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Ontario Farmers' Commitment to the Natural Environment

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On Behalf of

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For the

Walkerton Commission

July 2001

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Introduction

Ontario farmers have long realized the potential for agricultural production practices to have a negative impact on the natural environment. In response to this potential risk, farmers and their organizations have been active in promoting the development, verification and subsequent adoption of management techniques that will allow farmers to continue in the essential business of food production, while minimizing environmental degradation. An example of a technique familiar to most people that has been adopted by farmers throughout the world is ploughing on the contour of a slope or hill to reduce soil erosion.

The paper has three objectives:

- \$ provide examples of programs, research, and other initiatives that have been undertaken or supported by Ontario farmers through their organizations;
- \$ determine areas of research and programming that need to be addressed in the years to come; and,
- \$ provide recommendations as to how future research and programming needs can be funded

The environmental ethic of Ontario farmers is demonstrated not only by their willingness to adopt management techniques that reduce negative environmental impacts, but also by their willingness to invest in the development and verification of such techniques.

Environmental Initiatives in Ontario Agriculture: Fifteen Years of Progress

Grower Pesticide Safety Course

In 1986 AGCare (Agricultural Organizations Concerned About Resources and the Environment,) an umbrella group representing Ontario's field and horticultural producers, approached OMAFRA to discuss the development and implementation of a training program for Ontario farmers that focussed on the safe transportation, storage and application of pest control products. The outcome was the development and delivery of the Grower Pesticide Safety Course (GPSC), which is jointly administered by the Ridgetown Campus of the University of Guelph, Ontario's Ministry of Environment, and Ministry of Agriculture, Food and Rural Affairs (OMAFRA), and AGCare through their participation on the Ontario Pesticide Education Program (AGCare, 1991).

It is noteworthy that Ontario farmers, as well as farmers elsewhere, have had the opportunity to dismiss many of the objections to the use of agricultural pesticides as alarmist. For example, farmers could have cited the work of Dr. Bruce Ames, a prominent biochemist from the University of California at Berkeley, who has determined that 99.99 per cent of the pesticides in

the diet of people are naturally present in plants (Ames, 1990). Or farmers could have relied on testimony from Dr. Elizabeth Whelan, an esteemed epidemiologist, who, when she spoke in the early 1990's at an Ontario Institute of Agrologists' function stated that the best estimate as to how many people in North America have died as a result of pesticide residue on foods is **zero**. Not one! (Whelan, 1990). Yet farmers chose not to dismiss public concerns around pesticide use. While they do not disagree with the positions put forward by Ames and Whelan, they recognize that there are potential health and safety risks associated with pesticide use and are committed to managing those risks. Hence farmers' request, and continuing support for a program that provides training in the safe handling of pest management products.

The commitment Ontario farmers have to responsible use of pest control products is demonstrated by the fact that they have been instrumental in having the GPSC evolve over the years from a course that when first introduced was recommended but not required of farmers, to the current situation that allows only those who have passed the GPSC, and are thus classified as Certified Agriculturalists, to purchase and oversee the use of pesticides Scheduled as 1, 2, or 5. The *Pesticides Act* is the statute that restricts the sale of certain pesticides to only Certified Agriculturalists, and requires recertification every five years.

Another development relating to the GPSC is that of the Agricultural Assistant designation. As of January 1, 2000 anyone who handles and applies Schedule 2 or 5 pesticides must either be a Certified Agriculturalist or an Agricultural Assistant working under the supervision of a Certified Agriculturalist (AGCare, 1999).

The trend in pesticide use in Ontario has continually declined, as measured by total active ingredient, since a benchmark survey was conducted in 1983. Indeed a 40 percent reduction in active ingredient of pesticide was reported from 1983 to 1998 (Hunter, 1999, p.5). OFEC believes that this reduction is attributable, in part, to the more judicious use of pest control products as a result of the training provided to farmers through the GPSC.

A Grower Pesticide Safety Certificate is now required of anyone purchasing agricultural pesticides in the province of Ontario. While not all farmers are ecstatic with regard to this requirement, the majority of farmers recognize the value. It is noteworthy that farmers are far more accepting of a pesticide training program that a farm organization recommended and helped to develop, than one imposed upon them by government.

Our Farm Environmental Agenda

In 1990 Ontario elected its first social democratic government. Ruth Grier, the Minister of Environment in the newly elected social democratic government, and one of the few seasoned politicians sitting for the government, immediately announced her intention of quickly introducing a 'world class' Environmental Bill of Rights. The Minister of Agriculture, who was a neophyte politician, correctly assumed that such a bill had the potential to negatively impact upon agriculture, and assembled a Minister's Advisory Committee on Environmental Responsibility.

Sixteen Ontario farm leaders sat on this committee and most became quickly frustrated with the process. The source of their frustration was the fact that they were hearing presentations from numerous ministries explaining how agriculture would have to change in order to be more environmentally responsible. There was little or no recognition given to the advances made in such areas as crop rotation, reduced tillage, erosion control, or integrated pest management, to name just a few. Nor was there recognition of the fact that farmers themselves were best equipped to both identify and address environmental concerns associated with agricultural practices. Instead, farmers were expected to respond to agricultural agendas developed outside of their community by people with little practical knowledge of the farming industry.

This level of frustration resulted in the formation of the Ontario Farm Environmental Coalition (OFEC) in July 1991. The four lead agencies in this coalition were, and continue to be: The Ontario Federation of Agriculture (OFA); the Christian Farmers Federation of Ontario (CFFO); AGCare (Agricultural Groups Concerned About Resources and the Environment); and, the Ontario Farm Animal Council (OFAC). Both the OFA and CFFO are general farm organizations. AGCare is an umbrella group representing 45,000 field and horticultural crop producers on pest management issues, while OFAC is a council of livestock organizations that address animal welfare issues. In total over 30 Ontario farm organizations and virtually every commercial farmer in the province is represented by OFEC.

Dr. Gordon Surgeoner, a professor in the Environmental Biology Department at the University of Guelph, accepted an invitation to chair this coalition of farm organizations when it was established in 1991. Naming an individual who was not directly associated with a farm organization was a deliberate and strategic decision to ensure that the cohesiveness of the coalition could be maintained by eliminating the politics associated with choosing one leader from a group of leaders. Dr. Surgeoner was an excellent choice in that he had a demonstrated interest in issues pertaining to agriculture and the environment having recently completed a sabbatical in which he explored the concept of sustainable agriculture, and he had an abundance of passion for farmers and the multitude of issues they faced in running their businesses.

The first task of OFEC was to produce a document entitled *Our Farm Environmental Agenda* (1992). Having been faced with the possibility of responding to an agenda developed outside of the farm community, farmers decided to develop their own agenda. Farm organizations and farm organizations alone worked to develop this agenda document. It took thousands of hours, countless revisions and a few rewrites to produce a text that met the needs of each of the over 30 farm organizations represented by the coalition. In January 1992, *Our Farm Environmental Agenda* was released. It outlined environmental concerns that farmers identified with respect to soil quality, water quality, air quality, agricultural inputs, and natural resources.

The major recommendation contained within the document was to address environmental concerns associated with agricultural production practices by having every commercial farmer in the province produce an environmental farm plan tailored to his or her own particular farm operation. At that point in time, the concept of an environmental farm plan included the following aspects:

- \$ documenting the quality of the farm environment, recognizing the positive role played by good crop and animal husbandry;
- modifying practices and make other necessary changes that, over time, will result in an improved environment;
- \$ documenting actual farm practices employed as a result of completing an environmental farm plan
- \$ requiring a completed environmental farm plan as an eligibility requirement for accessing funding targeted to on-farm projects of an environmental nature

Other recommendations contained in *Our Farm Environmental Agenda* were linked to the environmental farm plan process. They included the following:

- Education and advisory support for developing materials associated with environmental farm planning and for the actual training process;
- \$ Research and development ranging from basic investigation to on-farm research verification and demonstrations;
- \$ Funding programs to assist farmers in offsetting capital costs associated with adopting practices that benefit the environment but do not improve the profitability of a farm operation;
- \$ Regulation when appropriate, recognizing that fostering an environmental ethic using a farmer-helping-farmer approach is far superior to regulatory instruments that tend to be over generalized and difficult to enforce.

It is worth restating that the above recommendations were developed exclusively by Ontario farm organizations working in concert through OFEC. *Our Farm Environmental Agenda* remains as the guiding document for OFEC activities today; strong evidence of the benefits associated with having broad, meaningful consultation with stakeholders when developing a policy position.

Environmental Farm Plan Program

As stated above, the primary recommendation of *Our Farm Environmental Agenda* was to address environmental concerns through a process of environmental farm planning. However, when that recommendation was put forward environmental farm planning was nothing more than a concept. It was at this point that OFEC invited relevant provincial and federal ministries into the coalition to assist in the development and delivery of what we now refer to as Ontario's Environmental Farm Plan Program (EFP).

Ontario's EFP Program was launched in 1992 as a Pilot Project involving approximately 500 participants from seven counties in the province. The Program relies on an EFP Workbook comprised of two distinct components. The first is a qualitative, self-administered risk assessment containing 23 Worksheets that outline environmental concerns at the farmstead level, the field level, and woodlots, wetlands and streams, where applicable. The second is an Action Plan that a farmer develops to address specific concerns identified in their risk assessment. Provincial government involvement in writing the Worksheets was critical, with over 100 staff from various Ministries participating as technical experts.

The delivery of the EFP Program is co-ordinated by the Ontario Soil and Crop Improvement Association, and involves assembling farmers (normally from 10 to 20) in a workshop setting over two days. Day-one of the workshop is used to complete a soil and site section specific to the actual farm of each participant and generally familiarize participants with the EFP Workbook and the concept of environmental farm planning. The second day is generally scheduled about two weeks later. The intent is that participants will have worked through the EFP Workbook and come to day-two of the workshop with specific questions or concerns. Approximately 100 EFP Workshops are held each fall and winter at locations throughout the province. The Workshop leader is generally a farmer who has undergone extensive training in the elements of EFP, and he or she is assisted by an OMAFRA employee, who has also undergone special training.

Funds to cover the costs of EFP Program development, implementation and administration have been provided by the Government of Canada, through Agriculture and Agri-Food Canada (AAFC). Since 1997, EFP Program funding has been sourced through AAFC's Canadian Adaptation and Rural Development Fund, administered in Ontario by the Agricultural Adaptation Council (AAC).

Another component of the EFP Program that is funded by AAFC is a financial incentive to program participants who attend the Workshop, complete the Workbook and submit it for a peer review evaluation, and subsequently undertake an on-farm project that addresses a concern identified in their EFP Action Plan. A maximum of \$1,500 is currently available to farmers to offset the capital cost of completing such a project. On average, the annual funding required to support both the education and awareness component of the EFP Program and the payment incentives is \$2 million.

By May 2001, the EFP Program had attracted over 20,000 Workshop participants since it was introduced province wide in 1993, with over 12,000 of those proceeding through the peer-review process. Of the farmers who have gone through the peer-review process, approximately 9,000 (75%) have applied for and received an EFP Incentive. It is noteworthy that EFP Incentive data indicates that payments of over \$11 million supported projects with actual costs totaling almost \$35 million, and those costs do not include 130,000 hours of unclaimed labour. Also, these data relate only to projects for which an EFP incentive claim was made. EFP Program administrators are confident that the raised awareness of farmers attending EFP Workshops has resulted in a multitude of environmental improvements that will never be captured in the EFP incentive data. For example, a recent audit of EFP Incentive recipients indicates that an average of 11 EFP action items were addressed on each farm. On average this resulted in expenditures of an

additional \$9,400 plus fifty hours of the farmers own labour, for each farm (FitzGibbon, 2000, p.27).

Ontario's EFP Program has been recognized internationally as a highly successful, industry driven, non-regulatory approach to environmental protection (OECD, 1998, pp. 53-56). While Ontario farm organizations have taken the lead in this important initiative, it truly is a co-operative effort with substantial contributions from the Government of Canada, the Government of Ontario, and the University of Guelph. However, as presented in a keynote address to the Great Lakes Basin Agricultural Summit, held at Michigan State University, OFEC is convinced that the farmer-helping-farmer approach has been a critical factor in the success of the EFP Program. Indeed OFEC is of the opinion that that had either the federal or provincial government introduced exactly the same program, the level of farmer participation would have been significantly lower (Kelly, 1996).

Nutrient Management Planning

Another important initiative of the Ontario Farm Environmental Coalition has been the development of the Nutrient Management Planning Strategy (OFEC, 1998). This strategy provides a science-based, nutrient management planning process for both the agricultural community and municipal sectors to use in setting and implementing standards which allow the province's farming sector to continue to grow and prosper with minimal environmental and societal impacts. Balancing the science-based aspect of nutrient management planning is the concept of good neighbour policies, the most important being to **never** take a neighbour's complaint lightly.

Basic principles of the NMP Strategy as released in March 1998 are as follows:

1. Farmers do not have the right to violate pollution laws, and anyone doing so should be held accountable.
2. Farmers should document and periodically review their nutrient management plans.
3. Farmers support having the agricultural industry and governments work co-operatively to achieve a consensus on pollution prevention standards regarding agricultural nutrients.
4. Farmers must follow acceptable nutrient management standards for pollution prevention.
5. Farmers will be encouraged to maintain or enhance their stewardship goals relating to nutrient management.

In answering the question 'Who needs to complete a Nutrient Management Plan?' the strategy indicates: All farmers **should** prepare a Nutrient Management Plan; Some farmers **must** prepare a Nutrient Management Plan. The trigger for those who must prepare a Nutrient Management Plan is:

-application for a building permit associated with establishing or expanding a livestock operation by 10 Livestock Units or more **and:**

-the newly established or expanded operation exceeds 150 Livestock Units

or

-the newly established or expanded operation exceeds 50 Livestock Units with a livestock density greater than two Livestock Units per tillable acre.

The elements of a Nutrient Management Plan include:

-ensuring that applied nutrients are matched to growing crop requirements

-compliance with minimum distance separations presented in OMAFRA's MDS II

-240 days of manure storage unless an acceptable manure management alternative is utilized

In responding to a request from OMAFRA to review a paper entitled *Proposed Standards for an Agricultural Operations Act in Ontario*, OFEC (2000) offered concrete recommendations to OMAFRA with respect to a classification system that would clearly indicate to all farmers the nutrient management planning requirements for various farm operation types and sizes and the phase-in period for making required adjustments (Table 1), and the importance of establishing local, nutrient management advisory committees (LNMAC's).

The classification system proposed by OFEC recognizes that all farms should eventually manage nutrients using an NMP that ensures the applied nutrient is matched with the nutrient requirements of the crop to which it is applied. However, the goal of having every farm complete and adhere to an NMP, particularly those farms that have no livestock and apply no manure or biosolids, is best phased in over a ten-year time frame. An important reason for the extended

TABLE 1

**Classification System For Ontario Agricultural Operations
Proposed by OFEC September 2000**

Category	# of Livestock & Livestock Density	Phase in Period	Requirements
1	>500 LU	1 years	<ul style="list-style-type: none"> -Engineers report supporting site selection for new and expanding operations-MDS for new and expanding operations -MDS for new and expanding operations -NMP on file at farm site -NMP third -party reviewed initially and at 5 year intervals -record keeping -Current NMP subject to random audits after 1 years and every 5 years thereafter -adequate manure storage determined by NMP (240 days for confined livestock)*
2	151 - 500 LU + those with 150 LU or less but > 2 LU /ac	3 years	<ul style="list-style-type: none"> -MDS for new and expanding operations -NMP on file at farm -NMP reviewed and updated if necessary by farmer on an annual basis -NMP third -party reviewed initially and at 5 year intervals -Current NMP subject to random audits after 3 years and every 5 years thereafter -record keeping -adequate manure storage determined by NMP (240 days for confined livestock)*
3	50-150 LU & < 2 LU /ac	5 years	<ul style="list-style-type: none"> -MDS for new and expanding operations -NMP on file at farm -record keeping -random audit of current NMP after 5 years -adequate manure storage determined by NMP (240 days for confined livestock)*
4	<50 LU & <2 LU /acre	5 year	<ul style="list-style-type: none"> -NMP on file at farm -record keeping -adequate manure storage determined by NMP (240 days for confined livestock)*
5a	No livestock but manure used	5 years	-NMP on file at farm
5b	No livestock but biosolids used	Immediate	<ul style="list-style-type: none"> -NMP on file at farm -NMP third -party reviewed initially and at 5 year intervals -compliance with Provincial Regulations governing the land application of biosolids
5c	No livestock, no manure / biosolids	10 years	-NMP on file at farm

*considerable debate is required on the definition of 'adequate storage' and the need for 240 days of storage on small livestock operations

phase-in period is that some sectors, horticulture being an example, are concerned that for many crops insufficient research has been conducted to determine optimal nutrient requirements or the means by which nutrients should be applied to minimize negative environmental impacts. The phase-in period will allow time for these research gaps to be addressed, thus providing confidence to farmers that fertilizer recommendations are based on research conducted under Ontario growing conditions with a reasonable number of replications.

OFEC has recommended that Nutrient Management Plans be subject to an OMAFRA co-ordinated third-party review leading to certification of the farm operation if **all** elements of nutrient management planning have been met. Situations may arise where OMAFRA will agree to grant a certificate when all standards are not met.

OFEC has also recommended that in areas where complaints related to nutrient management are likely, a Local Agricultural Advisory Committee be established at the county level with representation from the farm and non-farm communities. This Committee will attempt to mediate between the complainant and the farmer.

Finally, the Nutrient Management Planning Strategy of 1998 included guidelines and a model bylaw to assist municipalities in regulating the management of agricultural nutrients.

OFEC identified the following three key components that municipal bylaws relating to nutrient management should contain:

1. Certain livestock operations must prepare an Nutrient Management Plan.
2. Farm operations requiring a Nutrient Management Plan must also meet manure storage capacity requirements.
3. Minimum distance separations must be complied with.

However, over time OFEC's position on the usefulness of municipal by-laws on nutrient management changed. While the majority of the 54 bylaws relating to nutrient management that have been passed since 1997 have been relatively consistent with the OFEC model bylaw, there was evidence of considerable variation with respect to the trigger for requiring an NMP and the days of manure storage required (FitzGibbon, 2001). For example, in Lambton County the need to provide an NMP when applying for a building permit was triggered by 25 livestock units, while in Prince Edward County the trigger was 200 livestock units (FitzGibbon, 2001, p. 2). Recall that OFEC recommended that 150 livestock units be the size of farm operation that triggered the need for an NMP when applying for a building permit. As a result of these inconsistencies, OFEC decided that provincial standards would provide a more uniform approach to nutrient management across the province and ensure a science-based rather than emotive approach to the issue.

On June 13, 2001, Bill 81, a proposed *Nutrient Management Act*, was introduced to the Ontario

Legislature by the Minister of Agriculture, Food and Rural Affairs. OFEC was pleased to see that recommendations it had developed over the past several years and presented to OMAFRA were taken into consideration, in particular the writing of standards that will be provincial in scope and supersede municipal bylaws dealing with the same issues (OMAFRA, 2001, p.57).

OFEC Involvement With Ontario's Agricultural Adaptation Council

The Agricultural Adaptation Council (AAC) is a broadly based, industry-led, non-profit corporation, established in 1995 to administer the CanAdapt Program, an initiative funded from the Canadian Adaptation and Rural Development Fund (CARD) that flows approximately \$7 million of agricultural funding into Ontario on an annual basis, through Agriculture and Agri-Food Canada (AAFC). Priorities under the CARD program include: environmental sustainability, food safety and quality, research and innovation, human resources, marketing and rural development. As stated above, AAC has fully funded the EFP Program since 1997.

In May 1997, AAFC announced the National Soil and Water Conservation Program (NSWCP), that, in Ontario's case, provided an additional \$2.5 million to Ontario for agricultural initiatives that enhanced the sectors environmental sustainability. This was followed in June, 2000, by an AAFC announcement of the Agricultural Environmental Stewardship Initiative (AESI) to assist in supporting projects involving education and awareness, technology transfer and stewardship tools that will help address the impacts of agricultural practices on water, soil, air quality and wildlife biodiversity. The Ontario portion of AESI totals just less than \$2.5 million. The Agricultural Adaptation Council (AAC) was asked by AAFC to administer both NSWCP, which is now complete, and AESI, which has just been launched in Ontario. As the funding agency for OFEC's EFP Program, the AAC was aware of OFEC's expertise in addressing environmental issues relating to agricultural production practices, and approached OFEC to partner with it to deliver both NSWCP and AESI. To facilitate OFEC's involvement, an Advisory Committee was established with eight farmer representatives, four from AAC and four from OFEC. Also, staff support to the Advisory Committee is shared by AAC and OFEC.

With respect to AESI, a request for proposals has been recently circulated relating to the implementation of on-farm best management practices to address water quality. The due date for proposals is July 3, 2001, and it is anticipated that the Advisory Committee will have allocated approximately \$1.5 million in support of this activity by September 2001. The remaining AESI funds will support projects undertaken by the food processing sector to address water quality concerns and to assist farmers in establishing and maintaining a wildlife habitat component on their farms.

All but a few of the NSWCP projects approved for funding have now been completed. The majority of projects addressed the development or implementation of strategies to reduce negative environmental impacts associated with farming. Many dealt directly with the protection of either groundwater or surface water from agricultural contaminants, specifically nutrients and pathogens. In light of last year's tragedy in Walkerton, it is important to emphasize that OFEC

recognized the need to investigate pathogens associated with livestock production in 1998, when funding for projects dealing with *E. coli* (Gyles et al., 2000) and *Cryptosporidium* (Fleming et al., 1999) was approved. Indeed, OFEC funded a preliminary investigation of *Cryptosporidium* by Fleming et al. (1997) some years earlier. It is noteworthy that the only project funded by NSWCP that was exploratory in its approach dealt with the reduction and, in some cases, elimination of pathogenic organisms in liquid. Specifically, the project experimented with a physical, non-chemical, non-thermal process for introducing energy into an aqueous solution. The laboratory results of what is known as ‘pulsed plasma discharge process’ were quite promising, but it will be some time before this treatment technology is at the commercialization stage (Lowry and Cooper, 1999).

Other research studies funded through NSWCP that demonstrate the commitment of Ontario’s agricultural community to the quality of our water resources include an investigation of the integrity of a sample of concrete liquid manure storage systems (Komex, 2000), an evaluation of the impact grazing cattle have on surface water quality (Hayman, 2000), and verification at the farm level of the economic and environmental effectiveness of best management practices that are intended to reduce the movement of nitrate to groundwater (Conboy, et al. 2001). The decision by farm leaders to invest NSWCP funds into applied research again demonstrates a commitment by the industry to continuous improvement. Ontario’s agricultural research community has shown on numerous occasions that remedies for seemingly insurmountable problems can be developed in the fullness of time.

The NSWCP also funded projects where the objective was to demonstrate and implement technologies and management techniques that the research community had already assessed as effective in protecting water resources. A project to design a demonstration facility for alternative on-site septic systems and develop a series of courses to be presented to those who install such systems serves as an example (Kinsley, et al. 2000). Another example is the Rural Water Quality Program undertaken by the Grand River Conservation Authority (Ryan, 1999). This project provided financial assistance to farmers in prescribed sub-watersheds of the Grand River drainage basin for manure storage upgrades, fencing projects or other activities that would reduce agricultural impacts on water resources.

Another focus of NSWCP was education and awareness focus. To this end a number of projects were funded, including: a publication on nutrient management planning (OFA, 2000), a publication on alternative septic system designs (OSCIA, 2000), and the staging of an international conference on nutrient management planning in Niagara Falls, Ontario where farmers, academics, civil servants and agribusiness examined environmental, economic and social concerns relating to the production, storage and application of livestock manure and other nutrient sources (OMAFRA, 2000).

Finally, NSWCP funded a project to explore the feasibility of elevating the Environmental Farm Plan to the status of an environmental management system with an internationally recognized certification, namely ISO 14001. OFEC began to explore this possibility in 1998 when it commissioned a study by the University of Guelph (Wall et al., 1998). This study concluded that ISO 14001 was **not** a useful tool for improving environmental conditions on farm sites, given

that it was originally intended for large companies that have the required resources to implement and maintain the certification. However, there seemed to be considerable political support to test the ISO 14000 process in an agricultural situation so a pilot project was initiated with the intent of having a grower owned co-operative that packs and ships apples and other fruit, achieve full certification (Schankula, 2000). Indeed, the coveted ISO 14001 certification was achieved, but the cost was nothing short of astronomical, thus bearing out the conclusion of the 1998 study.

Research and Program Needs

Farmers in Ontario and around the world are faced with the challenge of trying to produce food and fibre products without having any of the necessary inputs move overland to adjacent properties or downward below the rooting zone of the crops used in rotation. For the foreseeable future, research to investigate management practices that achieve this goal will certainly be worthy of pursuit, as will the long-term verification of those practices at the farm level.

A more fundamental need, however, is for funding to continue the development and delivery of the EFP program. Despite the success of this program and the international recognition it has received, OFEC has concerns that funding agencies are looking for something new and different. Admittedly, the EFP program has not progressed to the extent that OFEC would have liked over the past few years, but that is entirely a function of underfunding. In a recent evaluation of the EFP program, Stonehouse (2000, p.4) observed that “one way of meeting the challenge of educating next-generation farmers is to expose them to the process of developing and preparing an EFP.” He went on to say that “such an exercise is essentially systemic in nature, relating theory with practice.” The same educational principles that Professor Stonehouse describes in the context of teaching university students apply in the EFP Workshop setting. Furman (1997, p.11) in a survey of 121 EFP program participants reported that 97% of respondents indicated that the exercise of attending an EFP Workshop either made the participant aware for the first time, or made them more aware of on-site environmental issues. Ideally, the EFP program will continue to evolve through revisions of workbook material as new information becomes available, through the development of new materials to address emerging issues such as the need to reduce greenhouse gas emissions, and by offering periodic updates to those farmers who have completed an EFP but would like to stay current with respect to environmental concerns facing the agricultural industry.

Funding is also needed to assist farmers in taking actions on their farms, as identified in the EFP. This is particularly important given the upgrades that may be necessary to manure storage facilities in light of the recently introduced Nutrient Management Act. Over the past several years a considerable amount of money has been invested in training farmers to assess the environmental risks associated with agricultural production, and in documenting best management practices that could address those risks. OFEC is convinced that this money was well invested, but the investment could be further enhanced by making funds available to farmers to help offset the cost of implementing best management practices on the farm.

With respect to research, there is need for applied research that builds on our knowledge of

agricultural production to develop and refine production practices that do not negatively impact the environment. While it has been long recognized that agriculture has the potential to enhance the natural environment, and in some cases those enhancements have been documented (Lockeretz, 1995), agriculture is generally perceived, wrongly, in OFEC's view, as an industry that leaves a significant footprint on the environment.

The Brundtland Commission (1987) clearly established that a sustainable agriculture must have both environmental and economic components that are positive in nature. Yet, a review of the sustainable agriculture literature would yield far more references to environment than it would to economy. OFEC supports soil and water quality research that will lead to best management practices that are 'best' in both an environmental and economic sense. Indeed, a cornerstone of the EFP Program is that a solution which is 85 percent effective in addressing an environmental concern and affordable to the majority of farmers is preferable to a 95 per cent solution that is cost prohibitive. However, determining what is best in both an environmental and economic sense can be challenging. For example, an OECD (1989) document that attempts to integrate agricultural and environmental policy suggests that "...the important function(s) of advisory services is to encourage farmers to use only the quantity of fertilizers which is necessary for profit maximisation. (p.66)". The problem is that in Ontario there are horticultural crops that show a profitable response to fertilizer applications that greatly exceed recommended application rates. This observation indicates a research need to determine 'nutrient fate' for the entire range of field and horticultural crops grown in the province, recognizing of course that 'nutrient fate' is likely influenced by a range of variable other than species. These variables may include soil texture, weather, depth to groundwater, slope, and elevation, to name just a few.

The subject of basic, fundamental, laboratory research that is curiosity driven also needs to be addressed. Farm organizations have a long history of actively supporting agricultural research that has the potential to be readily applied. However, applied research builds on basic research. OFEC has concerns that it may become increasingly difficult for researchers to attract funds for basic, fundamental research that is not directly related to agricultural production. The work on the 'pulsed plasma discharge process', described above, serves as an example where the agricultural industry did fund research that was curiosity driven, however that was the only one of forty projects approved for NSWCP funding. Where will the funds for the basic research that ultimately leads to applied research come from in a research environment where funding decisions are often based on how many dollars partners can bring to the project? And how can agricultural organizations justify partnering with a researcher to do basic research when there is an endless list of applied research that needs to be done? (Verkley, 1996).

Policy Recommendations

It is OFEC's position that environmental concerns associated with agricultural production practices are best addressed at the farm level. Indeed, not only are farm operators encouraged through the EFP and NMP processes to tailor their management to the field level of their farms, they are expected to take into consideration such in-field variables as elevation and soil texture when making management decisions. This approach would seem to be the ultimate in 'place-based environmental management' as discussed in what has become known as the Gibbon's Report (Gibbons et al., 2001). Farming is essentially a land-based industry and farmers make decisions every day regarding the management of the land under their control. Policies that result in farmers becoming aware of management practices that safeguard water resources and also encourage them to implement those practices will undoubtedly lead to improved quality in our surface water and groundwater resources.

The previous section on future research and program needs clearly indicates that OFEC believes the EFP Program should serve as the underpinning for Ontario agriculture when it comes to the management of environmental concerns. This belief is consistent with a commitment OFEC made a decade ago to include an EFP as an eligibility requirement for access to public funding for farm environmental programs (OFEC 1992) and is bolstered by the fact that Ontario's EFP has become recognized internationally as an effective, farmer led, environmental risk management tool. While both the federal and provincial governments appear to have the highest regard for the EFP Program, OFEC has had considerable difficulty securing the funds necessary to make improvements to the Program and make it available to Ontario farmers on a continuous basis. It is ironical that funding difficulties for the EFP have occurred at a time when the federal Minister of Agriculture and Agri-Food has been indicating that he has a vision of every farm in Canada having an environmental plan within five years (Vancilief, 2000 and 2001) and the Ontario government has been engaged in an inquiry into water quality. Unfortunately, the uncertainty created by the lack of long-term funding has resulted in declining participation levels since 1999 (OSCIA, 2001), which is an understandable response from the farming community. Why would farmers place their confidence in an environmental program that neither the federal nor provincial governments are willing to fund?

OFEC recommends that both the federal and provincial levels of government recognize the importance of the EFP Program as an environmental risk management tool for the Ontario farming community and provide adequate funding for its continued development, delivery and assessment.

The concept of elevating the EFP to a certified environmental management system has been an objective of OFEC for several years. The research on ISO 14000 was undertaken to explore that concept, and while it does not meet OFEC's needs at this time, learning the intricacies of the system was helpful. For example, it is readily acknowledged that the term 'continuous improvement', when used in the context of ISO 14000 relates to the improvement of the management system itself and not environmental performance. Not surprisingly, this is seen as a weakness by many environmentalists, but the justification of the approach is quite plausible. It is

argued that “...a systematic approach [such as ISO 14000] will necessarily result in improved performance and that an improved system will improve performance yet again.” (IISD, 1996, p.52). Acceptance of this justification would have an incredible, positive impact on the EFP Program in that it would silence the constant demand from funding agencies for measurable results attributable to EFP Program participation. OFEC has always been willing to accept that the EFP Program is primarily concerned with education and awareness building and that actual improvements to the physical environment will be incremental and difficult, if not impossible to measure in the short term. It is OFEC’s position that the EFP Program provides a systematic approach to environmental management that intuitively leads to environmental improvement. The antithesis to the adage ‘failing to plan is planning to fail’ could be ‘planning to succeed requires a successful planning system’. The EFP Program is such a system. And given the incredible popularity of environmental management systems within government, it would seem reasonable that both the provincial and federal Ministries of the Environment would be willing to assist OFEC in moving the EFP Program into a certifiable environmental management system.

OFEC recommends that because measurable environmental improvement that can be linked directly to the EFP Program will require a considerable length of time to document, potential EFP funding agencies should intuit that a systematic approach to environmental management as well crafted as the EFP will result in environmental improvement.

OFEC recommends that the provincial and federal Ministries of the Environment should work with OFEC to reposition the EFP Program into a certifiable environmental management system.

Another important policy issue relates to the provision of public funds to the farming community. As mentioned above, the federal government makes a considerable amount of money available to the AAC, a Council comprised of farmers elected by other farmers in their particular sector of agriculture, for their dispersal. The AAC was established in 1996 as a Council of 52 agricultural, agri-food and rural organizations, with a board of directors of 17 drawn from its member organizations. Since being established it has approved approximately 400 projects with committed funding of almost \$60 million to support a range of activities from the investigation of techniques that improve the production capabilities of common crops and livestock, to marketing, to ensuring that agricultural production does not negatively impact on the natural environment. As stated, OFEC has worked with AAC to flow the portion of their funds provided through NSWCP and AESI and OFEC has also been the recipient of AAC funding for EFP program delivery and several projects relating to agriculture and the environment.

In general OFEC has been pleased with the model of having AAFC funding flow to the farm community through AAC. While OFEC has not necessarily agreed with every funding decision made by AAC (AAC funding to EFP has not been sufficient over the past few years), the trust that AAFC has placed in the farm community by allowing a council of farmers to administer public funds is appreciated and the desired goal of funding more projects with lower administrative costs, while maintaining accountability, has been largely achieved. Given the

level of success that AAFC has had with this model of third-party delivery of funds, OFEC believes that the provincial government, through OMAFRA, should embark on a similar course, particularly since an OMAFRA administered program known as Healthy Futures, which has a Rural Water Quality component, will almost certainly flow less than one-half of the \$90 million allocated to it. Healthy Futures has utilized an advisory committee comprised of individuals from the agricultural industry, including farmers, but compared to funding programs administered by AAC it has been quite ineffective in supporting the type of investigations and implementation activities that were intended.

Any group charged with allocating scarce resources, whether the group is comprised of provincial cabinet ministers or farm leaders, will have difficulty deciding upon how the resources are to be shared. Nevertheless, OFEC strongly believes that Ontario's agricultural sector, led by farm leaders, has demonstrated its ability to make those tough decisions in a manner that will ensure that important activities relating to environmental enhancement, improved production, marketing and risk management will all be funded appropriately.

OFEC recommends that the Government of Ontario adopt a model employed by the Government of Canada whereby public funds are entrusted to the agricultural sector for disbursement by a council of farm leaders on projects and programs that will ensure Ontario's agricultural industry will be economically and environmentally sustainable for the balance of this century, and beyond.

A final policy recommendation relates to the concept of integrated risk management. Both the federal and provincial Ministers of Agriculture have indicated their preference for an integrated risk management program that would reduce the need for ad hoc, emergency assistance programs, and incorporate aspects of environmental risk and food safety, as well as the traditional risks associated with reduced yields due to weather, disease or pests, and poor prices associated with market conditions. OFEC has provided provisional support to an OFA proposal (Appendix 1) for a 'Contract With Consumers'. The essence of the contract is that farmers' commitment to continuous improvement of Ontario's farming systems must be balanced by consumers' commitment to share in the costs associated with making and maintaining those improvements.

For example, participation by farmers in training programs dealing with such topics as nutrient management, pest management, protection of water resources, and food safety will undoubtedly reduce the risk of environmental contamination but the training time and, more importantly, the time required to implement the techniques presented in the training come at a considerable cost to the farm operator. The suggestion is that an annual income support should be made available to those farmers who have taken relevant training programs and can demonstrate their commitment to principles of those programs. It is also suggested that funds be made available to help farmers offset costs associated with manure storage improvements, well upgrades or the establishment of buffer strips. Manure storage improvements have long been recognized as necessary on many livestock operations within Ontario, but neither the federal or provincial governments seem willing to share the cost. The argument seems to be that funding to agriculture

is limited and manure storage improvements are relatively expensive, therefore any funding that included the improvement of manure storages would be quickly depleted. Of course the fact that expanding the capacity of a manure storage or improving its integrity is expensive is precisely why farmers are reluctant to make the investment without some form of financial assistance, particularly when the investment provides no improvement to the profitability of the farm operation.

The use of public funds to meet the consumers' commitment is necessary because consumers of food in Ontario are unaccustomed to paying the full cost of production on most food products let alone the cost of production plus additional costs to ensure that soil, air and water resources are not damaged as a result of food production.

OFEC recommends that the Government of Ontario support the concept of Ontario farmers entering into a 'Contract With Consumers' whereby the farming community commits to the continuous improvement of Ontario's agricultural systems and consumers commit to cost-sharing the implementation and maintenance of those improvements, through the provision of public funds.

Conclusion

Five years prior to the establishment of OFEC the Brundland Commission (1987) observed that "...sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations." (p. 46). The OFEC Mandate (Appendix 2), while not drawing specifically on the language of the Brundtland Commission, essentially mirrors the essential elements contained in the above statement when calling upon all levels of government to ensure that federal, provincial and municipal policies provide adequate levels of staff and funding support for the development and implementation of strategies that will address environmental concerns linked with the business of farming.

APPENDIX 1

A Contract Between Food Producers and Consumers

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Society's awareness that human activity can negatively impact on the integrity of the natural environment has heightened in recent years. Beach closures, contaminated groundwater and endless reports on climate change resulting from the emission of greenhouse gases (nitrous oxide, carbon dioxide and methane) have fueled this heightened awareness.

Ontario farm organizations have long been aware that agricultural production practices have the **potential** to negatively impact the environment. But they also recognize that the **potential** negative impacts can be substantially reduced, if not eliminated, through the adoption of farm management practices that address negative environmental impacts.

Farm organizations have been the principal driver behind such initiatives as:

- \$ the Grower Pesticide Safety Course that provides training to farmers with respect to the transportation, storage, handling and application of pest control products;
- \$ the Environmental Farm Plan Program (EFP) that instructs farmers on how to complete a whole-farm environmental risk assessment of their farm operations and provides a template for the development of an Action Plan to address identified risks; and
- \$ the Nutrient Management Planning Strategy that sets out a number of principles relating to the importance of matching the rate of applied commercial fertilizer or manure to the nutrient requirements of a growing crop.

Farm organizations believe that initiatives such as the ones listed above have a positive impact by promoting the adoption of best management practices (BMP's) and have substantially reduced the environmental risk associated with agricultural production practices. Other initiatives that have an environmental protection element include 'identity preservation' programs and on-farm Hazard Analysis Critical Control Point (HACCP)-like programs. The aim of the former is to provide the consumer of food and fibre products with quality assurances that are actually traceable back to the producer, while the latter is focused on food safety and draws on a monitoring system developed by the food processing industry.

While there is considerable support for existing and emerging programs that will foster the protection of our air, soil and water resources, it is well recognized that costs associated with on-farm improvements aimed at reducing environmental risk are unlikely to be recovered in the marketplace.

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Consequently, Ontario farm organizations believe that public funding should be made available to the farming community to:

- \$ help offset capital costs incurred by farmers when changing a management practice (e.g. upgrades to manure storage, erosion control, etc.)
- \$ provide annual incentives to farmers who incorporates environmental management into the day-by-day management of their farm operations as demonstrated by participation in programs such as EFP, Grower Pesticide Certification, Integrated Pest Management or Nutrient Management Planning.

The concept of a ‘Contract With Consumers’ recognizes the legitimacy of consumers demand for food and fibre products that are produced without damaging our natural resource base, while at the same time acknowledging that Ontario food and fibre products must be priced to compete with similar products grown in jurisdictions where environmental protection and food safety are of less importance.

To ensure competitive pricing in the marketplace and a high level of on-farm environmental management, it is recommended that farmers who make improvements to their farm operations that address environmental and food safety concerns have access to public funds that are designated for such improvements. These funds would be best administered as a long-term program (e.g. ten years or longer) with a mandate to reduce environmental and food safety concerns associated with agricultural production through the widespread adoption of BMP’s.

It is further recommended that farmers who demonstrate a commitment to environmental management and food safety (e.g. through participation in relevant programs) be eligible for an annual income support program. These annual payments will reflect the cost to the farmer of attending and participating in seminars and workshops that provide training on food safety and environmental protection, as well as the cost of implementing the training at the farm level. An example is the emphasis that is placed on record keeping. All farmers keep some semblance of records, but the indication is that record keeping systems will have to become more robust to meet the requirements of an ‘identity preservation’ or HACCP-like program, for example. An argument may also be made for annual income support payments on the basis that a farming system that places a greater emphasis on environmental protection than on yield maximization, may be less productive.

OFEC Mandate

The Ontario Farm Environmental Coalition (OFEC) was established in July 1991 to provide a forum in which Ontario's agricultural organizations, in conjunction with relevant federal and provincial ministries, and non-farm organizations, can collectively:

- \$ identify environmental concerns associated with agricultural production practices;
- \$ develop agreed-upon strategies to assist farmers in addressing identified concerns; and,
- \$ establish a mechanism for implementing such strategies.

Using this process, OFEC is committed to the development and implementation of strategies that will encourage every farmer to conduct farming activities in a manner which respects the environment.

OFEC is prepared to lobby all levels of government to ensure that federal, provincial and municipal policies provide adequate levels of staff and funding support for the development and implementation of strategies that will address environmental concerns linked with the business of farming.

Ultimately, OFEC is committed to providing Ontario farmers with the tools necessary for them to conduct their businesses in a manner that will preserve or enhance the air, soil and water resources on which their livelihoods depend.

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