It has been suggested that the new safety net programs, GRIP and NISA(Net Income Stabilization Account), should be the first programs used as a practical application of the recommended methodology for environmental assessment. The enabling legislation for the two programs calls for environmental assessments to be carried out within two years of a federal-provincial agreement coming into force. The national GRIP committee has been involved in developing the environmental review process. It makes more sense to build environmental criteria into a program at its development stage and it is hoped we are moving in this direction in this country.

10. **The Committee recommends that the federal government set a time frame to meet the urgent need to convert existing agri-food policies and programs into an environmentally sustainable food system. (p. 24)**

11. **The Committee recommends that sustainable agriculture criteria be included in the development of all future agri-food policies and programs. (p. 24)**

INFORMATION FOR ADAPTATION

In the Committee's view, the key to achieving a more sustainable agriculture is to convert ideas developed at the scientific bench into operational practicalities on the family farm.

This country has developed a sophisticated structure for disseminating research information. This research establishment has been quite successful during the developmental stage of agriculture in pushing out the parameters of knowledge to allow Canada to stay on the leading edge in cereal production and livestock breeding. It has concentrated on finding solutions to specialized technical problems, whether in crop science, soil science, or livestock science whereby a given problem, for example egg production efficiency, was addressed in isolation from broader issues.

The traditional research model worked to the farmer's benefit but without his or her input. Projects could be conceived and pursued without a concern for how they could be implemented on a particular farm. It has been up to provincial extension agents, agricultural boards, farm organizations, crop associations and the farmers themselves to make appropriate use of all the scientific information that is being generated. The Committee heard from a number of these groups and has based its recommendations on their practical and thoughtful testimony.

New priorities prompt us to look at the relationships between production and resource management systems holistically. An understanding of the total farm system is required and nobody can do this better than the farm community itself. Important tools are applicable

knowledge and wise advisors. This implies having technology in "user friendly" packages and access to innovator farmers or neighbours who have tried out some of the new techniques. The Committee was told that farmers trust no one more than other farmers.

In the revised model, "farmers talking to farmers" doesn't just mean exchanging ideas. It also means determining priorities, and developing new approaches that can filter up to the laboratory and help refine agricultural research. The practice of farming is transmitted, like the land itself, from generation to generation, from older to younger farmer, from neighbour to neighbour. This land-bound, cultural information serves as the corporate memory for a particular region and cannot necessarily be transmitted across the county line. When you look at the farm as a system of inputs and outputs, this type of knowledge becomes invaluable. A technology information system whereby farmers capitalize on technologies that reinforce this communication system and empower them by giving them control over their own lives is much less likely to be suspect than some scientific edict imposed externally. Farmers are in the best position to modify and improve technologies in light of their own practical experience.

12. The Committee recommends that the federal government give priority to implementing an integrated approach to agricultural research and development. (p. 34)

13. The Committee recommends that the federal government work in partnership with other governments, the universities, industry and producers to ensure adoption of this integrated approach to agricultural research and development. (p. 34)

14. The Committee recommends that, at all levels of decision-making, producers have more involvement in the policies, programs, and technologies that may affect them. (p. 34)

The Committee heard testimony on several programs whose methods and tools demonstrate the potential of this more informal technology transfer network. These programs are particularly impressive because of their cooperative approaches and their ability to adjust and improve as they go along. The Committee felt it would be useful to describe them further as practical examples of what it considers to be a promising research approach.

The Committee was heartened by testimony on new practices. It confirmed the Committee's belief that, even in bad economic times, if the benefits can be demonstrated, farmers will voluntarily use the best practices. The programs to be described bear witness to this fact.

Fifty-six hundred kilometres (3,500 miles) of shelterbelts or 3.5 million trees have been planted under Saskatchewan's Save Our Soils Program. Producer involvement in program delivery has raised awareness and interest in soil conservation planning. In its brief, Saskatchewan Agriculture and Food highlighted the importance of monitoring technology transfers. Such monitoring can show the results of conservation practices, encouraging their adoption or indicating where further research is needed.

The issue of upgrading equipment arose at a number of the hearings. Though much farming equipment, especially on the Prairies, now needs replacing or upgrading, present low incomes make this impossible. Several witnesses stressed the importance of low-cost demonstration and trial of the specialized machinery required by many of the new technologies. With the current economic crunch, very specialized farm equipment is impractical for many farmers. In the Committee's view, this is one area of technology transfer where innovative approaches will be required.

15. The Committee recommends that the Government of Canada increase the Capital Cost Allowance in order to assist farmers to purchase approved conservation technology. (p. 34)

The Soil and Water Environmental Enhancement Program(SWEEP) began in 1986 as a five-year federal-provincial agreement to improve soil and water quality in southwestern Ontario. The goals of the $30 million project are to reduce phosphorous in the Lake Erie Basin as a result of cropland runoff and to improve agricultural productivity by reducing soil and water degradation. This dual objective, to rationalize production and improve the environment, is of particular interest to the Committee since this is what sustainable agriculture is all about.

When the Ontario Land Stewardship Program was conceived, the Ontario Ministry of Agriculture and Food approached a grass-roots farmer organization, the Ontario Soil and Crop Improvement Association, to deliver it. The three-year $40 million program offered financial incentives for first-time adoption of conservation farming techniques. It focused on practices that would improve soil structure and reduce soil erosion. Land stewardship committees, consisting of four or five farmers who reviewed and recommended on projects for funding, functioned on a county basis. The grants part of the program was so successful that it was expanded in 1990 as part of the Canada-Ontario Soil and Water Accord. This provided $38 million over four years to assist in the implementation of approved plans for the promotion, education, and demonstration of technology. This program is virtually fully subscribed.

In Alberta, the Conservation 2000 Program demonstrates an alternative private initiative taken by Alberta Pool in June 1989. Local Conservation 2000 clubs of concerned farmers focus on soil conservation problems and actions. This is a 10-year program, privately-funded through a foundation composed of the Pool and four corporate members who provide financial and technical support. The foundation sponsors symposiums, leadership training, publications, tours, and promotional material.

From the Committee's point of view, one of the most encouraging findings from this small survey of programs is the amount of involvement of the federal government in funding, scientific expertise, technology development and assessment, and information dissemination and communication.

Since the late 1980s, the federal-provincial accords have provided a mechanism for coordinating federal and provincial efforts in soil and water. The first major program funded within this framework, was the three-year $150 million National Soil Conservation Program.

It has contributed to many of the initiatives mentioned in this report, such as the Permanent Cover Program and on-farm technical and provincial assistance. The Committee believes it is crucial that the momentum not be lost and that such innovative financial assistance continue for existing and experimental projects that will help diversify the agricultural landscape.

16. The Committee recommends long-term funding under the National Soil Conservation Program be committed to maintain the momentum already achieved by programs such as the Permanent Cover Program. (p. 34)

In the Committee's opinion, government funding will continue to be important if we are to continue the impetus towards sustainability revealed by our study. Private funding is becoming more visible but government seed money to encourage private involvement will continue to be important as will its funding of basic research. Producer and other private groups are beginning to deliver programs in a manner that suits the clientele of which they are a part, and their involvement is much more likely to bring about a successful transition to new production methods. Farmers need more programs to guarantee their access to the technologies, resource personnel, training and funding assistance necessary for the move to sustainability.

17. The Committee recommends that Green Plan funding build on practical lessons learned from successful programs that are already delivering technology to the farming community. (p. 34)

18. The Committee recommends that increasing the technical skills of resource personnel and farmers be a Green Plan priority for the agricultural sector. (p. 34)

There will always be an essential role for the federal government in providing scientific expertise, coordinating the input of all participants, and monitoring the move towards sustainability. This role appears to complement that of the provincial governments, which is concentrating on extension activities relating to raising awareness and providing technical advice and incentives to ensure that programs go ahead successfully.

That federal coordinating role will become ever more important as the informal research network that is part of the new research model includes more and more "hands-on" research. The network will be expanding while at the same time we are attempting to put into effect more integrated research approaches. The Committee considers that there is a need for an independent auditor to monitor gains towards sustainability given the complexity of this new technology transfer model.

19. The Committee recommends that Parliament establish an independent auditor to monitor Canadian agriculture's progress towards sustainability. (p. 34)

CONCLUSIONS

It is very evident that we are already in the transition phase in making agriculture more sustainable. The Committee found numerous positive signs of this, many of which it has shared with the reader.

From all that the Committee has heard, both generational wisdom and book knowledge have a place in looking holistically at a farm and designing an agricultural scheme for it that will ensure it continues into the next century.

The Committee feels that there are grounds for optimism. Awareness is growing in the government and in the private sectors about the cost of ignoring environmental degradation. Direction from government is important and can be particularly effective in providing creative incentives to change the direction of agriculture. We have seen that this can mean an incremental approach, but it does require a firm commitment. A national policy setting out the importance of food would be a start, to be followed by an assessment of all existing policies and programs to see if they are consistent.

The Committee realizes that it has probably asked more questions than it has offered solutions, but, as always, its intention is to continue a dialogue inside and outside the agricultural community.

Summary of Recommendations

1. The Committee recommends that sustainable agriculture be recognized as an essential part of Canadian life. **(p. 6)**
2. The Committee recommends that recognition of sustainability include meeting farming needs for economic, social and environmental stability. **(p. 6)**
3. The Committee recommends that the federal government develop long-term national goals for a sustainable agri-food system. **(p. 13)**
4. The Committee recommends that the federal government involve all segments of Canadian society in a dialogue that will recognize the intrinsic value of food production and promote the formation of a long-term policy for agriculture. **(p. 13)**
5. The Committee recommends that one of the goals of the food strategy should be domestic food security. **(p. 13)**
6. The Committee recommends that production for export should not compromise agriculture's ability to meet future food production needs on a sustainable basis. **(p. 14)**
7. The Committee recommends that, to assist farmers in their stewardship role, the federal government offer significant on-farm incentives to develop effective sustainable practices. **(p. 14)**
8. The Committee recommends that federal agricultural support programs should be market and production neutral. **(p. 24)**
9. The Committee recommends that producers qualify for federal financial assistance when they have met environmental practices that are part of an approved conservation farm plan. **(p. 24)**
10. The Committee recommends that the federal government set a time frame to meet the urgent need to convert existing agri-food policies and programs into an environmentally sustainable food system. **(p. 24)**
11. The Committee recommends that sustainable agriculture criteria be included in the development of all future agri-food policies and programs. **(p. 24)**
12. The Committee recommends that the federal government give priority to implementing an integrated approach to agricultural research and development. **(p. 34)**
13. The Committee recommends that the federal government work in partnership with other governments, the universities, industry and producers to ensure adoption of this integrated approach to agricultural research and development. **(p. 34)**
14. The Committee recommends that, at all levels of decision-making, producers have more involvement in the policies, programs, and technologies that may affect them. **(p. 34)**

15. The Committee recommends that the Government of Canada increase the Capital Cost Allowance in order to assist farmers to purchase approved conservation technology. **(p. 34)**

16. The Committee recommends long-term funding under the National Soil Conservation Program be committed to maintain the momentum already achieved by programs such as the Permanent Cover Program. **(p. 34)**

17. The Committee recommends that Green Plan funding build on practical lessons learned from successful programs that are already delivering technology to the farming community. **(p. 34)**

18. The Committee recommends that increasing the technical skills of resource personnel and farmers be a Green Plan priority for the agricultural sector. **(p. 34)**

19. The Committee recommends that Parliament establish an independent auditor to monitor Canadian agriculture's progress towards sustainability. **(p. 34)**

CHAPTER ONE

Introduction

Ever since the publication in 1987 of the Brundtland Report, *Our Common Future*, individual countries have been trying to come to terms with the concept of sustainable development, development that meets the needs of the present without compromising the needs of the future. At risk are the air, water and soil systems that support life.[1] The challenge for agriculture is to fulfill today's food requirements, without compromising — by overexploiting this natural resource base — its ability to meet food essentials of future citizens.

With global agriculture in a period of transition, the agri-food industry in this country is being forced to re-examine its mode of operation. One of the pillars of this new look is environmental sustainability. The Federal-Provincial Task Force Report on this subject provided a jump-off point for the Committee to continue the dialogue within the agri-food industry and beyond its borders on the issues that must be addressed as Canada moves towards a more sustainable food production system.

We have been fortunate in this country to enjoy an abundant, nutritious and inexpensive food supply. We have tended to treat this privilege as a right, yet there are many in this world who do not share such good fortune. We have taken our ability to produce food for granted and until recently have not questioned the pressures we are placing on the natural resource base on which this bounty depends. Farmers find themselves suddenly caught in the cross fire of consumers' changing demands regarding food preferences, health and safety, and environmentalists' edicts on the quality of the environment. Farmers are being asked to respond to these challenges in a time of economic duress.

It was these types of concerns that led the Standing Committee on Agriculture to launch its study of sustainable agriculture. The objective was to put the issues on the table and listen to those in the agri-food industry who have to find solutions.

At public hearings between October and December 1991, the Committee listened to approximately 30 presentations. In addition, before the hearings, about 50 briefs were received from interested parties. The Committee has structured its report around what it heard and read. The report is directed to all those concerned about whether we will have a vibrant agricultural sector in the next century and to the farming community, which is already making adjustments to ensure that this will be the case.

In what follows, the Committee examines what sustainable agriculture represents and how it fits into the long-term direction and goals of agriculture. This leads the Committee to explore the framework necessary for a sustainable food system. The next challenge is to define the path to sustainability, who needs to be involved, and what are their roles. Finally, what kind of information is needed to make the transition to sustainable agriculture? What barriers and incentives hinder or promote the adoption and adaptation process? Some general conclusions are then offered.

End Note

[1] World Commission on Environment and Development, *Our Common Future*, Oxford University Press, Oxford, 1987, p. 44.

CHAPTER TWO

Why Sustainable Agriculture?

Definitions of sustainable agriculture tend to vary, but they generally contain certain elements in common. These relate to the conservation of the natural resource base, the economic viability of agriculture, and to the need for safe and nutritious food. Sustainable agriculture generally involves practices to protect or improve soil structure, and to conserve water and prevent its pollution. The Canadian Fertilizer Institute described sustainable agriculture systems as "those that are capable of maintaining their productivity and usefulness to society indefinitely. These systems must be resource conserving, environmentally sound, socially supportive and commercially competitive. These systems must be derived region by region, farm by farm, crop by crop and field by field" (Issue 23:32, 12-12-91).

Like many of the groups before the Committee, the Institute acknowledged the definition of the Federal-Provincial Agriculture Committee on Environmental Sustainability which is that:

> Sustainable agri-food systems are those that are economically viable, and meet society's needs for safe and nutritious food, while conserving or enhancing Canada's natural resources and the quality of the environment for future generations.[1]

Nevertheless, it was also evident in the testimony that there is confusion over what we mean when we talk about sustainable agriculture. The term means different things to different people. The Committee was told that we must define what we feel is important enough to invest in now so as to ensure we will have it in the future. Yet definitions won't necessarily tell you what's sustainable. If use of a chemical increases yields in the short term but produces an increased health risk in the long term, is such a production system sustainable? "Sustainable" obviously has something to do with being able to live with long-term consequences and what we are willing to preserve for future generations.

The evidence suggests that we may be reaching a global threshold where we can no longer ignore the long-term consequences of soil degradation. A United Nations Environment Program study released in the spring of 1992 identifies 12 billion square kilometres (5 billion square miles) or 10.5% of the planet's fertile land base as degraded from overgrazing by livestock, farming inefficiently and deforestation since 1945. This diminishing arable land base is expected to feed a population forecast to almost double by the year 2050 to 10 billion. The study suggests this loss could lead to permanent global food shortages.[2]

According to the Worldwatch Institute, an organization that monitors global progress towards a sustainable society, we are losing 12.7 million additional tonnes or 1% of world grain output each year because of land degradation and damage to crops from pollution. Set against the annual estimated gains from increased irrigation, fertilizer and other inputs of

26.3 million tonnes, we are left with a net gain of 13.5 million tonnes, well below the 25.3 million tonnes or 2% growth needed to match annual population growth. These are not encouraging signs for world food production.[3]

The status of soils here in Canada is not at all clear. Canadian scientists are presently perfecting the methodology to measure soil loss across the country. They are also preparing maps which indicate the risk of wind and water erosion on unprotected soils and the degree of protection provided by existing cropping patterns. Unfortunately, these cropping patterns are taken from the 1981 Census of Canada and it is estimated to take two years to update cropping data from the 1991 Census. Some information did emerge from the hearings.

Dr. Rennie, Professor Emeritus, College of Agriculture, University of Saskatchewan, pointed to reduced yields in the semi-arid region of the Prairies, resulting from soil deterioration. In the mid-1980s, both the Science Council of Canada and Agriculture Canada estimated the cost of soil degradation in the Prairies to be slightly in excess of $1 billion annually, in terms of lost production. As Dr. Rennie put it, "At the present time, this cost is shouldered by the man on the land, and this is one of the reasons he is in such desperate straits today" (Issue 9:21, 21-10-91).

A historical perspective might be useful. There was a tremendous push after the Second World War to increase food efficiency. The same boundless optimism that had opened up the frontier to agriculture promoted great confidence in the ability of science to make the soil more productive. One means of augmenting efficiency was to expand the use of herbicides, pesticides, and fertilizers so that each farmer could produce more per unit acre and provide a reliable, continuous supply of food that was safe and secure for the Canadian public at a reasonable cost. Governments in North America and Europe actively encouraged overproduction so that a thriving export industry would unfold, especially with the developing countries. An energy-intensive agriculture flourished, based on inexpensive oil.[4] Components of agriculture were developed in isolation, rather than as part of an integrated system.[5] Crop specialization led many farmers to eliminate livestock, so row crops replaced forage or hay crops in the rotation. Dairy production was no longer linked to beef production. Some things we now judge good for the environment were considered to be in competition with agriculture. Consequently, unproductive parts of the agricultural landscape like woodlands, shelterbelts, and wetlands disappeared and were converted to cultivatable ground. Land and water resources were resculptured to perform like the big business they had become. Not much thought was given to treating the soil base as part of the biological ecosystem of which it is a part. The potentially beneficial relationships between agricultural production and features of the environment were ignored.[6] Over the years, this led to increased degradation of the resource base.

We now have food surpluses, declining export markets, and low commodity prices with farm bankruptcy rates and rural emigration that are alarmingly high. It is clear that our present methods of farming with high land values and high overhead, in some cases are not proving sufficiently flexible and diversified to remain profitable for the person on the land. Nevertheless, policy supporting these methods appeared to be appropriate for the times. Can we afford to be so shortsighted again?

The Committee believes it is essential to encourage a model of food production that is profitable to the producer and, at the same time, beneficial to the long-term sustainability of agriculture. The Committee was told in various ways that farmers are naturally good stewards if they can afford to be. In the following pages, the Committee hopes to show that this is not an unachievable task.

In the November 1990 issue of *Conservation 2000*, put out by the Alberta Pool, the former lieutenant-governor of Alberta, Grant MacEwan, said, "Western Canadian farmers can no longer hide behind the belief that soil conservation will cost them money." He disputes that adopting soil-conserving practices needs to have an adverse impact on the bottom line but rather believes it can contribute to the viability of the farm. One such example would be seeding a waterway; this not only eliminates gullying problems but also can give the farmer a crop of hay.[7] Another would be using fertilizers effectively in relation to soil and water conservation, which is found to benefit crop yield and quality; namely, fall "banding" is reported to significantly outperform a spring "broadcast" application in terms of yield. Studies of zero tillage in east central Alberta also show significant yield increases in dry years and no yield disadvantages in other years. Other inexpensive start-up ideas to aid conservation include spraying summer fallow for winter crop protection, renting machinery, only using harrows to prepare fields prior to seeding, planting trees along fence lines, and arranging land swaps to allow crop rotations.[8]

Reduced yields from soil erosion mean economic losses. Studies in the U.S. on corn and wheat have shown that a one-inch loss of topsoil reduces yields by 6%.[9] Once soil erosion is underway, it progresses unrelentingly, like a fatal disease. Unfortunately, its progress can be easily overlooked. In addition, some of the cures, like crop rotation, manure spreading or legume planting, have a reputation for being outmoded, which makes them less attractive. Mr. MacEwan advises farmers to view soil loss as being just as real as a cash expense. He emphasizes that land is the biggest capital asset most farmers own. If they allow soil degradation to devalue this asset, they are robbing themselves of a chance for profit both now and when they decide to retire. He urges Prairie farmers to lift their eyes from day-to-day concerns and consider where they want their farms to be in 5, 10 and 20 years' time. The temptation to ignore soil conservation only puts off what will eventually have to be faced. Mr. MacEwan does not believe that resources are the exclusive property of one generation. He is optimistic that the proper application of technology, philosophy and management can satisfy not only the immediate need for profit but also the need for stewardship of the land for upcoming generations.

The Committee is sensitive to the fact that for farmers sustainability must include economic survival. This surely implies the ability to maintain productivity at a viable level in light of the forces placed upon it which could make it collapse, if not immediately, in the near future. The apparent conflict between economic and environmental goals in the short-term tends to evaporate when it becomes a question of the survival of the natural resource, as Grant MacEwan is suggesting. When agricultural sustainability represents the capacity to maintain productivity, whether of a field, farm or nation, in the face of stress or shock, the trade-off between production and environmental goals diminishes. A stress could be

increasing salinity, or erosion or debt, a major drought or a new pest. (A sustainable solution to control the latter, for instance, might mean the use of pesticides, providing the pesticides were affordable and used selectively.)[10]

Mr. MacEwan raises a very valuable question when he talks about farming in the long term. Sustainability only has meaning if Canadian society is committed to a future for the agricultural sector. Farmers need to know what Canadians expect of them and whether the country feels there is something in agriculture that is of intrinsic value and worth keeping. The farming community also needs to know where it is going and to have some say in whether society's expectations are realistic. As Ms. Switzer-Howse of Soil Conservation Canada put it: "...you have a segment of society that is not seeing real gains in its income, but is being given an increasingly important role to play not only in food production but also in environmental protection.... Right now, there is no long-term stability. They [farmers] have no long-term guarantee of what is going to happen" (Issue 13:30, 5-11-91).

Until we start defining the agriculture we want in the future, there will continue to be a dialogue about what sustainable agriculture means. To the Committee, agriculture is at a crossroads, where what one Member called the old philosophy of "grow, grow, grow,"[11] is outmoded, but where the debate on its replacement has just begun. The debate has to be much more broadly-based and has to go beyond the farm-gate to help define where we want to go with the Canadian agriculture and food system. The result would be a national policy expressing what agriculture is supposed to provide for Canada and into which all sectors could buy. Dr. Freeman McEwen, President of the Agricultural Institute of Canada, used the health care debate of the early 1960s (and its Royal Commission consensus-building process) as a good example of what is required to ensure that everyone understands what it will cost to fulfil expectations.[12] Dr. McEwen has suggested a similar mechanism for discussing agriculture's future.

1. **The Committee recommends that sustainable agriculture be recognized as an essential part of Canadian life.**

2. **The Committee recommends that recognition of sustainability include meeting farming needs for economic, social and environmental stability.**

End Notes

[1] Federal-Provincial Agriculture Committee on Environmental Sustainability, *Report to Ministers of Agriculture*, Ottawa, June 30, 1990, p. 11.

[2] World Resources Institute, *The Global Assessment of Soil Degradation*, World Resources Institute, Baltimore, Maryland, April, 1992 (published in collaboration with the UNEP and UNDP).

[3] Lester R. Brown *et al., State of the World*, A Worldwatch Institute Report, W.W. Norton & Company, New York, 1990, p. 64-65.

[4] Vernon G. Thomas, "Sustainable Agriculture, Science and Ethics," in *The Guelph Seminars on Sustainable Development*, S.G. Hilts and A.M. Fuller, editors, School of Rural Planning, University of Guelph, Guelph, February and March, 1989, p. 47.

[5] Carole Giangrande, *Down to Earth, The Crisis in Canadian Farming*, House of Anansi Press, Toronto, 1985, p. 108-110.

[6] Thomas (1989), p. 47.

[7] Alberta Pool, *Conservation 2000*, November 1990, p. 11.

[8] Alberta Pool, *Conservation 2000*, 1991/92 Edition, p. 9.

[9] Brown (1990), p. 61.

[10] Gordon R. Conway and Edward B. Barbier, *After The Green Revolution*, Earthscan Publications, London, 1990, p. 37.

[11] House of Commons, Standing Committee on Agriculture, *Minutes of Proceedings and Evidence*, Issue 9:26, 21-10-91.

[12] *Ibid.*, p. 7.

CHAPTER THREE

Towards a National Strategy

3.1 A Long-Term View

This need for a long-term vision of agriculture was a frequent refrain among the witnesses. Farm organizations such as the Canadian Federation of Agriculture (CFA) had expected that the ongoing policy review process might provide a blueprint on farm and rural community structure, employment and education, and an idea of what constitutes sustainable agricultural development. While the policy offered certain guiding principles, it did not map out an overall vision of where we hope to be within a specific time frame.

For the CFA, this long-term vision is inseparable from an understanding of sustainable agriculture. "What we are essentially talking about is the long-term stability of the industry – the maintenance of a viable rural infrastructure and a healthy environment" (Issue 16:4, 26-11-91).

A long-term strategy would deal with such topics as comparative advantage and food security, export expectations and the handling of surpluses, the future of farm communities and the family farm, off-farm employment, value-added activities, health and safety, and so on. Included would be a national soil conservation policy that clearly defined soil as a finite resource to be protected.[1] In this way, food production and soil conservation would be seen as matters of national importance.

The issue of sustainability can provide the focus needed for questioning the type of agriculture Canada wants and the direction it should take. As a society, we have to decide whether farming is a way of life or just a business like any other; whether food is seen as what sustains life or as merely a commodity to be bought and sold; whether farming with its rural community values has intrinsic value or is not worth preserving.[2]

3.2 The Dialogue

Some of the above issues came up at the hearings, some are items of discussion in the major policy review mentioned, and some have yet to be addressed. Agriculture Canada has begun the process of broadening the basis of consultation to encourage "partnership" approaches that will avoid simplistic solutions. These new consultative approaches are still in their infancy, however, and subject to government decisions. There is also still room for expanding the dialogue, especially between rural and urban interests. Numerous witnesses raised concerns about misunderstandings between these two solitudes.

The Science Council emphasized the importance of integrating differing viewpoints. In its work on the transfer of technology in support of sustainable agriculture, the Council found that consumers and farmers had more in common than they initially realized. The consumer

has tended to take cheap, nutritious food for granted but there is now profound interest in food safety, an issue that is being hotly debated. As Professor Gilson of the University of Manitoba put it, "...consumers have to be reminded that while they raise legitimate questions about food safety and health... they have to remind themselves they are not apart from, but part of, a system — not only in terms of the benefits but some of the responsibilities... that go with the system" (Issue 18:29, 4-12-91).

A similar sentiment was echoed by Dr. McEwen when he said, "After all consumers have as big an investment in the agriculture and food system as anybody else because they depend upon it to bring up their families. They depend upon it for a healthy and nutritious food supply" (Issue 9:7, 21-10-91).

Ms. Switzer-Howse put it more bluntly,

> You cannot separate urban from rural, because there is no post-agricultural society. Without food, you have no urban community. Without the security that we have been able to supply in food, at a reasonable cost, we wouldn't have had the cities we have. We wouldn't have had the development of industries. We no longer had to have this large labour force in agriculture — they were able to go on and do other things. That has been because of the food security, because of the fact that we have had an efficient agricultural system, and we had the resources, the soil and the water. We won't have that in the future if we destroy our soil resources and result in degraded water. That is a unit that is necessary for our current structure. (Issue 13:42-43, 5-11-91)

Consumers may not be aware of the monetary or environmental demands they are placing on producers, and may be surprised at the latter's reaction. That is why there has to be a continuing dialogue within Canadian society on the value of food production and what part society plays in the survival of this sector, in order to ensure that all parties understand the others' points of view.

3.3 "Cheap" Food or Self-Sufficiency?

Farmers know that Canada produces some of the lowest-priced and the safest food in the world;[3] in Canada, only 10% of average disposable income goes on food consumed at home, compared to between 15% and 20% in most western countries. Farmers are concerned, however, that the urban population does not necessarily appreciate these advantages. Farmers need to hear, "...we as Canadians are willing to support you in the business of producing food for us, and if you are going to produce food for us, we are willing to pay you what it costs" (Issue 11:48, 22-10-91).

Alternatively, if low-priced food is the preferred policy, are we willing to take the consequences of losing self-sufficiency? For instance, there have been suggestions that because we cannot produce certain crops as cheaply as can be done elsewhere, we should stop producing them. How impervious are we to a discontinuous food supply if we depend on a global market? We have seen what happens in a disrupted oil market. In relation to our dependence on U.S. imports, one witness pointed out, "If there is a frost in Florida, the first thing the governor does is close the borders. He doesn't worry that Canada might be depending on him for that particular commodity" (Issue 13:31, 5-11-91).

At the end of the Second World War, Canada was self-sufficient in the production of plums, peaches, apricots, strawberries and pears. With consumer demand for fresh year-round supplies, by 1980 we were importing over half our peaches and close to three-quarters of our plums, as well as close to half our supply of the other tree fruits. Locally-grown produce may taste better, but its price and seasonality cannot always compete with the low-cost and year-round production of the same crop in other countries.[4]

Niagara fruit farmers are still grappling with this problem. Cheaper products entering Canada are making it increasingly difficult for Ontario producers to compete. Many of these farmers are financially unable to work their land and are seeking to sell off some in order to continue to farm the remainder. Agricultural land prices cannot compete with urban development prices. Yet the climate and the soils of the Niagara region, called the "Garden of Canada" by one witness, are uniquely suited for growing tender fruits and in the past have provided Canadian consumers with reasonably-priced produce. One-third of Niagara's fruitland base has already been lost to urban expansion, and another third is under threat. The solution at the regional government level being suggested is a conservation easement whereby the farmer would receive compensation for development restrictions placed on the land in perpetuity or for a specified period of time.[5]

It is evident that some such innovative approach is required if we wish to stop the present trend. Ms. Gracia Janes, President of the Preservation of Agricultural Lands Society, confirmed that, despite broad public awareness of the unique qualities of the Niagara region, governments have not acted to save the fruitlands. Her testimony also demonstrates that raising awareness, a goal of her group over the past 15 years, is not enough to save prime agricultural land.

Between 1966 and 1986, we lost just over 300,000 hectares (750,000 acres) of land to urban expansion, of which 58% was prime agricultural land. To replace equivalent production from lower class land would require twice the land area.[6]

Should food be regarded as a necessity of life of which we should have a secure supply, or is it just another commodity to be produced only in those areas where costs are low enough to make a profit? It is acknowledged that food security needs can be met without a country having to be completely self-sufficient.[7] However, a significant dependence on food export and import commodities could leave Canada vulnerable to international market shocks. The priority we, as a society, place on preserving prime agricultural land and on supporting those who farm that land says a lot about how we value food self-sufficiency. The Committee believes that agriculture should be in a position to supply our basic food needs. The federal government has an important role to play in setting priorities to meet this goal. The next section looks at exports.

3.4 The Export Trade

The new world trade order appears to be moving away from protectionism and food self-sufficiency towards global free trade.

As a world trader, especially in wheat, Canada's engine of growth in the modern agriculture industry has been its exports, but these have not brought stability. Compensating farmers to ensure they can continue to compete on world markets has also been costly, reaching over $3 billion annually in recent years.[8]

Do we have a responsibility to feed people across the globe? A food policy might make it clear that food was important — both to feed one's own people and the hungry elsewhere.

Worldwatch Institute President Lester Brown tells us that world grain production more than doubled between 1950 and 1984, but has since slowed down. When the aforementioned degradation effects are factored in, our apparent ability for continued surpluses is nonexistent.[9]

With 90 million more people to feed each year, major grain exporters like Canada can be expected to play a role in feeding the world's hungry. Mr. Len Gustafson, Parliamentary Secretary to the Prime Minister, sees a window of opportunity for Canada in this role, "One thing we can do very well is produce food" (Issue 13:41, 5-11-91). The purchasing power of the world's nations is likely to remain a problem, but if a net positive benefit to Canada can be demonstrated, we have the resources and the capability to respond.

We are obviously looking for the kind of mix of exports and imports in agriculture that will bring some security, resiliency and stability to the industry. In the grain and red meat sectors, there is optimism that the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) will provide such a framework, prices will rise, and the subsidies and support programs will gradually diminish. There is, however, a downside to placing undue emphasis on exports. Increasingly Canada has tended to specialize in export-crop production, while developing a preference for food imports as these have become more available. Crop specialization without the benefit of diversified, but possibly less profitable crop rotations, has been shown to be less environmentally sustainable.[10] Indeed, much of the erosion in the Prairies is the result. Whether a domestically-oriented agricultural policy is more environmentally sustainable of course depends on the extent to which natural resource management is built into production policies. In the Committee's view, export policy should not compromise this country's ability to keep a sustainable domestic agricultural sector viable into the next century. Export production should also adhere to sustainable principles. How farming is structured is crucial to this endeavour.

3.5 The Future Structure of Farming and the Stewardship Ethic

The family farm and its future promoted discussions on the structure of farming. These covered the essential role in sustaining agriculture played by vibrant rural communities with viable farm families. The survival of a farm structure based on an intimate knowledge of the land was also considered as an integral part of responsible stewardship. The Committee was reminded that farmers work long hours, they feel pride in their work and take responsibility for what they do. It was pointed out that growing a good crop must be rewarding, otherwise, why would farmers be willing to work so hard.

The CFA stressed the importance of the family farm and reported that in the 1986 Census, over 99% of farms reported were family farms or family-controlled farms.[11] Depending on their size, they might support an extended family; however, it was more likely these days that they were having trouble supporting even one family, with some members of necessity bringing in off-farm income as a supplement.

One witness took exception to the suggestion that the family farm could not be efficient in view of the adjustments farming had had to make to cut costs over the last decade.[12] Another witness felt that the family farm could outcompete the corporate farm because of the farm family's willingness to take a reduction in income in order to maintain a way of life. He was optimistic about the survival of the family farm, as agriculture moves to sustainability.[13]

If sustainable agriculture requires a more careful tending of the land, surely the logical steward is the person who hopes to pass on the land to the next generation. Earlier in the report, we spoke of the importance of land as an asset to be husbanded. The other major asset in the farming system is its human resource. Unless society places value on our land stewards and the expertise they bring to this task, agriculture might as well be invisible and will certainly continue to decline. If food exists to sustain and nurture life, surely its primary producers, who carry out this difficult function for society, should be rewarded. In the past, producers were encouraged to produce. Good stewardship should not have to mean a reduction in farm income. Now that we realize the folly of emphasizing production to the detriment of our natural resource base, there should be incentives, at least in the transition phase, to help farmers adapt to the new demands in an environmentally acceptable way. Eventually, reduced input costs and greater productivity from healthier soils should make farming more, not less, profitable.

The Committee supports the development of innovative incentive mechanisms that will assist individual farmers to implement sustainable production systems suited to their own particular situation. To date, compensation of an environmental nature has tended to concentrate on compensating farmers for loss of production. Another approach would be to reward good management practices. For instance, the Science Council has suggested that farmers be paid an end-of-season premium based on the depth of topsoil and its levels of organic matter and contaminants.[14] Improved techniques of measuring soil depth might make such an incentive approach possible. To the Committee, this is an interesting reward method which should be pursued.

3. **The Committee recommends that the federal government develop long-term national goals for a sustainable agri-food system.**

4. **The Committee recommends that the federal government involve all segments of Canadian society in a dialogue that will recognize the intrinsic value of food production and promote the formation of a long-term policy for agriculture.**

5. **The Committee recommends that one of the goals of the food strategy should be domestic food security.**

6. **The Committee recommends that production for export should not compromise agriculture's ability to meet future food production needs on a sustainable basis.**

7. **The Committee recommends that, to assist farmers in their stewardship role, the federal government offer significant on-farm incentives to develop effective sustainable practices.**

End Notes

[1] Issue 13:33, 5-11-91.

[2] Carole Giangrande, "Agriculture and Sustainable Development," The Guelph Seminars on Sustainable Development, S.G. Hilts and A.M. Fuller, editors, School of Rural Planning, University of Guelph, Guelph, February and March, 1989, p. 54-55.

[3] Issue 16:24, 26-11-91.

[4] Giangrande (1985), p. 106-109.

[5] Issue 22:24, 11-12-91.

[6] D.W. Anderson, C.J. Roppel, and R.M. Gray, *Sustainability in Canadian Agriculture,* Study commissioned by the Science Council of Canada, University of Saskatchewan, Saskatoon, August 1991, p. 36.

[7] Giangrande (1985), p. 106-109.

[8] Science Council of Canada, *It's Everybody's Business,* Submissions to the Science Council's Committee on Sustainable Agriculture, Minister of Supply and Services, Ottawa, 1991, p. 30.

[9] Brown (1990), p. 59.

[10] Conway and Barbier (1990), p. 84.

[11] Issue 16:28, 26-11-91.

[12] *Ibid.*

[13] Issue 9:28, 21-10-91.

[14] Science Council (1991), p. 28.

CHAPTER FOUR

The Management Challenge

4.1 The Farming Continuum

The Committee heard testimony on very different types of farming systems in an attempt to establish the components of sustainable agriculture.

Basing his remarks on five years of practical research in the semi-arid region of the Prairies, Dr. Rennie, formerly with the University of Saskatchewan, outlined what changes would have to take place to make contemporary dryland agriculture sustainable.[1] Participants in the research project he described ("Innovative Acres") found that it was actually possible both to double yield and at the same time regenerate depleted soils by using "high tech" conservation methods. According to Dr. Rennie, most farmers concur that traditional intensive tillage, particularly during a fallow year, has been a significant cause of serious damage to their soils; it has led to remarkably inefficient capturing of rainfall or snowmelt during the fallow year.[2]

Some 40 farmers participated in the project that Dr. Rennie described. Each farmer established his own recipe, within general guidelines, for farming on the allotted 80 acres. Intensively tilled summer fallow was excluded and all tillage operations were kept to a minimum. Crop rotations included hard red spring wheat, durum wheat, coarse grains, flax, canola, lentils and peas. Crop residue management practices were followed as much as was practicable. Chemical weed control, strip cropping, stubble sculpturing, early seeding, and direct combining were included wherever possible.[3]

The findings confirmed the importance of efficient water and fertilizer use, and judicious use of herbicides. Dr. Rennie stressed that agriculture should be more high-tech and science-based. His message is that sustainability will result from an improved application of today's and future technologies.[4] Also of critical importance are management skills, training of tomorrow's farmers, and responsiveness to changing consumer preferences. In other words, agriculture should become more consumer-driven than habit-driven.

The last statement is probably a view on which another group of farmers could agree, since they too are in business in response to consumer preference. There the parallel ends, however. These are organic farmers who farm without chemicals and design production techniques in harmony with ongoing natural processes. Because of its emphasis on the health and integrity of the natural resource base, organic farmers sometimes equate their system of farming with sustainable agriculture. This causes consternation among farmers using so-called "conventional" conservation techniques, which, in their eyes, are equally valid examples of sustainability.

4.2 The Individuality of Sustainable Management

The Committee certainly learned from its study that sustainability has features unique to each farm. It is not just a collection of techniques but a way of approaching the farm as a whole system. "High tech" and "organic" are examples of two methods along a continuum of farming approaches outlined to the Committee. The common element is the quality of the farming. What is interesting is the span of methods and how they differ to meet varying economic, soil and climatic conditions. For instance, no till may be environmentally desirable but may not be economically practical where weeds are out of control or new equipment must be purchased.

Agronomic practices need to be tailored to individual needs. The more the new technologies can be packaged with this in mind, the more sure will be our path towards sustainability. A later section looks in more detail at this component, which the Committee believes is crucial.

In its Report, the Committee does not wish to play the role of advocate for any one particular cropping practice but believes it may be useful to describe a selection of approaches in order to show the present wealth of information and breadth of thinking.

4.3 Practical Examples of Sustainable Techniques

The Federal-Provincial Agriculture Committee on Environmental Sustainability listed eleven actions that would help sustain long-term agriculture.[5] These were: reducing summer fallow, reducing tillage, intensifying crop rotations, retaining crop residues, enhancing shelterbelts, improving ground and surface water management, removing erodible lands from production, developing energy-efficient technologies, rehabilitating wetlands, and encouraging farm environmental plans. For comparison, a report commissioned for the United States Agency for International Development lists intercropping (growing two crops simultaneously), crop rotation, agroforestry (intercropping of annual herbaceous crops with perennial shrubs or trees), sylvo-pasture (intercropping of grassland and other fodder with trees), green manuring (incorporating legumes grown to fix nitrogen into the following crop), conservation tillage (placing the seed directly in the soil with little or no preparatory cultivation), and integrated pest management (using all appropriate techniques that enhance natural pest controls, with only selective dependence on pesticides so as not to interfere with natural enemies).[6]

Flexible cropping and tillage practices and encouraging a diversified landscape appear to be priorities common to both the Canadian and American lists.

4.3.1 Crop Rotation

Committee testimony confirmed a growing preference for crop rotation. One example given was corn. Mr. Terry Daynard, Vice-President, Ontario Corn Producers' Association, reminded the Committee that corn is Canada's only indigenous crop. From a minor beginning

prior to 1960, with improved hybrids, effective weed control, and growing demand, corn emerged as the dominant crop across all of southwestern Ontario during the 1960s. Economically beneficial monocropping of corn replaced mixed farming systems based on livestock and various cash crops. The Committee heard that when environmental problems became apparent by the early 1980s, Ontario farmers began shifting away from continuous corn to crop rotations. Present crop rotations commonly include soybeans, winter wheat, and either red clover or alfalfa.[7]

Another dominant trend of the past decade reported by Mr. Daynard and the Ontario Soil and Crop Improvement Association was a major decrease in the amount of soil tillage used in production. According to a University of Guelph study, reduced tillage is more important than crop rotation in improving soil organic matter levels.[8] An increasing number of Ontario farmers are now growing corn and other crops using conservation tillage methods.

4.3.2 Conservation Tillage

The most detailed explanation of this tilling method came from a group of farmers in Manitoba, who have been pursuing no till for the past 10 years or so. Their organization, the Manitoba-North Dakota Zero Tillage Farmers' Association, is dedicated to preserving the soil resource for future generations by promoting a system of crop production that drastically reduces soil erosion and builds up organic matter.

Wheat can be planted in flax stubble and soybeans in corn stubble. Other crops typical in no till are field peas and canola. Conservation of soil moisture, elimination of soil erosion, retention of organic matter, wildlife diversity, fuel savings and increased yields are reported benefits. Several studies confirm a yield advantage for wheat, barley, canola and flax from zero tilling, especially in dark brown soils,[9] and more efficient use of nitrogen fertilizer.

Given the economic and other benefits, the Committee pursued the logical question, one that is crucial to the movement towards sustainable agriculture. Why, given its advantages, does not zero tillage have more than its present share of 1% to 2% of Manitoba's cultivated acres?[10]

Initially, the Committee was told, zero-till farmers were considered "oddballs" who, unlike "conscientious" farmers, did not till their stubble in the fall. After an initial flurry of interest between 1978 and 1980, only those farmers who continued to follow good agronomic practices and took the extra time to apply fertilizer into the stubble persevered with zero till. The early equipment was not good enough to ensure the establishment of consistently good crops and the preferred glyphosate herbicide was very expensive. Those who stayed with zero till understood the system and had good experiences at the beginning.

Western Canada is now a leader in manufacturing the specialized and modified seeding equipment used by zero-till farmers.[11] Knowledge about what makes the system work has also improved, though there is still room for more R and D (research and development) to make the system work better, according to Mr. David Rourke, Board Member of the Zero Tillage Association. He also stressed improving education, so as to avoid potential problems for

first-time users. He agreed that zero tillage, which practises continuous cropping and avoids summer fallow, would not be as suitable in the driest regions of the Prairies, such as the Palliser triangle, unless a balanced, flexible approach adapted it to suit moisture and other conditions.

The Manitoba-North Dakota Zero Tillage Farmers' Association's presentation was particularly interesting, given the long existence of the organization and its growing understanding of the barriers and incentives that affect adoption of sustainable techniques. Mr. Rourke summed it up when he said, "...we need a greater effort to educate the general public on issues of agricultural sustainability. We need to encourage a more scientific approach, rather than an emotional one, to determine what is good or bad for our environment and, specifically, for ourselves, the farmers, and the people who work with the systems" (Issue 13:11, 5-11-91).

4.3.3 The Incremental Approach

Saskatchewan Agriculture and Food informed the Committee of conflicting trends in the province's agriculture.[12] As Mr. Althouse, the member for Mackenzie, reminded the Committee, Saskatchewan represents approximately 42% of Canada's farmland with 20 million hectares (50 million acres) of land under cultivation out of its total farmland base of 26 million hectares (65 million acres). While diversification is gaining ground (lentils and peas and other special crops now represent 486,000 hectares[1.2 million acres]), spring wheat acreage is also increasing. Some pasture land has continued to be broken; between 1971 and 1991, about 1.6 million hectares (4 million acres) were added. While a drop in summer fallow of 2 million hectares (5 million acres) during the same period is positive as far as sustainable practices are concerned, together with the 1.6 million new hectares (4 million acres), it means an additional 3.6 million hectares (9 million acres) in crop.

Saskatchewan has been using a variety of techniques in its incremental or gradual move to sustainable agriculture. These include direct incentives and demonstrations to bring about changes in management techniques. It has been encouraging the return of shelterbelts and the conversion of fragile, erodible soil back to permanent cover. A joint program under the Canada-Saskatchewan Agreement on Soil Conservation, the Permanent Cover Program, has seeded 67,000 hectares (165,000 acres) to permanent cover. Another 243,000 hectares (600,000 acres) is targeted for the entire Prairie region as part of "Third Line of Defence" funding made available in April 1991. Because of economic conditions, the uptake on the more recent program is reported to be slower.

Mr. Zilm, Assistant Deputy Minister, Saskatchewan Agriculture and Food, stressed that, despite the economic hardship that most Saskatchewan farmers were experiencing, there had been tremendous enthusiasm and collaboration between the agricultural sector and other groups in working towards environmental objectives. He felt that although financial incentives were important, the willingness to work together and achieve common goals made progress possible.[13]

4.3.4 Integrated Farming Systems

Several witnesses informed the Committee about the advantages of integrating livestock and crops. Cattle add economic diversity to crop farming operations, making such operations less vulnerable to weather and market risks. Cattle provide economic incentive to include forages in a crop rotation system. Their pasture land often provides habitat for wildlife. In summation, the Committee was told that livestock production is part of the equation in moving to a sustainable agricultural system.[14]

The Canadian Cattlemen's Association (CCA) reported that the beef industry is the largest single farm commodity in Canada. It constitutes annual farm gate sales of just over $4 billion. With annual sales of over $8 billion, meat processing is the third largest of all manufacturing industries, after motor vehicles and petroleum products. Ruminants, such as cattle, graze primarily on land unsuitable for cultivation. In so doing, they more than double the land area that contributes to our food supply. Cattle convert material that humans cannot digest into a high-quality nutrient-dense protein. Cattle producers contest the claim that animals compete with human beings for grain; cattle are fed mostly coarse feedgrains or low-quality grains unsuitable for human consumption. One of the greatest advantages of cattle is their ability to convert the solar energy trapped in forages into food energy. According to the CCA, forages account for about 80% to 85% of the total feed needed to produce a pound of beef.[15]

This benefit is being explored at the University of Guelph from the environmental point of view; crop rotations involving grasses and forage legumes are one way of checking soil erosion.[16] Between 1921 and 1988, production of forage in Ontario dropped from 2.8 million hectares (7 million acres) to 1.5 million hectares (3.7 million acres) as the emphasis shifted to grains and oilseeds. Professor Buchanan-Smith, of the Department of Animal and Poultry Science, conceded that inconsistencies in the quality of forage harvested and the performance of animals fed these forages had contributed to this decline. He attributed these deficiencies to a lack of research attention; but this is now being rectified by the University of Guelph. He expressed the view that very respectable levels of performance were possible in forages. The problem was that forages could not compete as a feed with low-cost grain. The witness felt that forages would become an economical proposition only if they were also seen as a conservation measure worthy of some special incentive.[17] Grain price trends would of course also remain relevant.

4.4 Sustainable Systems and Government

This raises an interesting point that was brought to the attention of the Committee a number of times. Forage is not included in the recently introduced government safety net program, the Gross Revenue Insurance Program, usually referred to as GRIP. The explanation offered was that while Agriculture Canada recognized the importance of forage for conservation, the redirecting of funds and staffing resources into new areas is administratively complex.[18] GRIP committees are looking at problems associated with applying the program.

It was suggested that a move in the right direction would be to expand GRIP to give basket coverage to all commodities on a farm; thus, total farm receipts would be insured rather than the price of any one particular commodity. This would prevent the producer from taking a signal from any one commodity on future production. It would also tend to encourage a more diversified crop base.

Dr. McEwen of the Agricultural Institute of Canada considered that such changes would need to be monitored to ensure that any assistance allocated for a particular piece of land was used effectively.[19] He suggested the agricultural community should decide and monitor what constituted a sustainable system for a particular piece of land and who should receive compensation.

4.5 A Conservation Farm Plan

This individualized, self-assessment type of approach is already being tried in several jurisdictions. Each farm has its own micro-climate, and each farmer considers his or her own situation unique. In Alberta, individual farm plans are being developed with the intention of conserving and sustaining the resources for future generations. These personalized plans involve review of such items as air photos, soils maps, and cropping rotations. With the assistance of technical advice from the agricultural service board and provincial extension personnel, an assessment is made of all farm assets, and an individual farm plan is developed, maximizing resources toward production and sustainability.[20] Funding comes from the Canada-Alberta Soil Conservation Initiative.

Saskatchewan is carrying out on-farm planning on a field-by-field basis. It is a pilot program under Save Our Soils and the Canada-Saskatchewan Agreement on Soil Conservation. The pilot is designed to determine affordable ways to deliver soil conservation plans on a field-by-field basis.[21]

A farm plan is also part of Ontario's Land Stewardship Program, which provides financial incentives to adopt conservation farming practices. This is a program run and evaluated by farmers. Again, a key feature is the sharing of information and technical advice provided by the province in developing farm inventory and action plans. The Program, in effect until 1994, is funded through the Canada-Ontario Accord on Soil and Water Conservation and Development.[22]

A conservation plan has considerable appeal for the Committee, since it initiates the individualized regime that most producers need to contain soil and water degradation on their farms. It would also provide the producer and the farming community with the base information required to set and monitor realistic conservation and other goals.

Recent action by farm groups themselves reinforces the Committee's view that this is not an unrealistic or unacceptable goal.[23] In January 1992, members of 50 Ontario farm organizations came out in support of farm plans as part of their environmental agenda. As farmers, they feel that they are in the best position to encourage farming activities that respect the environment. Plans would include documentation on the quality of the farmland,

site-specific commitments to improve the land and environment, peer review, exchange of technological advances, and a commitment to include farm plans as an eligibility requirement for new farm environmental programs. The last is already being done in Ontario and Alberta, as described above. Indeed, these farmers identify the Ontario Land Stewardship Program as a model.[24]

Such types of grass-roots initiatives are very encouraging and, from what the Committee has heard, have the greatest chance of success. It is interesting to note that federal funding can play a very crucial role in helping the individual to adjust to changing requirements in agriculture, as can be seen in the foregoing commentary. Farming in the future will be looking to government not only for positive and corrective solutions but also to ensure that there are no roadblocks in the way of desirable directions.

4.6 Cross-Compliance

If, as discussed in a previous section, Canadian society agrees we should have an indigenous and sustainable food supply, and if revenue assistance is felt to be a necessary part of such a goal, it will be up to governments to ensure that their programs are not contributing to a deteriorated environment. One way of doing this is through cross-compliance, a concept introduced by the U.S. *Food Security Act* of 1985, whereby commodity benefits were denied to those farmers who converted wetlands or highly erodible land to crop production.

Cross-compliance would mean that certain programs were available to producers only if they conformed to good agricultural practice. This need not necessarily involve assessment by academics or the bureaucracy, but rather by fellow farmers. Dr. McEwen suggested that the agricultural community was in a better position to apply such standards.[25]

At the hearings, the concept of cross-compliance was supported in certain situations, namely to bring poor-quality land out of production. It was the method of implementation that aroused the most discussion. Obviously, increasing awareness and understanding by extension and other programs is a priority. The next section of the report will look at the types of supportive programs and technical staff that are necessary to provide "farmer-friendly" information. Accessible information will increase awareness of the benefits of conservation and sustainable practices. Pre-planning and education were considered critical for paving the way to new approaches, such as cross-compliance. In this way, the farming community would be alerted to expectations about environmental sustainability. Several witnesses also had concerns about taking a regulatory rather than a cooperative path.

A cooperative system of cross-compliance has already shown signs of success, according to Mr. Paul King, Agricultural Fieldman with the Camrose, Alberta Agricultural Service Board, where management practices are a consideration in farmers' claims for livestock losses from predation. Provincial compensation is refused where management practices have contributed to these losses.[26] Mr. King explained the effectiveness of the program in terms of the few repeat requests for compensation in the absence of improved management practices.

The Committee applauds what is being accomplished by a cooperative approach. It would take this a further step. Farm groups are already suggesting farm plans should be a requirement for new environmental support programs. These plans would provide the

information needed for gauging whether each farm was meeting its environmental objectives. The Committee would apply eligibility criteria to all support programs. As mentioned, the U.S. denies financial subsidies to producers who do not meet certain conservation criteria.

4.7 Existing Policies and Programs

This action would make no sense unless government rationalized existing programs to ensure that they did not detract from environmental goals. A report delivered to Ministers of Agriculture in November 1991 set out guidelines on how this might be accomplished. Proposed criteria would cover the review of existing policies and programs, principles of environmental assessment, and coordination mechanisms for environmental reviews. The plan is the first step in meeting a commitment made as part of the agri-food policy review to make existing policies and programs consistent with sound soil and water principles.[27]

It has been suggested that the new safety net programs, GRIP and NISA (Net Income Stabilization Account), should be the first programs used as a practical application of the recommended methodology for environmental assessment. The enabling legislation for the two programs calls for environmental assessments to be carried out within two years of a federal-provincial agreement coming into force. GRIP is now operating in every province except Newfoundland. NISA is in effect in all provinces except Newfoundland and New Brunswick.[28] The national GRIP committee has been involved in developing the environmental review process. It makes more sense to build environmental criteria into a program at its development stage and it is hoped we are moving in this direction in this country.

8. **The Committee recommends that federal agricultural support programs should be market and production neutral.**

9. **The Committee recommends that producers qualify for federal financial assistance when they have met environmental practices that are part of an approved conservation farm plan.**

10. **The Committee recommends that the federal government set a time frame to meet the urgent need to convert existing agri-food policies and programs into an environmentally sustainable food system.**

11. **The Committee recommends that sustainable agriculture criteria be included in the development of all future agri-food policies and programs.**

End Notes

[1] Issue 9:24, 21-10-91.

[2] Agriculture Canada and Alberta Agriculture, *Sowing the Seeds for Sustainable Agriculture*, Proceedings of the Travelling Symposium, Vol. 1, February 11-16, 1991, p. 5.

[3] *Ibid.*, p. 7.

[4] Issue 9:43, 21-10-91.

[5] Federal-Provincial Agriculture Committee on Environmental Sustainability (1990), p. 28.

[6] Conway and Barbier (1990), p. 41.

[7] Issue 14:12, 6-11-91.

[8] Ontario Corn Producers' Association, Brief presented to the Standing Committee on Agriculture, November 6, 1991, p. 4.

[9] Issue 13:10, 5-11-91.

[10] *Ibid.*, p. 13.

[11] *Ibid.*, p. 6.

[12] Issue 18:9, 4-12-91.

[13] *Ibid.*, p. 20.

[14] Issue 12:8, 31-10-91.

[15] *Ibid.*

[16] Issue 11:4, 22-10-91.

[17] Issue 11:8, 22-10-91.

[18] Issue 13:35, 5-11-91.

[19] Issue 9:16, 21-10-91.

[20] Issue 11:40, 22-10-91.

[21] Issue 18:8, 4-12-91.

[22] Issue 11:27, 22-10-91.

[23] Ontario Federation of Agriculture, Christian Farmers of Ontario, AGCare, Ontario Farm Council, *Our Farm Environmental Agenda*, Guelph, January 1992, p. 24.

[24] *Ibid.*, p. 25.

[25] Issue 9:8, 21-10-91.

[26] Issue 11:42, 22-10-91.

[27] Agriculture Canada, *Building Partnerships*, Growing Together Publication, September-October 1991, p. 3.

[28] *Ibid.*

CHAPTER FIVE

Information for Adaptation

5.1 The Present Technology Transfer Structure

In the Committee's view, the key to achieving a more sustainable agriculture is to convert ideas developed at the scientific bench into operational practicalities on the family farm.

This country has developed a sophisticated structure for disseminating research information. An elaborate system of over 100 commodity and regional committees is overseen by the Canadian Agriculture Services Coordinating Committee (CASCC), which serves as the prime mechanism for agricultural research communication in Canada.[1] This research establishment has been quite successful during the developmental stage of agriculture in pushing out the parameters of knowledge to allow Canada to stay on the leading edge in cereal production and livestock breeding. It has concentrated on finding solutions to specialized technical problems, whether in crop science, soil science, or livestock science whereby a given problem, for example egg production efficiency, was addressed in isolation from broader issues.[2] The CASCC has done an amazing job in keeping tabs on all this research. Much of it was conducted by the federal government or the universities, after which it filtered down, often with the help of provincial extension personnel, to the farmer, who was seen as a somewhat passive recipient of this process.

The Committee learned of the difficulties in such an approach during its questioning about the reaction of farmers to integrated animal-crop forage-based farming systems.[3] One university researcher explained, there was no time to get heavily involved in as much contact and extension with the farmers as he would have liked. Thus, there was no assurance that the university-based research would turn out to be feasible for local farmers.

One farm group, AGCare (Agricultural Groups Concerned About Resources and the Environment) thought that increasing farmer and user-group representation on the federal and provincial committees might better ensure that research programs are directed to the needs of the agricultural community and society at large.[4] Others have described the existing process as cumbersome and slow-moving.[5] Also, despite the over 4,000 separate research projects carried out by government, industry, and the universities since 1974, we are told there are gaps in baseline data, including natural resource base data. Coordination of effort remains a problem.[6]

The traditional research model worked to the farmer's benefit but without his or her input. Projects could be conceived and pursued without a concern for how they could be implemented on a particular farm. It has been up to provincial extension agents, agricultural boards, farm organizations, crop associations and the farmers themselves to make

appropriate use of all the scientific information that is being generated. The Committee heard from a number of these groups and has based its recommendations on their practical and thoughtful testimony.

5.2 A Revised Research Model

New priorities prompt us to look at the relationships between production and resource management systems holistically. An understanding of the total farm system is required and nobody can do this better than the farm community itself. That message came out loud and clear to the Committee, even if the wording varied from intervenor to intervenor. "...give the farm manager the tools he or she needs to manage..." (Issue 9:30, 21-10-91). Important tools are applicable knowledge and wise advisors. This implies having technology in "user friendly" packages and access to innovator farmers or neighbours who have tried out some of the new techniques. The Committee was told that farmers trust no one more than other farmers.

In the revised model, "farmers talking to farmers" doesn't just mean exchanging ideas. It also means determining priorities, and developing new approaches that can filter up to the laboratory and help refine agricultural research. The practice of farming is transmitted, like the land itself, from generation to generation, from older to younger farmer, from neighbour to neighbour. This land-bound, cultural information serves as the corporate memory for a particular region and cannot necessarily be transmitted across the county line. When you look at the farm as a system of inputs and outputs, this type of knowledge becomes invaluable. A technology information system whereby farmers capitalize on technologies that reinforce this communication system and empower them by giving them control over their own lives is much less likely to be suspect than some scientific edict imposed externally. Farmers are in the best position to modify and improve technologies in light of their own practical experience. Common sense would tell us that no technology has much chance of succeeding if it treats the farmer as the lowest link in a hierarchical chain of transmitted wisdom. As one witness stressed, "Technology needs to be delivered in a manner that shows some sensitivity to the farmer's situation. We think we have achieved that with the one-on-one, 'come see how it works and try it out before you adopt it' approach" (Issue 11:42, 22-10-91).

The Committee heard testimony on several programs whose methods and tools demonstrate the potential of this more informal technology transfer network. The Committee was most gratified to see that one of these programs is to be extended under the Green Plan. These programs are particularly impressive because of their cooperative approaches and their ability to adjust and improve as they go along. As they evolved, they have also confirmed the need for taking long-term approaches. The Committee felt it would be useful to describe them further as practical examples of what it considers to be a promising research approach.

5.3 Technology Transfer in Progress

The Committee was heartened by testimony on new practices. It confirmed the Committee's belief that, even in bad economic times, if the benefits can be demonstrated, farmers will voluntarily use the best practices. The programs to be described bear witness to this fact.

5.3.1 Saskatchewan's Save Our Soils Program

A key technological program in which the federal government is involved in Saskatchewan is the Canada-Saskatchewan Agreement on Soil Conservation. Two somewhat different delivery arrangements operate in conjunction with the provincial extension service.[7] Technical and communication services under the Agreement are delivered by the Saskatchewan Soil Conservation Association, a producer group, contracted to perform these functions.

The Save Our Soils Program is delivered through 43 district extension boards, each of which hires a soil conservation technician to administer a program of on-farm incentives. Two field seasons have been completed, involving 3,100 producers and 61,000 hectares (150,000 acres). Fifty-six hundred kilometres (3,500 miles) of shelterbelts or 3.5 million trees have been planted. Producer involvement in program delivery has raised awareness and interest in soil conservation planning. In its brief, Saskatchewan Agriculture and Food highlighted the importance of monitoring technology transfers.[8] Such monitoring can show the results of conservation practices, encouraging their adoption or indicating where further research is needed.

5.3.2 Upgrading Equipment

Saskatchewan also described the role farmers are playing in developing and adapting technology to conserve the soil. An example used was the Conserva-Pak air seeder, which can fertilize and seed at the same time. Developed by Mr. Jim Halford, a farmer from Indian Head, Saskatchewan, it is manufactured at Indian Head and is already having an impact on how the soil is worked.[9] Its usefulness was accredited by the Manitoba-North Dakota Zero Tillage Farmers' Association in their no-till system.[10]

The issue of upgrading equipment arose at a number of the hearings. Though much farming equipment, especially on the Prairies, now needs replacing or upgrading, present low incomes make this impossible. Several witnesses stressed the importance of low-cost demonstration and trial of the specialized machinery required by many of the new technologies. With the current economic crunch, very specialized farm equipment is impractical for many farmers. In Alberta, the agricultural service boards sometimes help out by purchasing some of the newer equipment. Mr. Paul King told the Committee that the County of Camrose Board, with which he is involved, has lent or rented equipment at low cost so that producers can try it firsthand without the initial capital investment.[11] In Ontario, under the Land Stewardship Program, equipment is supplied for demonstration research plots. Initially, there was even money available to assist individuals in buying their own machinery.[12] In the Committee's view, this is one area of technology transfer where innovative approaches will be required. Joint access to expensive machinery, joint ownership, or having someone specially trained to do the job are all possibilities that may need to be investigated. Farmers have always relied to some degree on custom work performed by neighbours or other specialists; perhaps this concept could be developed as a cost-saving feature.

5.3.3 Ontario's Soil and Water Environmental Enhancement Program

The Soil and Water Environmental Enhancement Program (SWEEP) began in 1986 as a five-year federal-provincial agreement to improve soil and water quality in southwestern Ontario. The goals of the $30 million project are to reduce phosphorous in the Lake Erie Basin as a result of cropland runoff and to improve agricultural productivity by reducing soil and water degradation. This dual objective, to rationalize production and improve the environment, is of particular interest to the Committee since this is what sustainable agriculture is all about.

The Canada-U.S. Water Quality Agreement calls for phosphorous reduction in the Lake Erie Basin of 2,000 tonnes per year. SWEEP has a broad mandate that involves technical assistance, research, and financial incentives to help implement the Canadian commitment to a reduction of 300 tonnes of phospherous a year, of which 200 tonnes is from farmland and 100 tonnes is from industrial and municipal sources. The province is responsible for delivery and is providing field-level advice through expert teams, workshops and demonstration projects.[13] This omnibus conservation program encompasses a number of Ontario government soil and water initiatives, including removing fragile erodible soils from production, and promoting conservation tillage.[14] In January 1992, the program was extended as part of the federal government's Green Plan Initiative for agriculture.

One of the main roles of the federal government in the SWEEP Program is in developing and evaluating the actual technology transferred to farmers in the region. The assessment is taking place through a sub-program entitled TED (Technology Development and Evaluation), which may supply a model for future development of both the technology transfer and supporting research components for sustainable farming systems. TED's purpose is to undertake research to develop, adapt and evaluate technologies that could be applied by farmers to meet SWEEP Program objectives.[15] A private consulting firm manages TED for Agriculture Canada, which in turn provides scientific direction on research priorities and coordinates SWEEP objectives with departmental activities. A Technical Advisory Committee under TED provides input from the farming community, the universities, the private sector and government. TED is seen as a model for bridging the gap between research and practice. Despite attempts to include farmers in research planning and field experimentation, relatively few farmers beyond the innovators have been involved in TED. One promising computerized support system allowed farmers to simulate their unique operation and explore alternatives but ran out of money before its usefulness could be fully tested. The TED program taught a number of valuable lessons about the complexities of technology transfer and the need to have a long enough time frame to produce adoptable results.

Another important function of SWEEP is the collection and storage of information.[16] A centre was set up for this purpose in 1989; it serves as a centralized information source on soil conservation. The Soil and Water Conservation Information Bureau is administered by the University of Guelph where its location on the campus supplies it with information sources, resources, credibility and neutrality. The Bureau generates a newsletter, "InfoSOURCE," sent to 8,000 farmers bi-monthly, networks with innovative farmers, cultivates strong links within the research community to gather objective information including an inventory of

ongoing research, maintains a free, self-serve database (ENVIRO.DOC) of published scientific information on soil and water subjects and other reference tools, and collaborates with other conservation agencies involved in soil conservation. The Committee was told that the establishment of this federally-funded Bureau has been a very positive step for farmers and their advisors, since it can put at their disposal information resources which will help them to innovate.[17]

Another part of the federal program is a practical "hands-on" demonstration site where existing technologies can be evaluated and new conservation methods developed. A pilot demonstration looks at how the introduction of comprehensive soil and water conservation practices affects water quality and compares results with the status quo.

A practical approach is also the hallmark of the Tillage-2000 Project. This is a research and demonstration project, initiated in 1985 by the Ontario Ministry of Agriculture and Food (OMAF) in cooperation with the Ontario Soil and Crop Improvement Association and the University of Guelph. This SWEEP Project examines the effects of alternative tillage practices and crop rotations on approximately 35 farm sites throughout the province over five years and compares these with the results of side-by-side conventional tillage. The objective of the project was to develop conservation farming systems for specific soil types, climatic zones and farming operations based on information derived from field-sized plots. Plots were monitored for growth patterns, soil fertility, crop yield and economic inputs. The project results were then analyzed and distributed and will form part of the data being gathered on crop performance and soil properties in the Lake Erie Basin. The program expanded as it went along and provided new insights on tillage erosion, amount of soil loss, nitrogen replacement and new measures to control problem weeds. The result is a large database on tillage systems and their suitability for Ontario soils, which will shape tillage programs to the year 2000.[18] Project findings should enable farmers to maximize productivity and minimize soil degradation. An added bonus reported was the involvement of innovator farmers who passed on their expertise through tours and meetings.[19] Their commitment had a lot to do with the success of SWEEP, adding to the saleability of such programs.

5.3.4 The Land Stewardship Program

Unlike the case in previous grant programs, when the Ontario Land Stewardship Program was conceived, the Ontario Ministry of Agriculture and Food approached a grass-roots farmer organization, the Ontario Soil and Crop Improvement Association, to deliver it. The three-year $40 million program offered financial incentives for first-time adoption of conservation farming techniques. It focused on practices that would improve soil structure and reduce soil erosion. Land stewardship committees, consisting of four or five farmers who reviewed and recommended on projects for funding, functioned on a county basis. The least successful portion of the program was the response to training offered on such topics as conservation machinery, possibly because courses tended to duplicate what was already being offered. The grants part of the program was so successful, however, that it was expanded in 1990 as part of the Canada-Ontario Soil and Water Accord. This provided $38 million over four years to assist in the implementation of approved plans for the promotion, education, and demonstration of technology. This program is virtually fully subscribed by the

5,000 applicants, representing about 10% of the Ontario farming population.[20] One addition to the revised program is the handling of animal and chemical waste. Financial assistance is also available for joint ventures to evaluate conservation technology and to promote awareness. The more stringent emphasis on conservation farm planning does not seem to have been a deterrent, possibly because it offers a financial incentive to offset the immediate costs of adopting conservation technology.

5.3.5 Alberta's Conservation 2000 Initiative

In Alberta, the Conservation 2000 Program demonstrates an alternative private initiative taken by Alberta Pool in June 1989.[21] Local Conservation 2000 clubs of concerned farmers focus on soil conservation problems and actions. This is a 10-year program, privately-funded through a foundation composed of the Pool and four corporate members who provide financial and technical support. The corporate sponsors are DuPont Canada Inc., Monsanto Canada Inc., AT and T, and Western Co-operative Fertilizers Ltd. The foundation sponsors symposiums, leadership training, publications, tours, and promotional material. Workable, field-proven answers are offered to questions about changing farm practices, with special input and advice from industry, research, and extension personnel. One of the most important effects of these approximately 22 clubs across Alberta has been to interest farmers in soil conservation techniques applicable to local conditions.

5.4 Incentives and Barriers

These programs appear to have common aspects which make them particularly useful and acceptable to the farming community. Farmers are actively involved in making decisions and in evaluating the effectiveness of the conservation measures. This form of peer monitoring appears much more acceptable than government regulation; while there is expert information, it is easily accessible and in a farmer-friendly format. Advisors provide advice as much as possible on a one-to-one basis, with methods and solutions applicable to the particular farm. On-farm research or research and demonstration is often a part of the learning process. One SWEEP initiative that would have provided farmers with a computer-based ability to simulate their own farm situation and make conservation choices could have been an excellent tool for the transfer of technology; however, lack of long-term funding prevented proving its effectiveness. A short-term outlook seems to threaten many potentially innovative introductory steps.

Consequently, government incentives should be sufficiently long-term to allow a slow testing and uptake period especially since it can take up to three years for a program to be up and running. Often, it is after the innovators have become involved that the program starts to lag.[22] Monitoring is therefore important as it may be necessary to adapt the program to particular environmental or administrative requirements and to ensure that the program is reaching those who most need it. While funding is important, commitment and interest appear to be equally so. Field days, workshops, tours and research demonstrations all play a role in raising awareness, encouraging continuing interest, and increasing skills that will allow farmers to better evaluate the usefulness of remedial conservation measures over the long-term.

From the Committee's point of view, one of the most encouraging findings from this small survey of programs is the amount of involvement of the federal government in funding, scientific expertise, technology development and assessment, and information dissemination and communication.

Since the late 1980s, the federal-provincial accords have provided a mechanism for coordinating federal and provincial efforts in soil and water. The first major program funded within this framework, was the three-year $150 million National Soil Conservation Program in December 1987. It has contributed to many of the initiatives mentioned in this report, such as the Permanent Cover Program and on-farm technical and provincial assistance. The Committee believes it is crucial that the momentum not be lost and that such innovative financial assistance continue for existing and experimental projects that will help diversify the agricultural landscape. The Committee considers an ongoing program is a more appropriate vehicle for federal long-term assistance than is the emergency "Third Line of Defence" funding under which the Permanent Cover Program received a boost in April 1991.

One avenue may be through the six-year Green Plan Initiative for environmentally sustainable agriculture announced by Agriculture Minister Bill McKnight in February 1992: $128 million is to go to joint federal-provincial ventures and a further $22 million will address national issues, with much of the money going to an improved regulatory system for pesticides. Another $20 million will help agriculture respond to and reduce the increase in greenhouse gases. The infusion of funds will allow the innovative SWEEP program to collect another year of data but its short time-horizon means that in six years' time, it may again be a question of searching for funds for any unfinished business.

In the Committee's opinion, government funding will continue to be important if we are to continue the impetus towards sustainability revealed by our study. Private funding is becoming more visible but government seed money to encourage private involvement will continue to be important as will its funding of basic research. Producer and other private groups are beginning to deliver programs in a manner that suits the clientele of which they are a part, and their involvement is much more likely to bring about a successful transition to new production methods. Moving towards sustainability may mean learning to do things differently from the way we do them now. It may mean new attitudes and new skills. Farmers need more programs to guarantee their access to the technologies, resource personnel, training and funding assistance necessary for the move to sustainability.

There will always be an essential role for the federal government in providing scientific expertise, coordinating the input of all participants, and monitoring the move towards sustainability. This role appears to complement that of the provincial governments, which is concentrating on extension activities relating to raising awareness and providing technical advice and incentives to ensure that programs go ahead successfully.

That federal coordinating role will become ever more important as the informal research network that is part of the new research model includes more and more "hands-on" research. The network will be expanding while at the same time we are attempting to put into effect more integrated research approaches. The Committee considers that there is a need for an independent auditor to monitor gains towards sustainability given the complexity of this new technology transfer model.

12. The Committee recommends that the federal government give priority to implementing an integrated approach to agricultural research and development.

13. The Committee recommends that the federal government work in partnership with other governments, the universities, industry and producers to ensure adoption of this integrated approach to agricultural research and development.

14. The Committee recommends that, at all levels of decision-making, producers have more involvement in the policies, programs, and technologies that may affect them.

15. The Committee recommends that the Government of Canada increase the Capital Cost Allowance in order to assist farmers to purchase approved conservation technology.

16. The Committee recommends long-term funding under the National Soil Conservation Program be committed to maintain the momentum already achieved by programs such as the Permanent Cover Program.

17. The Committee recommends that Green Plan funding build on practical lessons learned from successful programs that are already delivering technology to the farming community.

18. The Committee recommends that increasing the technical skills of resource personnel and farmers be a Green Plan priority for the agricultural sector.

19. The Committee recommends that Parliament establish an independent auditor to monitor Canadian agriculture's progress towards sustainability.

End Notes

[1] F.L. McEwen and L.P. Milligan, *An Analysis of the Canadian Research and Development System for Agriculture/Food*, Study commissioned by the Science Council of Canada, University of Guelph, 1991, p. 5-8.

[2] Thomas (1989), p. 50.

[3] Issue 11:16, 22-10-91.

[4] Issue 14:7, 6-11-91.

[5] Canadian Agricultural Research Council, *Partnerships: A Focus on Technology*, Conference Proceedings, Montreal, June 4-5, 1991 p. 72.

[6] *Ibid.*, p. 61-62.

[7] Issue 18:8, 4-12-91.

[8] Saskatchewan Agriculture and Food, Brief submitted to the Standing Committee on Agriculture, September 15, 1991, p. 11.

[9] Issue 13:6, 5-11-91.

[10] Issue 18:6, 4-12-91.

[11] Issue 11:40, 22-10-91.

[12] Ontario Ministry of Food and Agriculture, Resources Management Branch, Guelph Agriculture Centre, *Land Stewardship II Brochure*, Queen's Printer for Ontario, Guelph, 1990, p. 6.

[13] Issue 11:24, 6-11-91.

[14] Ontario Ministry of Agriculture and Food, *Annual Report, Fiscal Year 1987-88*, Queen's Printer for Ontario, Toronto, 1988, p. 18.

[15] Bob Fletcher, Ecological Services for Planning, *Technology Transfer, Research and Sustainable Farming*, Workshops on Adoption of More Sustainable Practices in the Agri-food Sector, Ottawa, January 14-15, 1992, p. 2.

[16] University of Guelph, *SWEEP Soil and Water Conservation Information Bureau Brochure*, Guelph, 1989.

[17] Issue 22:20, 11-12-91.

[18] Ontario Soil and Crop Improvement Association, Ontario Ministry of Agriculture and Food, University of Guelph, *Tillage 2000 Brochure*, Queen's Printer for Ontario, 1987.

[19] Issue 11:25, 22-10-91.

[20] Issue 22:16, 11-12-91.

[21] Alberta Wheat Pool, *Conservation 2000 Fact Sheet*, Workshop on Adoption of More Sustainable Practices in the Agri-food Sector, Ottawa, January 14-15, 1992.

[22] Issue 11:30, 22-10-91.

CHAPTER SIX

Conclusions

It is very evident that we are already in the transition phase in making agriculture more sustainable. The Committee found numerous positive signs of this, many of which it has shared with the reader. The perceived risks of adjusting present practices may be very great. Part of this concern is surely related to the cost of trying out new techniques. If farmers had some assurance that these techniques would prove beneficial, there would be less reluctance to adopt them. That is why programs like SWEEP which rationalize production and environmental objectives are so important. Programs such as Ontario's Tillage 2000, which include modeling, demonstrations and adequate resource personnel, help demonstrate in practical fashion what is feasible for an individual farmer before he or she makes changes which, poorly chosen, could turn out to be costly.

Because of experience with previous changes, there may be concern that bringing in a new technology will have unexpected ramifications for other aspects of management. Or there may be a loyalty to the traditional way in which grandfathers and fathers have farmed and the feeling that this passed-down knowledge, the importance of which we have already discussed, is superior to formal education. From all that the Committee has heard, both generational wisdom and book knowledge have a place in looking holistically at a farm and designing an agricultural scheme for it that will ensure it continues into the next century.

The Committee is sure that "where there's a will, there's a way." It feels that there are grounds for optimism. Awareness is growing in the government and in the private sectors about the cost of ignoring environmental degradation. Granted we are still identifying the problems, but we are initiating remedial programs and systems approaches that are beginning to make a difference. Direction from government is important and can be particularly effective in providing creative incentives to change the direction of agriculture. We have seen that this can mean an incremental approach, but it does require a firm commitment. When policies work at cross-purposes, commitment is not the message received. They just present road-blocks to progress.

A national policy setting out the importance of food would be a start, to be followed by an assessment of all existing policies and programs to see if they are consistent. Agriculture's current review is a beginning but the Committee questions whether this explores agriculture's place in the national economy.

The Committee realizes that it has probably asked more questions than it has offered solutions, but, as always, its intention is to continue a dialogue inside and outside the agricultural community. It sends its accolades to all those dedicated individuals who must make the proposed integrated approach work, whether it is the farmers in the field, the researchers in the lab, or the technical advisors on tour.

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APPENDIX A

List of Witnesses

Individual / Organization	Date	Issue
SUSTAINABLE AGRICULTURE		
Agricultural Groups Concerned about Resources and the Environment (AGCare)	November 6, 1991	14
Bill Allison, Vice-Chairman;		
Ken Hough, Secretary and Technical Advisor.		
Agricultural Institute of Canada	October 21, 1991	9
Freeman McEwen, President.		
Agriculture Canada	October 8, 1991	7
Avrim Lazar, Director General, Bureau for Environmental Sustainability, Policy Branch;		
Steve Henderson, Chief, Policy and Program Analysis, Bureau for Environmental Sustainability, Policy Branch;		
Laure Benzing-Purdie, Research Coordinator (Environment), Research Branch;		
Janet Ferguson, Director General, Strategies and Planning, Research Branch.		
Alberta Agricultural Service Board	October 22, 1991	11
Paul King, Agricultural Fieldman.		
Brock University	October 21, 1991	10
Hugh Gayler, Associate Professor, Department of Geography		
Canadian Cattlemen's Association	October 31, 1991	12
Jim Magee, Co-Chairman, Environment / Animal Care Committee;		
Jim Caldwell, Assistant General Manager, Director, Government Affairs;		
Peggy Strankman, Environmental Co-ordinator;		
Mary Dean, Director of Public Affairs.		

Individual / Organization	Date	Issue
Canadian Farm Women's Network	November 6, 1991	14
Rennie Feddema, Treasurer.		
Canadian Federation of Agriculture	November 26, 1991	16
Ralph Jespersen, President;		
Sally Rutherford, Executive Director;		
Andreas Dolberg, Resource Analyst.		
Canadian Fertilizer Institute	December 12, 1991	23
Bob Whitelaw, Chairman of the Board (CFI), President and CEO, Agrico Canada Ltd.;		
Henry Neutens, Chairman, Environmental Affairs Committee (CFI), Vice-President, Kent County Fertilizers Ltd.;		
Jim Beaton, President, Potash and Phosphates Institute of Canada;		
Bud Kushnir, First Vice-Chairman (CFI), Senior Vice-President, Operations, Sherritt Gordon Ltd.;		
Jim Brown, Managing Director (CFI).		
Canadian Organic Growers Inc.	December 5, 1991	19
Anne Macey, Member of the Executive.		
Canadian Organic Producers Marketing Cooperative Ltd.	December 5, 1991	20
Robbie Wotherspoon, President;		
Elmer Laird, Vice-President and Director of Communications.		
Canadian Organic Unity Project	December 5, 1991	19
Bryan Johnson, Project Manager		
Crop Protection Institute	November 28, 1991	17
Allan Jones, Vice-President, Environmental Affairs, Rhône-Poulenc Canada Inc.;		
Cam Davreux, Vice-President, C.P.I.;		
Wendy Rose, Communication Manager, C.P.I.		

Individual / Organization	Date	Issue
Macdonald College of McGill University	December 5, 1991	19
Stuart Hill, Director of Ecological Agriculture Projects;		
Jacques Nault, Agronomist.		
Manitoba-North Dakota Zero Tillage Farmers' Association	November 5, 1991	13
Garth Butcher, Past President;		
David Rourke, Board Member.		
National Farmers Union	November 28, 1991	17
Perry Pearce, National Board Member;		
Hartmut Haidn, National Board Member;		
Rick Munroe, Member;		
Cory Ollikka, Youth President.		
Ontario Corn Producers' Association	November 6, 1991	14
Terry Daynard, Executive Vice-President.		
Ontario Ministry of Agriculture and Food	October 22, 1991	11
Brent Kennedy, Resource Management Specialist.		
Ontario Soil and Crop Improvement Association	December 11, 1991	22
Maurice Martin, President;		
Elwin Vince, First Vice-President;		
Harold Rudy, Program Manager.		
Organic Crop Improvement Association International (Canada)	December 5, 1991	20
Cy Ross, Member;		
Don Blakney, Director.		
Prairie Pools Inc.	November 26, 1991	16
Brian Saunderson, Director of Manitoba Pool Elevators;		
Wallace Winter, Saskatchewan Chairman of Rye Committee;		
Dale McKeague, Policy Analyst, Manitoba Pool Elevators.		

Individual / Organization	Date	Issue
Preservation of Agricultural Lands Society Gracia Janes, President; John Bacher, President of Friends of Foodland.	December 11, 1991	22
Resource Efficient Agricultural Production Canada Roger Samson, President.	October 21, 1991	10
Saskatchewan Agriculture and Food Henry Zilm, Assistant Deputy Minister; Martin Wrubleski, Director, Agricultural Engineering Branch.	December 4, 1991	18
Science Council of Canada Janet Halliwell, Chairman; Clay Gilson, Chairman of the Sustainable Agriculture Project; William Smith, Project Officer and Science Adviser.	December 4, 1991	18
Soil and Water Conservation Society, Alberta Chapter Richard Johnson, Outgoing President.	December 12, 1991	23
Soil Conservation Canada Karen Switzer-Howse, Executive Director; Ron Halstead, Director and Secretary-Treasurer.	November 5, 1991	13
University of Guelph Jock Buchanan-Smith, Professor, Department of Animal and Poultry Science.	October 22, 1991	11
University of Saskatchewan Don Rennie, Dean Emeritus; Donald Acton, Professor of Soil Science.	October 21, 1991	9

APPENDIX B

List of Submissions

Individual/Organization

SUSTAINABLE AGRICULTURE

AGCare (Agricultural Groups Concerned about Resources and the Environment)

Agricultural Institute of Canada

Buchanan–Smith, Jock (Professor, Department of Animal and Poultry Science, University of Guelph)

Canadian Animal Health Institute

Canadian Broiler Hatching Egg Marketing Agency

Canadian Cattlemen's Association

Canadian Farm Animal Care Trust

Canadian Farm Women's Network

Canadian Federation of Agriculture

Canadian Federation of Biological Societies

Canadian Fertilizer Institute

Canadian Organic Growers Inc.

Canadian Organic Producers Marketing Cooperative Ltd

Canadian Organic Unity Project

Canadian Turkey Marketing Agency

Canola Council of Canada

Crop Protection Institute of Canada

Fédération d'agriculture biologique du Québec

Gayler, Hugh (Associate Professor, Department of Geography, Brock University)

Hall–Beyer, Bart (Agronomist)

Hill, Stuart (Director, Ecological Agriculture Projects)

King, Paul (Agricultural Fieldman, Alberta Agricultural Service Board)

Lapointe, Richard (Private Citizen)

Manitoba Minister of Agriculture

Manitoba–North Dakota Zero Tillage Farmers' Association

Monsanto Canada Inc.

Munroe, Rick (Private Citizen)

National Farmers Union

Olsen, Mary (Private Citizen)

Ontario Corn Producers' Association

Ontario Fruit and Vegetable Gowers' Association

Ontario Ministry of Agriculture and Food

Ontario Wheat Producers' Marketing Board

Organic Crop Improvement Association

Peace River Organic Producers Association

Prairie Pools Inc.

Preservation of Agricultural Lands Society

Rempel, Sharon (Private Citizen)

Samson, Roger (President, Resource Efficient Agricultural Production Canada)

Saskatchewan Agriculture and Food

Saskatchewan Research Council

Saskatchewan Water Corporation

Science Council of Canada

Soil Conservation Canada

Tylucki, Ted (Private Citizen)

Union of Agricultural Producers

University of Guelph, Ontario Agricultural College

Western Stock Growers' Association

Government Response Request

Pursuant to Standing Order 109, the Committee requests that the Government table a comprehensive response to the Report within one hundred and fifty (150) days.

A copy of the relevant Minutes of Proceedings and Evidence (*Issues Nos. 7, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 22, 23 and 38 which includes this report*) is tabled.

Respectfully submitted,

HARRY BRIGHTWELL,
Chairman.

Minutes of Proceedings

TUESDAY, APRIL 7, 1992
(39)

[Text]

The Standing Committee on Agriculture met *in camera* at 3:43 o'clock p.m. this day, in Room 307, West Block, the Chairman, Harry Brightwell, presiding.

Members of the Committee present: Vic Althouse, Harry Brightwell, Maurice Foster, Len Gustafson, John Harvard, Al Horning, Ken Hughes, Rod Laporte, Gabriel Larrivée, Joe McGuire, Ken Monteith, Bob Porter, Lyle Vanclief.

In attendance: From the Research Branch of the Library of Parliament: Sonya Dakers, Research Coordinator.

The Committee commenced its examination of the draft report on sustainable agriculture. (*See Minutes of Proceedings and Evidence, Tuesday, October 8, 1991, Issue No. 7*).

At 5:27 o'clock p.m., the Committee agreed to suspend its consideration of the draft report.

The Committee then proceeded with a general discussion as to its future business.

At 5:50 o'clock p.m., the Committee adjourned to the call of the Chair.

THURSDAY, APRIL 9, 1992
(40)

The Standing Committee on Agriculture met *in camera* at 3:43 o'clock p.m. this day, in Room 536, Wellington Bldg., the Chairman, Harry Brightwell, presiding.

Members of the Committee present: Vic Althouse, Harry Brightwell, Ken Hughes, Gabriel Larrivée, Joe McGuire, Ken Monteith, Bob Porter, Lyle Vanclief.

In attendance: From the Research Branch of the Library of Parliament: Sonya Dakers, Research Coordinator.

The Committee resumed its consideration of the draft report on sustainable agriculture. (*See Minutes of Proceedings and Evidence, Tuesday, October 8, 1991, Issue No. 7*).

At 5:08 o'clock p.m., the Committee adjourned to the call of the Chair.

TUESDAY, MAY 5, 1992
(42)

The Standing Committee on Agriculture met *in camera* at 10:11 o'clock a.m. this day, in Room 701, La Promenade, the Chairman, Harry Brightwell, presiding.

Members of the Committee present: Vic Althouse, Harry Brightwell, Maurice Foster, John Harvard, Rod Laporte, Joe McGuire, Bob Porter, Lyle Vanclief.

Acting Members present: Girve Fretz for Len Gustafson, Lee Richardson for Ken Hughes.

In attendance: From the Research Branch of the Library of Parliament: Sonya Dakers, Research Coordinator.

The Committee resumed consideration of the draft report on sustainable agriculture. (*See Minutes of Proceedings and Evidence, Tuesday, October 8, 1991, Issue No. 7*).

On motion of Lyle Vanclief, it was agreed,—That the Draft Report, as amended, be adopted as the Committee's Second Report to the House and that the Chairman be instructed to present it to the House when it is printed.

On motion of Bob Porter, it was agreed,—That, pursuant to Standing Order 109, the Committee request that the Government table a comprehensive response to the Report within one hundred and fifty (150) days.

On motion of John Harvard, it was agreed,—That the researcher and Clerk be authorized to make such typographical and editorial changes as may be necessary without changing the substance of the Draft Report.

On motion of Maurice Foster, it was agreed,—That the Committee be authorized to hold a press conference following the presentation of the Report in the House of Commons.

On motion of John Harvard, it was agreed,—That the Clerk be authorized to engage the services of a French text reviser to review the text of the Committee's Report on sustainable agriculture, in an amount not to exceed $2,250.00.

On motion of John Harvard, it was agreed,—That, in addition to the 550 copies printed by the House, the Committee print 1,500 additional copies of the report.

At 11:55 o'clock a.m., the Committee adjourned to the call of the Chair.

Carmen DePape
Clerk of the Committee

Chambre des communes
Canada

SUR LA VOIE

d'une

agriculture viable et durable

RAPPORT DU COMITÉ PERMANENT DE L'AGRICULTURE

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