Environmental Farm Plans: Measuring Performance, Improving Effectiveness, and Increasing Participation

Final Report

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Prepared for:

Ontario Federation of Agriculture, on behalf of the
Ontario Farm Environmental Coalition

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Executive summary

The Canada-Ontario Environmental Farm Plan (EFP) Program is a strong, long-term partnership between farm groups and the federal and provincial governments. It started in 1992 and is continuing today under the 2008–2013 Growing Forward framework. The EFP Program is the primary vehicle for agricultural environmental stewardship in Ontario and enjoys high levels of participation and acceptance. Since 2005, the EFP education and risk assessment tool has been linked to the Canada-Ontario Farm Stewardship Program for cost-shared funding for eligible activities identified in EFP Action Plans.

Research objective

This project was undertaken to study and report on the effectiveness of the EFP and ways to improve the program in terms of:

1. Assessing the level of implementation of EFP Action Plans across Ontario;
2. Ongoing measurement of progress in implementing EFP Action Plans; and
3. Encouraging farmers already participating in EFP to fully implement their EFP Action Plans.

Specifically, the research assessed the development and implementation of EFP Action Plans. The research builds on a previous survey completed in 1999. A future stage of this work will examine ways of encouraging non-participating farmers to complete and implement a peer-reviewed EFP.

Methodology

This research project used three methods:

- a literature review to determine methods that have successfully encouraged producer participation and to identify strategic improvements worth consideration
- key informant interviews with Ontario Soil and Crop Improvement Association (OSCIA) representatives (n=5) and EFP technical advisors (Ontario Ministry of Agriculture, Food and Rural Affairs [OMAFRA], n=3) to gain insight into factors that encourage and discourage producers from participating in the EFP Program, as well as their experiences with the Program
- a two-stage survey of 189 EFP participants to collect data on producers' experiences with the EFP Program, their perceptions of potential services, and their progress implementing their Action Plans

Performance measurement

The EFP Program's stated objectives are to highlight a farm's areas of environmental strength, identify areas of concern, and set realistic Action Plans with timetables to improve environmental conditions and reduce risk. Moreover, the long-term goal of the funding partners of the Program is sustainable, environmentally responsible farming. Therefore, the EFP Program involves a two-stage process for encouraging agri-environmental change. The first stage directly aligns with the EFP Program, which results in producers having developed a risk assessment and Action Plan to prepare them to address the agri-environmental risks associated with their operation. The second

stage involves producers taking action to reduce the agri-environmental risks associated with their operation—they may implement these actions using their own resources, or they may participate in cost-share programs. Both of these stages must be completed for producers to reduce the impact of their operation on the environment. Measuring the causation of environmental outcomes is a complex task, which may not be attributable to any one specific program. Hence, if final outcomes cannot be determined, the second-best result is to measure the intermediate outcomes and outputs of a program that contributes to long-term outcomes. For the EFP Program, these outputs include workbook completion rates, participation in cost-sharing programs, extension services participation, and the degree to which the EFP Action Plans have been implemented.

Profile of respondents

Based on the survey results, it appears that the EFP Program is attracting producers with a wide range of characteristics. The majority (66%) of producers who participated in the EFP survey were between the ages of 35 and 55 and tended to be experienced farmers. On average, they have been farming for 27 years, since the age of 16. They also tend to have completed some form of post-secondary education (62%). Livestock and crop production were equally represented and reflective of the distribution of agricultural producers in Ontario and Canada.

When compared to the 2006 Census of Agriculture, it appears that EFP participants tend to have higher revenues and larger farms. Almost three-quarters of EFP participants reported farm revenue of $100,000 and over, compared to about one-third of producers in Ontario and Canada. Additionally, the average size of an EFP farm (590 acres) is 153% greater than the average Ontario farm (233 acres).

Encouraging agri-environmental change

Workshops and workbooks

EFPs, as currently structured in Ontario, empower the individual producer to identify environmental problems and improve on-farm conditions. The EFP model is based on education, awareness building, farm organization, leadership, and confidentiality. Responsibility is largely placed on the individual producer to voluntarily participate and to correctly examine and remedy environmental issues on their farm, with support from various sources such as farm organizations and government advisors.

As part of the EFP development process, the Program uses workshops to educate producers about agri-environmental issues. Workshops are praised in the literature for their effectiveness in promoting EFP and the value of best management practices (BMP) to producers. By design, all producers responding to the 2010 EFP survey had participated in a 3rd edition EFP workshop and had their Action Plans peer reviewed. However, on average, they had attended their first EFP workshop 10 years ago. About one-third of participants (31%) were new to the Program within the past five years. In other words, they had not participated in a 1st or 2nd edition EFP workshop.

The two most common motivations that producers cited for attending workshops were funding and education. Virtually all producers (94%) attended an EFP workshop so they could access cost-share funding, which suggests they had a specific agri-environmental project they wanted to implement. As the vast majority of producers (87%) also reported attending an EFP workshop

for educational purposes—such as evaluating agricultural concerns on their farm, increasing their knowledge of agri-environmental issues and concerns, and learning more about environmental regulations—the EFP workshops and workbooks are successfully helping producers identify and understand the nature of potential environmental concerns on their farms.

Given the educational nature of the EFP workshops, one would expect that the knowledge gained may change producers' environmental priorities for their farm. While just under two-thirds (62%) of responding producers went to the EFP workshop with a clear environmental project in mind, almost half of the respondents (45%) said, because of what they learned in the workshop, their priorities for environmental projects for their farm changed. While they did not provide specific examples of how the priorities changed, they spoke of how the workshops increased their awareness and knowledge of agri-environmental issues and concerns, motivated them to take action, and helped them prioritize projects. All of these changes to priorities are consistent with the outcomes of the EFP development process.

The creation of an EFP requires a time investment from producers, including preliminary efforts before physical changes are completed. However, for those who participated in the EFP workshop and developed an Action Plan, time commitment does not appear to be a barrier. Almost all respondents (91%) said they had enough time between the first and last day (evening) of the workshop they attended to complete their workbook. Most participants (80%) said it took them six hours or less outside of the workshop to complete the workbook.

The EFP workbook comprises 23 worksheets. The 2010 EFP survey found that, on average, producers included a potential concern and associated activity in their Action Plan for 11 worksheets (out of a possible 22[1]). Additionally, on average, they identified a potential concern and associated activity for 35 questions (out of a possible 319), which is up from 23 questions in 1999. Most commonly, producers (86% or more) included an activity in their Action Plan for at least one question associated with the following worksheets: Water Wells, Storage of Petroleum Products, and Soil Management. Compared to 1999, aside from two worksheets, a higher percentage of producers identified at least one concern per worksheet.

Action Plans

Producers who participated in the 2010 survey listed an average of 83 *individual* activities (a total of 15,708 *individual* activities for the 189 producers who participated in the survey) in their Action Plans, which is up from 23 per producer in 1999 (or 4,127 in total for the 179 producers who participated in the survey). In 2010, the number of activities per Action Plan ranged from 8 to 380. These activities may address one or more workbook question and therefore translate into an average of 27 unique activities, with a range of 6 to 84 unique activities per producer.

The EFP has a high level of program completion once producers decide to attend a workshop. The majority of respondents (80%) submitted their Action Plan for peer review within one month of the workshop, including 31% who submitted it at the workshop. Additionally, since submitting their Action Plan for peer review, most (82%) have gone back to their EFP workbook at least once to review the information or update their Action Plan, including 44% who have

[1] The workbook contains 23 worksheets. However, worksheet 1 is for Soil and Site Evaluation. This worksheet is excluded from the analysis because producers are not asked to identify on-farm actions.

gone back to the workbook more than once. Compared to 1999 (51%), more producers are reviewing their workbooks and/or updating their Action Plans. This may result from the requirement to have an up-to-date 3rd edition Action Plan to be eligible to participate in cost-share programs.

In transitioning from EFP development to implementing Action Plans, producers may require additional information on how to proceed. Almost all producers said that while implementing their Action Plan they were either able to access (77%) or did not require (18%) technical information about how to proceed. The main sources of technical information were BMP books, OMAFRA fact sheets, and OMAFRA staff.

By implementing agri-environmental practices, producers demonstrate increased agri-environmental stewardship. On average, producers have completed and/or are in the process of implementing 65% of their Action Plan. This is up from 54% in 1999. The worksheets with the greatest portion of activities completed (between 73% and 75%) are Disposal of Farm Wastes, Soil Management, and Pest Management. The worksheets with the greatest portion of activities that have not been started (between 42% and 54%) are Water Efficiency, Storage of Petroleum Products, Use and Management of Manure and Other Organic Materials, and Woodlands and Wildlife. Compared to 1999, aside from two worksheets, the percentage of activities completed and ongoing has increased.

Producers are making significant investments in agri-environmental projects. Overall, producers implemented agri-environmental activities valued at about $69,600 per farm or about $13 million in total for the 189 producers surveyed. Moreover, for 42% of the activities completed, producers said there were no implementation costs or did not report them. Producers devoted an average of 130 hours of their time per farm (or a total of 30,726 hours for the 189 producers surveyed) to implementing activities. Activities associated with the following four worksheets account for 72% of the total implementation cost and represent the highest average cost per producer: On-Farm Storage of Livestock Manure and Other Prescribed Materials, Soil Management, Energy Efficiency, and Pest Management.

Producers used an average of $53,900 (or just over $10 million in total for the 189 producers surveyed) of their own finances to cover over three-quarters (78%) of the cost of implementing activities. The remaining 22% of the costs or an average of $15,600 per farm (almost $3 million in total for the 189 producers surveyed) was financed through cost-share funding. In other words, every cost-share dollar is leveraging over $3 in producer investment in projects. On average, the cost of activities implemented by each producer was $69,600, which is up 544% from $10,800 in 1999.

Producers are also in the process of implementing 3% of activities identified in Action Plans. Almost half (45%) of the activities that have been started will be completed by 2011. Producers plan to complete another 25% of the activities by 2015.

About 31% of the activities identified in Action Plans have not been started. Producers plan to begin implementing about one-third (33%) of these activities by 2012. However, they have not decided when they would begin implementing about half (49%) of the activities. In 2010 and 1999, producers did not identify specific barriers to implementing 23% and 18% of activities, respectively. Further, the most common barriers have not changed since 1999: 30% of producers said it is not an immediate priority, which may suggest they have not been persuaded about the

importance of the project or there are other projects they would like to complete first; and 23% said they lacked finances to implement the project, which may suggest they do not have adequate access to credit to fund the project, they could not access cost-share funding, or they are currently spending resources on other projects.

Respondents were asked what additional services would help them implement their Action Plan. The top three helpful services involved on-farm activities: tours of environmental practices used on other farms (67%), one-to-one on-farm visits by technical specialists (52%), and on-farm demonstrations of specific practices or technologies (47%). These services may help meet the different needs of different types of producers, encourage producers to implement a greater portion of their Action Plans, and encourage other producers to participate in the EFP Program.

Impact of Environmental Farm Plans

Virtually all producers (95%) said their EFP had at least some impact on their farming operation. Consistent with the expected outcomes of the EFP development process, producers reported that the EFP increased their awareness and understanding of agri-environmental issues and concerns, increased their implementation of actions to address agri-environmental issues, and helped them observe environmental and financial benefits. The range of impacts identified in 2010 and 1999 were similar. As further evidence the EFP is achieving its intended outcomes, about half of the respondents (48%) said that by completing an EFP, they identified some unexpected environmental benefits for their operation. Many of the stated benefits related to increased awareness and understanding or improvements to specific farm management practices.

Many producers reported that their EFP resulted in some or significant improvement to various aspects of their farm operation: 74% saw improvement to soil quality, 71% noticed improvement to water quality, 63% found improvement to family health and safety, and 48% saw improvement to fish and wildlife habitat.

A minority of producers have voluntarily used their EFP to meet *Nutrient Management Act* (NMA) requirements (20%), counter accusations made by others regarding environmental neglect on their farm (9%), qualify for other programs/opportunities (8%), or achieve a favourable loan rate or insurance premium (3%).

Confidentiality

During the first few years of the program in Ontario, about 25% of farm producers had adopted the program (Yiridoe, 2000). At that time, participants had the misperception that other participants might disclose what could be considered sensitive and confidential information regarding their farming operation. The Canada-Ontario EFP has taken measures to limit confidentiality concerns, and the continued existence of the Program may have increased trust over time. The survey found that the confidentiality of their EFP workbook and Action Plan continues to be important, with 80% reporting that it is important or very important. However, a minority of producers said the confidentiality of their workbook and Action Plan was *important* or *very important* because they contain general business-related information that need not be shared with others or sensitive information that could be used against the farm.

Potential barriers and mitigating strategies

Overall, all producers (100%) were satisfied with the last EFP workshop they attended, including 61% who were very satisfied. Respondents were asked to provide suggestions for improvements to the EFP workshops. Their feedback did not reveal any overwhelming areas of concern. Although many comments revolved around workshop logistics, some requested additional or more in-depth educational opportunities.

Given participants' extreme levels of satisfaction with the workshops, it is difficult to draw any conclusions about the factors that may discourage others from attending and taking action. Although this research was not able to determine the reasons for non-participation, a review of literature about EFP participation and related topics in similar fields or jurisdictions revealed potential barriers to participation including insufficient information about EFPs, time constraints, mistrust of authorities, individual farm characteristics, extension agents' qualifications, financial constraints, social barriers, and technical skills shortages. Potential responses to these barriers, as cited in the literature, include increasing financial incentives and/or marketing certified EFPs; enhancing social interaction among farmers through forums for peer discussion, mentorship, or environmental clubs, which may result in increased implementation of agri-environmental practices and raise the profile of the EFP program, which may encourage other producers to participate; continuing to provide ongoing in-service training for EFP extension representatives; and tailoring services to the different needs of producers based on characteristics such as the type of commodity produced, age, and education-levels.

Conclusion and recommendations

The core activities associated with EFP development are workshops and one-on-one consultation. The typical producer attending an EFP workshop is between the ages of 35 and 55, has about 27 years of farming experience (since the age of 16), and has participated in some form of post-secondary education. A majority of participants are returning producers who had previously attended a 1st or 2nd edition workshop.

Producers mostly commonly decided to attend a workshop to become eligible to apply for cost-share funding and for educational purposes. Producers reported overwhelming satisfaction with the workshops. One of the benefits of the EFP development process is that the Program increases producers' understanding of environmental risks and mitigation practices, enables them to identify and examine areas of environmental concern, and raises their awareness of the impact of their operation on the environment. Almost half of the producers who participated in the Program said, because of attending the workshop, they changed their priorities for environmental projects.

Producers implemented or initiated 61% of the activities (9,557 activities for the 189 producers who participated in the survey) identified in their Action Plans. On average, each producer had completed 51 activities and started another three. Most commonly, they had completed or started projects related to Disposal of Farm Wastes (worksheet 6), Soil Management (worksheet 15), and Pest Management (worksheet 20). The producers who participated in the survey plan to complete a total of another 223 activities by the end of 2011.

The value of activities implemented was about $69,600 per farm or just over $13 million for the 189 producers surveyed. Producers devoted an average of $53,900 per farm or just over $10 million (for the producers surveyed) of their own finances to these projects and obtained the remaining $15,600 per farm or $3 million in total (for the producers surveyed) from cost-share programs. The most common source of cost-share funding was OSCIA-delivered programs. These activities took about 130 hours per farm or more than 30,000 hours in total (for the producers surveyed) to implement.

The outcome of the implementation of agri-environmental projects is increased agri-environmental stewardship, which leads to enhanced agri-environmental benefits and reduced agri-environmental risks. This, in turn, results in the enhanced environmental sustainability of soil, water, air, and biodiversity. Over 7 in 10 producers found that their EFP resulted in improvements to soil and water quality.

The following are recommendations for future consideration.

Recommendation 1 – Continue Successful Education through EFP Program Implementation

Through education, the EFP workshops are raising awareness of agri-environmental issues and influencing behavioural change. For example, although the majority of producers (62%) attended an EFP workshop with a clear project in mind, many (45%) changed their priorities due to what they learned in the workshop and by completing their Action Plans. This study found that producers who attend an EFP workshop are overwhelmingly satisfied with the Program. Producers provided few suggestions for changes to the workshop. Given the high-level of program satisfaction and successes in educating producers and influencing their behaviours, the main elements of the program are highly successful and should be maintained.

Recommendation 2 – Continue Powerful Linkage of Education and Cost Sharing

This study confirmed the extensive evidence in the literature that education, in combination with access to cost-sharing, is a strong motivator in encouraging producers to agri-environmental issues. However, some evidence in the literature suggests that inadequate access to credit prevents some producers from accessing cost-share programs such as the Canada-Ontario Farm Stewardship Program (COFSP). The survey of EFP participants suggests that smaller farms are less active in the EFP Program than larger farms. Further work should be done to assess whether access to credit is an issue for certain types of farms. Additionally, the EFP Program should continue coordinating its services with cost-share programming.

Recommendation 3 – Offer More Services Tailored to Different Needs of Different Types of Producers

The survey found that producers are using the services currently available through the EFP workshops and technical advice from staff at OMAFRA and other organizations or publications. While virtually all survey respondents said they could access or did not require technical information about how to implement their Action Plan, about two-thirds of the producers surveyed said additional services and assistance would or might help them implement their Action Plans to address agri-environmental risks (refer to Section 12.2 for additional information). The literature also suggests that individual participant characteristics such as age and experience may discourage participation in workshops. Therefore, the EFP Program should

consider offering specialized services based on farm and farmer characteristics such as type of commodity experience, age, size of operation, and education. The Program could accomplish this by building on its past successes in reaching out to Mennonite and First Nation farmers, which involved considering cultural and religious beliefs in outreach efforts and workshop materials (refer to Section 12.2).

Recommendation 4 – Consider Additional Ways to Encourage Farmers to Implement EFP Action Plans

This study tested producer interest in a number of additional services to assist them in implementing their EFP Action Plans. Current as well as potential participants in the EFP Program may benefit from additional services such as:

1. Tours of environmental practices used on other farms
2. One-to-one on-farm visits by technical specialists
3. On-farm demonstrations of specific practices or technologies
4. Discussions with other farmers about how to implement certain practices
5. Supplemental workshops/presentations on specific topics or practices

These services may help further educate producers about how to address on-farm agri-environmental risks and inform their decisions about what practices to implement.

Recommendation 5 – Consider Additional Services to Enhance Social Interaction among Farmers regarding EFP implementation

The literature emphasizes the importance of social factors improving farmers' participation and action in agri-environmental programs. In this study, family, friends and neighbours are identified as an important source of information on how to implement EFP Action Plans. Social factors are already integrated into the existing EFP Program. Nevertheless, the EFP Program should consider further enhancing social interaction among farmers regarding their EFP implementation. This may involve establishing forums for peer discussion, mentorship, or environmental clubs. Enhanced social interactions may result in increased implementation of agri-environmental practices and raise the profile of the EFP Program, which may encourage other producers to participate. Many of the additional services suggested in recommendation 4 will help facilitate enhanced social interaction.

Recommendation 6 – Conduct Research to Understand Motivation of Farmers not Participating in EFP

While some insight into barriers to participation have been gathered through the literature, research on the motivations and opinions of producers who have not attended an EFP workshop or submitted an Action Plan for peer review is needed to identify approaches to facilitate participation. This information would enable the EFP Program to identify potential methods of increasing participation. Appendix C includes a draft questionnaire for research on non-participants.

Roughly one-quarter of Ontario farmers have never participated in EFP and another 65%–70% have participated in the past but do not have an up-to-date 3rd edition EFP. Additional techniques to attract these groups of farmers into the EFP program are needed. Not all will choose to

participate, but presumably many will, given the right approach. Research will help identify the right techniques and perhaps how many more farmers might be expected to participate.

Recommendation 7 – Expand Performance Measures to Show Success of EFP

Ongoing performance measurement and monitoring, such as through the 1999 and 2010 surveys of EFP participants, will enable the EFP Program to track and communicate its effectiveness at promoting environmental stewardship and encouraging producers to implement actions to mitigate or manage agri-environmental risks. The EFP Program's greatest area of influence is education-oriented. The process of behavioural change begins by attracting producers to EFP workshops and encouraging them to complete workbooks and submit Action Plans for peer review. Once they have completed the educational aspects of the EFP Program—for the EFP Program to have contributed to an environmental impact—producers must implement their Action Plan. Therefore, any performance measurement strategy must include the educational and implementation aspects of the EFP Program.

The current information and statistics collected regarding EFP participation remain useful and should continue to be tracked (see Section 5). Consideration should be given to collecting additional information through the EFP workshops that might help show the success of the EFP including reasons for attending an EFP workshop, satisfaction with workshops, and the number of worksheets and questions completed as part of the risk assessment. Additionally, to further enhance performance monitoring of the EFP Program, the following indicators should be tracked:

- Number of worksheets and questions included in the Action Plan
- Number of activities included in the Action Plan
- Length of time taken to submit the Action Plan for peer review
- Number of activities implemented
- Percentage of Action Plan completed or initiated
- Amount of financial and time resources expended implementing projects
- Percentage of actions implemented that affect soil, water, air quality, and biodiversity (by worksheet)

Direct measurement and modeling of environmental benefits of EFP implementation on soil, water, air, and biodiversity is outside the scope of this project. Nevertheless, linking performance measurement within the EFP Program with scoped empirical measurement and modeling of environmental effects could be useful for corroborating the effects of actions.

Recommendation 8 – Use Action Plan Data to Document the Value of EFP

To monitor and measure the EFP's educational and environmental impacts, it is important to maintain detailed information on the nature of the Action Plans prepared by producers while maintaining confidentiality. Analysis of Action Plan data can be used to assess the extent to which producers identify and take action on environmental concerns on their farms. Electronically capturing the content of completed Action Plans would facilitate the performance monitoring process, perhaps from a sample of farms. The electronic version of the EFP workbook and Action Plan may provide an opportunity in this regard. To protect the confidentiality of producers, the database should not contain any private information. The 1999

and 2010 surveys are good examples of the ability to both collect information on EFP Action Plans and maintain confidentiality.

Linking the Action Plan databases to databases maintained by cost-share programs would facilitate assessment of the contribution of educational programs and funding programs to environmental change. Additionally, by understanding the nature of the concerns identified and actions implemented/to be implemented, one can estimate the cumulative impact of the EFP and cost-share programs on the environment.

Recommendation 9 – Ongoing EFP Performance Measurement

Future surveys of producers participating in the EFP Program should attempt to contact two subsets of producers:

1. A random sample of participants to assess the overall progress of the EFP Program

2. A sample of participants who have participated in previous surveys to assess the implementation of Action Plans over time.

These two samples would provide a picture of the EFP Program as a whole and its ability to continue to influence change over time.

Recommendation 10 – Revise the EFP Action Plan to Enable Farmers to Identify Changes in Risk Ratings Resulting from Activities Undertaken

The goal of the EFP Program is to improve environmental conditions and reduce risks on farms. A measure of such improvement would be changes in the risk ratings (up to 319 ordinal ratings of 1 to 4) in the EFP workbook arising from the implementation of the Action Plan. To better enable this type of identification of the extent of risk change, the EFP Program should consider revising the EFP workbook Action Plan template to make it easier for producers to determine how individual actions may improve a particular risk rating. This action would assist producers in undertaking continuous improvement of risk ratings over time. There is an educational goal in producers identifying what activities identified in their Action Plan will actually improve their risk ratings and the extent of the improvements, relative to the risk rating categories specified for each workbook question.

In support of the change above, the definitions of actions, compensating factors, and monitoring activities should be clarified. The research found that the definitions included in the workbooks are not well-understood or consistently applied. Classification of the activities in the Action Plan based on these definitions may help establish the magnitude of the EFP Programs' impact on the environment.

1.0 Introduction

The Environmental Farm Plan (EFP) Program is a strong, long-term partnership between farm groups and the federal and provincial governments that started in 1992 and continues today under the 2008–2013 Growing Forward framework. The Canada-Ontario EFP Program is the primary vehicle for agricultural environmental stewardship in Ontario and enjoys high levels of participation and acceptance. However, additional methods may be needed to encourage all remaining farms to complete an up-to-date EFP and fully implement it.

Approximately 70% of Ontario agricultural producers have participated in EFP workshops, but only about one-quarter have an up-to-date, peer-reviewed 3rd edition EFP. In 2002, Robinson (2006b, p. 209) estimated that one-quarter of Ontario farmers had begun to implement peer reviewed EFPs. Additionally, it is estimated that 53% of concerns in a sample of EFPs had been acted on in 1999 (FitzGibbon, Plummer, & Summers, 2000a; Plummer, Spiers, Summer, & FitzGibbon, 2007; Summer, Plummers, & FitzGibbon, 2008). While these studies provide some insight into the performance of the EFP Program, statistics on the number of participants and workbooks distributed are only descriptive and lack analysis of effectiveness and achievements. The Program seeks up-to-date estimates of how many actions are identified and implemented in EFPs and to encourage producers to complete 3rd edition EFPs and fully implement them.

This project was undertaken to study and report on the effectiveness of the EFP and ways to improve the EFP Program in terms of:

1. Assessing the level of implementation of EFP Action Plans across Ontario;
2. Ongoing measurement of progress in implementing EFP Action Plans; and
3. Encouraging farmers already participating in EFP to fully implement their EFP Action Plans.

A future stage of this work will examine ways of encouraging non-participating farmers to compete and implement a peer-reviewed EFP. In support of this research, a draft questionnaire for a survey of non-participants appears in Appendix C.

1.1 Purpose and outline of report

This report provides the results of a research project to assess the effectiveness of Ontario's EFP Program and recommend ways to improve it in terms of:

- Assessing the level of implementation of EFP Action Plans across Ontario;
- Ongoing measurement of progress in implementing EFP Action Plans; and
- Encouraging farmers already participating in EFP to fully implement their EFP Action Plans.

Specifically, the research assessed the development and implementation of EFP Action Plans. The research builds on a previous survey completed in 1999.

- Section 2 details the research methodology.
- Section 3 outlines the history of EFPs in Ontario.
- Section 4 discusses behaviour change theory and Section 5 discusses performance measurement of EFPs.
- Sections 6 through 14 provide the research results.
- Section 15 offers conclusions and recommendations.

2.0 Methodology

This research project comprised three data methods: a literature review, key informant interviews, and a survey of EFP participants.

2.1 Literature review

The objective of the literature review was to determine methods that have successfully encouraged producer participation and to identify strategic improvements worth consideration.

An initial review of online documentation (Agriculture and Agri-food Canada [AAFC], United States Department of Agriculture [USDA], Organisation for Economic Co-operation and Development [OECD]) located material for evaluation planning as well as additional documents. Next, we used Google Scholar (http://scholar.google.com)[2] to undertake a keyword search of the academic and technical literature. The academic literature includes articles in refereed journals and the technical literature consists of reports produced by research institutes in the field of agriculture and agricultural support systems. Keywords included *agri-environmental, Environmental Farm Plan, Ontario,* and *stewardship.* As our understanding increased, we completed Boolean searches (searches within subject areas) to isolate articles on topics such as *conservation*.

We then identified key articles and reports through a review of abstracts. Some could be downloaded directly, but most had to be accessed through the University of Manitoba electronic archive. Using this portal, we could access PDF and HTM versions of relevant journal articles. Note that we were able to access all articles identified using this technique. Books were retrieved from the University of Manitoba library as required. The bibliographies included in the selected articles also cited further material that we downloaded after reviewing abstracts.

We also identified key journals in the field and examined entire volumes and issues between 1996 and 2006. Examples of these journals include the *Canadian Journal of Agricultural Economics*, the *American Journal of Agricultural Economics*, and the *Journal of Environment and Planning.*

Using the article titles and abstracts, we created a series of subheadings that formed the basis for this review. In many cases, referenced articles, reports, and books spanned more than one subject area, and we cross-referenced as needed.

The review drew from the most significant material. We elected not to use multiple citations of an issue. Rather, we identified the most significant statement of the issue, which in many cases was the most recent treatment. In this way, we were able to ensure that we had current analysis and opinions on agricultural support policy. We have included all references reviewed, although not all the material has necessarily been cited.

[2] Google Scholar is a specialized search engine that supports keyword searches of academic and technical literature.

2.2 Key informant interviews

Eight interviews with Ontario Soil and Crop Improvement Association (OSCIA) representatives (n=5) and EFP technical advisors (n=3) were conducted to gain insight into the factors that encourage and discourage producers from participating in the EFP Program, as well as their experience with the Program.

The Ontario Federation of Agriculture (OFA) provided PRA with the names of and contact information for nine key informants. OFA informed key informants about the interview process prior to being contacted by PRA to schedule an interview. Please note that one key informant was not available for an interview.

In consultation with OFA, PRA prepared a guide for the interviews. All key informants were provided with a copy of this guide in advance of their scheduled interview time. Interviews were conducted over the phone and took about 45 minutes to complete.

2.3 Survey of Environmental Farm Plan participants

The survey of EFP participants collected data on producers' experiences with the EFP Program, their perceptions of potential services, and progress implementing their Action Plans. The survey comprised two components: a self-complete questionnaire and an in-person interview.

The survey was completed with 189 Ontario producers in selected counties[3] who had a 3rd edition, peer-reviewed EFP. To protect the confidentiality of EFP participants, 10 representatives of OSCIA agreed to conduct the in-person interviews and data entry for the survey. Each representative interviewed up to 19 producers in their respective county. They selected potential participants according to a target number of completions by farm type, which helped ensure the sample of producers interviewed was representative of all Ontario producers. The targets were designed to reflect the distribution of farm types across Ontario and were based on statistics from the 2006 Census of Agriculture.

- The development of the survey questions was informed by the questionnaire used for the 1999 survey, the literature review, and key informant interviews, and was completed in consultation with the project steering committee. The draft questionnaires and associated data entry forms were pretested with four OSCIA representatives, all of whom are also farmers that have a peer-reviewed EFP for their operation. Based on pretest results, the wording of some questions was revised to make them easier for producers to respond to and the structure of the data entry forms was modified.

- PRA held a training session in Guelph for the OSCIA representatives assisting with the research to introduce them to the questionnaires and describe the participant recruiting and interviewing and data entry processes. Based on discussions at the training session, the questionnaires were revised again. Most of these changes were made to certain

[3] The counties included in the research were: Kent, Durham and Kawartha Lakes, Carleton, Dundas, Grenville, Sudbury, Cochrane, Nippising, Parry Sound, Timiskaming, Prescott, Russell, Wellington, Lambton, Huron, Oxford, and Prince Edward County.

questions that OSCIA representatives were not comfortable asking and producers would not be comfortable responding to, because of their close relationships.

2.3.1 Caution in interpretation of results

In interpreting the results of the survey of EFP participants, it is important to recognize that potential respondents were not drawn from a random sample. As mentioned in Section 2.3, respondents were drawn from a subset of counties in Ontario. Additionally, potential respondents were identified based on the type of agricultural production they were involved in and OSCIA representatives' perceptions of producers' willingness to participate in the survey. Therefore, the survey results may not be representative of the population as a whole. Additionally, while the report compares the results of the 1999 and 2010 surveys of EFP participants, the two surveys did not necessarily involve the same producers.

2.3.2 Profile of respondents

Up to July 31, 2011, over 35,000 farm businesses have participated at least once in EFP workshops since the program was introduced in 1993. In the 2006 Census of Agriculture, Ontario had 57,211 census farms. In 2010, Ontario recorded about 47,000 farm businesses that make $7,000 in gross revenue. An estimated 70%–75% of farm businesses have participated in the EFP Program since 1993. [4]

Based on the survey results, it appears that the EFP Program is attracting producers with a wide range of characteristics. The majority (66%) of producers who participated in the EFP survey were middle-aged (between 35 and 55) and tended to be experienced farmers. On average, they have been farming for 27 years, since the age of 16. They also tend to have completed some form of post-secondary education (62%). Livestock and crop production were equally represented and reflective of the distribution of agricultural producers in Ontario and Canada.

When compared to the 2006 Census of Agriculture, it appears that EFP participants tend to have higher revenues and larger farms. Almost three-quarters of EFP participants reported farm revenue of $100,000 and over, compared to about one-third of producers in Ontario and Canada. Additionally, the average size of an EFP farm (590 acres) is 153% greater than the average Ontario farm (233 acres).

In 2010, most respondents said that, over the next five years, they are somewhat or very likely to grow their operations by expanding the size of the farm (69%) or becoming involved in another line of production (41%). Few respondents are somewhat or very likely to reduce their involvement in farming.

A complete profile of respondents appears in Appendix D.

[4] The number of census farms and the number of registered farm businesses has been declining in Ontario for decades. So the exact percentage of farms with an EFP cannot be calculated.

3.0 Context and history

This section places EFPs within the context of alternative methods to promote sustainable farming practices and describes the history of EFPs in Ontario.

3.1 Context

Agricultural producers depend on the health of the land for their livelihood and are in the best position to understand the importance of sustainable production. In recent decades, many citizens in the developed world (i.e., OECD countries) have placed an increased emphasis on environmental sustainability, which has raised awareness of the need for undertaking agri-environmental measures. EFP is one of Ontario and Canada's responses to this issue. With limited public funding, agri-environmental programs have achieved acceptance as a vital strategy in improving stewardship (Robinson, 2006b).

Several methods can be used to promote sustainable farming practices:

- *Taxation* alters the input cost or output return on investment, resulting in behaviour changes.
- *Cost-sharing* reduces the direct cost of environmental stewardship and increases the relative return to producers. Similar to tax schemes, financial incentives on their own are unable to alter perspectives on a type of behaviour.
- *Regulation* is a method of government intervention that requires adherence to standards and imposes fines or retribution on those who do not meet the standards.
- *Risk spreading programs* spread the costs of implementing a new environmental technology between government and the producer. By mitigating some of the uncertainty of profits, production, effectiveness, and applicability, these programs can enhance the use of environmental technology.
- *Information and extension services* provide increased knowledge of the technologies available and their benefits. These programs do not alter the financial incentives for producers, but through educational activities may result in long-term changes in behaviour after a program is completed.
- *Moral suasion* attempts to appeal to farmers to become "good stewards" of their land, and to be conscious of their external impact on others and their surrounding environment. Moral suasion can come from authorities, experts, peers, or other sources. When successful, moral suasion has lasting long-term benefits.

3.2 History of Environmental Farm Plans in Ontario

Recent history has shown that in OECD countries, grassroots agri-environmental responses have begun to spur land stewardship, which is limiting the impact of agriculture on the environment. As constraints on land and resources impose demands on agricultural production worldwide, countries such as Canada have proactively taken measures to limit the environmental effects of agricultural production.

In 2008, primary agriculture (crop and animal) production in Ontario accounted for $4.5 billion in revenue; the industry maintains a leadership position in agri-environmental programming internationally (McGee, 2010). The EFP Program began as a pilot in seven Ontario counties in 1992 and was made available province-wide in 1993.

EFPs identify environmental risks and issues, regulatory requirements, and develop actions to prevent or mitigate risk. The Canada-Ontario EFP Program primarily utilizes *information and extension services* and *moral suasion* to achieve improved agri-environmental behaviour on farms. EFPs, as currently structured in Ontario, empower the individual producer to identify environmental problems and improve on-farm conditions. The EFP model is based on education, awareness building, farm organization, leadership, and confidentiality (OFA, 2010b). The program is designed to have producers assess their own farm's environmental risks and to establish a strategy for amelioration. Responsibility is largely placed on the individual producer to voluntarily participate and to correctly examine and remedy environmental issues on their farm.

The element of high producer responsibility has been praised in the literature, as many conclude that farmers themselves have the best understanding of the conditions on their farms. Surveys of producers indicate that voluntary environmental programming on farms is preferred to regulation, and land stewardship will increase with greater producer input into program design (Smithers & Smit, 1989). The program logic assumes that a participant who voluntarily takes part has a stake in correctly identifying environmental issues, and with guidance from program officials and documentation, is capable of designing and executing an environmental Action Plan (Robinson, 2006b).

The Canada-Ontario EFP Program encourages voluntary environmental compliance and stewardship by utilizing education and outreach to improve the long-term acceptance of sustainability among agricultural producers. By promoting awareness of environmental issues on farms to producers, the EFP Program may viably achieve a sustainable approach to accomplishing widespread stewardship. The Canada-Ontario Farm Stewardship Program (COFSP), which is closely coordinated with the EFP Program, uses *cost-sharing* to assist producers in implementing the change promoted by the EFP Program. The direct linkages between education and incentives provide a synergy between the different approaches.

3.3 Program design

The Ontario EFP Program partnership began in 1992. The concept was essentially designed by the Ontario Farm Environmental Coalition (OFEC), financially supported by AAFC, received technical content from OMAFRA, and delivered by the OFA (on behalf of OFEC) and OSCIA. The program was the pioneer to Canadian environmental farm planning in its present form. It was established as a community-based initiative, seeking to encourage EFP adoption by agricultural producers based on individual farm characteristics.

Participants traditionally begin the program by attending one of the 130 regional workshops offered each year, designed to introduce environmental farm planning and agricultural conservation. Workshops are led by an OSCIA representative and technical advice is provided by staff from OMAFRA. Following the first of two workshops, producers develop an environmental risk assessment of their farm and then submit it at the second workshop. Risk assessments are completed by scoring various farm conditions in one of four ordinal categories—1, 2, 3, and 4 (Best). Wall, Weersink, and Swanton (2001) praise this system for providing:

> *… a structure suitable for continual improvement. Each farm operator can use the goal of moving to the next classification through implementing the management practices suggested for that improvement as the guide for continually bettering the environmental practices in the farm operation (p. 41).*

The risk assessment informs the development of an Action Plan, which helps producers establish a strategy for operating their farm in an environmentally responsible way. A voluntary group of fellow producers peer review the Action Plan to determine whether it is appropriate. Once an Action Plan has been deemed appropriate, producers are eligible to apply for cost-share funding to implement agri-environmental projects.

3.4 Development of an Action Plan

Development of an Action Plan involves two steps:

1. *Farm Review*. The Farm Review involves completing 23 worksheets, each containing a series of topics related to the potential risk area. For each topic, there are four descriptions of either natural conditions or current situations, each with a numerical rating: 4 (Best), 3, 2, and 1.

   - ► The Best or 4 rating shows conditions that protect the environment or have the lowest potential for environmental damage.
   - ► A 1 rating shows conditions that have the highest potential to adversely affect the environment.

   Topics rated 1 or 2 show the areas of the farm operation that need changes to reduce the possibility of future environmental problems. A maximum of 319 potential topics are included in the Farm Review.

2. *Action Plan.* Creating the Action Plan involves describing the activities that could be implemented to solve or control the potential environmental problems associated with the farm operation. This is completed for all topic areas that received a 1 or 2 rating in the Farm Review.

3.5 Workbook editions

The EFP workbook is currently in its 3rd edition. It began as a pilot project in 1992 and was implemented province-wide in 1993. Throughout its history various modifications have been made. Each edition comprises 23 worksheets; however, the nature of the farm review topics (herein referred to as questions) and the total number of questions has evolved. OMAFRA staff led the development and revision of each EFP worksheet through consensus involving teams of knowledgeable people from farm organizations, federal departments (e.g., AAFC, Environment Canada), provincial ministries (e.g., OMAFRA, Environment Canada, Natural Resources Canada), conservation authorities, universities, and private industry.

In addition to the opportunity for producers to voluntarily participate in the educational workshop supported by EFP, government cost-share programs, also delivered through OSCIA, were offered to accelerate adoption of environmental actions. From 1993–2004, an EFP Incentive Program offered a $500 incentive initially and a $1,500 incentive later for implementation. Beginning in 2005 with the Agricultural Policy Framework, the Canada-Ontario Farm Stewardship Program has offered cost-sharing grants on eligible projects identified in EFP Action Plans.

- 1st edition (1993–1994). After development of the workbook through a pilot project testing the approach in 1991–1992, the 1st edition was launched province-wide. The 1st edition of the EFP workbook included improvements identified during use of the Pilot Edition Workbook in workshops held in the selected counties. The language used in worksheet questions and descriptions was refined and adjustments made to better align ratings within the 1, 2, 3, and 4 risk rating categories. The workbook included 251 questions.

  Producers with an EFP Action Plan, that had been deemed appropriate through peer review, were eligible, through the EFP Incentive Program, for up to a $500 contribution toward BMP implementation. The contribution, supported by AAFC, was made to producers upon submission of a paid invoice that totalled at least $500 and was related to the implementation of an activity from their Action Plan.

- 2nd edition (1996). The 2nd edition was an evolution of the 1st edition and included minor refinements in the wording of a small number of questions and rating descriptions, with most worksheets continuing to have roughly the same number of questions (258). Some of the more substantial changes were:
  - Expanding Worksheet 1 to include more information and sample maps to assist producers in preparing their farmstead and field maps.
  - Changing the questions in Worksheet 14 – Energy Efficiency to reflect advancements in technologies and improved rating descriptions.
  - Increasing the number of questions from 11 to 20 in Worksheet 18 – Horticulture Production and introducing separate questions to evaluate potential risks in field and greenhouse horticulture operations.
  - Adding columns in the Action Plan sheets so producers could identify short- and long-term actions, compensating factors, and monitoring activities.

  From 1996 to 2004, the EFP Incentive Program increased to $1,500 for farmers implementing actions from a peer-reviewed EFP Action Plan. This was supported by CanAdapt funding through AAFC.

- 3rd edition (2004). The 3rd edition included many general updates and a notable boost in the number of questions (319) contained in the workbook (though the number of worksheets remains at 23). Greater information on the federal *Fisheries Act* was introduced to the risk assessment. With the introduction of the Province's nutrient management regulation, Worksheet 8 was expanded to include an evaluation of existing permanent liquid nutrient and runoff storage structures. An Emerging Issues section was added that introduces discussion on greenhouse gas, biodiversity, and contingency planning.

  A registered farm business with an Action Plan deemed appropriate through peer review was eligible for up to $30,000 through COFSP, supported by the Agricultural Policy Framework (APF). Part way through the APF, the COFSP maximum gain per farm business was raised to $50,000. Numerous other programs, with support from multiple provincial ministries, federal departments, and environmental foundations, also delivered through OSCIA, provided enhanced cost-share opportunities.

  With the introduction of Growing Forward, effective April 2009 through March 2013, COFSP continues with a new maximum contribution of $30,000 per eligible farm business. Once again, several other programs supported through other ministries and departments are providing cost-share opportunities, which bolster further interest in EFP.

4.0 Behaviour change theory

The literature acknowledges that the implementation decision is different for each individual and often combines some degree of personal experience, scientific evidence, and cultural influences. Effective policy can recognize which areas lag in the development of new innovation among producers, and supplement them. Rogers (1995) segments innovation diffusion into four stages: knowledge, persuasion, decision, and confirmation.

(i) Knowledge: *The individual is exposed to the innovation and gains some understanding of how it functions.*

- Canada-Ontario EFP workshops are effective at exposing producers to innovations. An important component of this stage is teaching producers about the basic logic behind why an innovation is useful.

(ii) Persuasion: *The individual forms a favourable or unfavourable attitude toward the innovation.*

- This stage consists of individuals weighing the costs and benefits of a prospective technology. During this stage the relative advantage over existing technology is considered, along with compatibility and complexity. These concerns can be eased by implementing trials and observations as well as facilitating peer discussion.

(iii) Decision: *The individual engages in activities that lead to a choice to adopt or reject the innovation.*

- This stage may include technical support for when producers have questions or concerns regarding their implementation.

(iv) Confirmation: *The individual seeks reinforcement for the innovation-decision they have made. Conflicting information about the innovation may cause them to reverse the earlier decision at a later stage.*

- At this stage, extension may be critical to reinforce the benefits of the innovation. A weakness in support at this stage may be one explanation for producers who complete EFPs but do not complete peer review, or update their EFPs at a later date.

Extension programming may require support at each stage. Programs with extension services that provide support for one or more of these stages will be discussed along with an examination of the type of services provided.

The Canada-Ontario EFP Program has extension support in place for increasing producer awareness of the existence of the program as well as persuasion about the benefits. Workshops and on-site visits are praised in the literature as being effective tools in the *knowledge* and *persuasion* stages (Robinson, 2006a; FitzGibbon et al., 2000b). The Canada-Ontario EFP Program offers less extension support to producers at the *decision* and *confirmation* stages (OMAFRA, 2010a; OSCIA, 2009).

5.0 Performance measurement

Performance measurement has become ubiquitous in the modern world. Government funding for initiatives like EFP now requires more detailed accountability to document the achievements of such programs. EFP receives support from both federal and provincial governments and so needs to adapt to the changing demands for performance measures.

The Treasury Board of Canada Secretariat's (2009) four principles for performance reporting are:

- Principle 1: Focus on the benefits for Canadians, explain the critical aspects of planning and performance, and set them in context
- Principle 2: Present credible, reliable, and balanced information
- Principle 3: Associate performance with plans, priorities, and expected results, explain changes, and apply lessons learned
- Principle 4: Link resources to results

According to the Ontario Public Service Guide to Performance Measurement, measures should be:

- S: Specific – state clearly and concisely what will be measured
- M: Measurable – should be quantified, even if based on qualitative data
- A: Achievable and attainable – relate to things the ministry can influence and achieve
- R: Realistic – based on reliable, verifiable data that reflect the ministry/activity's contribution to achieving government priorities and results
- T: Timely – data can be collected, processed, and distributed within a useful time frame and at reasonable cost

Data currently used for performance measurement are collected through EFP workshops and applications for cost-sharing through the COFSP and other associated cost-share programs.[5]

- Data from EFP workshops includes:
  - Number of EFP workshops delivered across counties and districts over time
  - Workshop participation across counties/districts over time
  - New participant (i.e., first time attending) or returning participant (i.e., already participated in EFP workshops at least once in previous years)
  - Number of EFP Action Plans deemed appropriate through peer review across counties/districts over time
  - Primary commodity of participating farm businesses
  - Major watershed where farm is primarily located
  - Declaration on whether the farm is certified organic or in transition

- Data from Growing Forward Program enrollment, COFSP project proposal applications, and claim forms include the following:
  - Detailed description of farm business location
  - Farm Business Registration Number or equivalent (as dictated by program eligibility policy and procedures)
  - General information about the farm business (e.g., primary commodity, secondary commodity, number of livestock, farmland owned/rented/leased, crop types)
  - Best Management Practice (BMP) category and practice code of each project receiving a cost-share allocation
  - Specific location of each environmental project supported through COFSP (e.g., county/district, farm name, lot, concession, and GPS coordinates)
  - Question from individual's EFP Action Plan that is addressed by the proposed project and a description of the project
  - Detailed, itemized, and total project costs, and COFSP cost-share awarded
  - Other sources of funding received for the project
  - The change in risk rating accomplished as a result of completing the project

The Canada-Ontario EFP Program's performance has been challenging to evaluate due to the "needs focus" of the Program. As Smithers and Furman (2003) explain, the EFP does not focus "on the promotion of adoption of any particular farming innovation, but rather on the completion of a farm-level environmental appraisal and the development of a farm-specific environmental action plan" (p. 343) and its implementation. Nevertheless, the detailed rankings of risk assessments for each farm provided a rich data set to use to track aggregate progress, while retaining complete confidentiality.

[5] One of the founding principles of the EFP process was that the information generated through the Risk Assessment and Action Plan is to remain confidential. As the program delivery agent, only OSCIA has access to the individual workbooks to review them for completeness and facilitate peer review of the action plans. The completed workbooks are the property of the participant, and are returned to them by OSCIA after the review. Personal information from individual workbooks is not disclosed to other program partners. Information provided by farm businesses through the cost-share application and claim process may be used by program partners for the purposes of evaluating, auditing, and administering the program and Growing Forward. The data in the reports must be aggregated only, and in a format that could not result in the disclosure of personal or confidential information identifiable to any particular recipient or render such information identifiable.

According to OMAFRA (2010a), the EFP Program's stated objective is to:

- highlight a farm's areas of [environmental] strength
- identify areas of concern
- set realistic Action Plans with timetables to improve environmental conditions

The EFP Program is structured to comprehensively assess and improve the unique environmental issues a producer confronts on their farm. The program contains 23 comprehensive worksheets, each with several subsections addressing specific environmental concerns. Thus, a wide variety of actions and outputs may result from best or beneficial management practices derived from an EFP (OMAFRA, 2010a). Measuring overall success becomes complex as the number of possible outcomes increases. Thus, programs with more specific focuses are simpler to assess, and have fewer output indicators to measure to quantify program performance. The advantage of EFP is its comprehensive approach to environmental issues. The rich data from Action Plans can provide a more holistic view of environmental issues and actions on farms.

While not a stated objective of the EFP Program, a long-term goal of the funding partners of the program is sustainable, environmentally responsible farming (OFA, 2010a & OSCIA, 2009). Monitoring the reach of the program assesses the EFP Program's contribution, but fails to address the first bullet point of performance reporting: focus on a few critical aspects of performance. The EFP performance reporting may signal improved perceptions toward land stewardship by producers but fails to measure the final objective of improved environmental conditions.

Figure 1 provides a three-stage logic model for encouraging agri-environmental change. The first stage directly aligns with the EFP Program, which results in producers having developed a risk assessment and Action Plan to prepare them to address the agri-environmental risks associated with their operation. The second stage, which is optional, involves having the Action Plan peer reviewed. By completing this stage, producers receive the recognition of having an Action Plan that has been deemed appropriate and become eligible to receive funding from cost-share programs to assist with the implementation of their Action Plans. The third stage involves producers taking action to implement their EFP Action Plans to reduce the agri-environmental risks associated with their operation—they may implement these actions using their own resources, or they may participate in cost-share programs. The first and third stages must be completed for producers to reduce the impact of their operation on the environment.

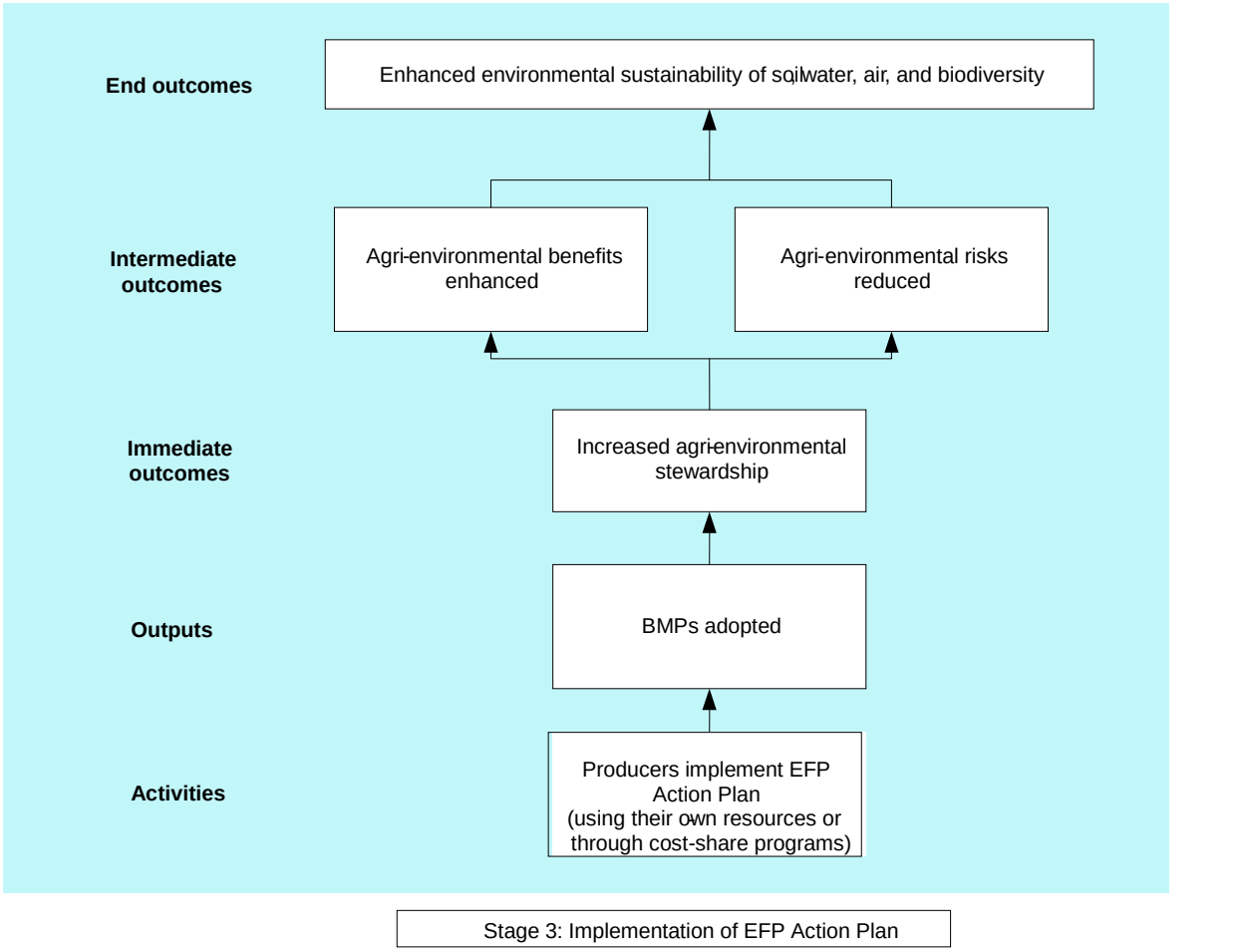

Figure 1. Logic model for encouraging agri-environmental change

Measuring the causation of environmental outcomes is a complex task, which may not be attributable to any one specific program. The most commonly mentioned issues in EFPs are soil degradation and water contamination, and each issue has been targeted in prior initiatives like the 2002 *Nutrient Management Act* (NMA) and the 2004 Nutrient Management Financial Assistance Program (NMFAP) (OMAFRA, 2010b). The existence of these programs makes it difficult to attribute gains directly to the EFP Program, but rather some combination of external factors (Smithers and Furman, 2003, p. 350).

If final outcomes cannot be determined, the second-best result is to measure the intermediate outcomes and outputs of a program that contributes to long-term outcomes. These outputs include workbook completion rates, participation in cost-share programs, extension services participation, as well as qualitative measures like network growth and changing perceptions of agri-environmental participation.

The most common performance measure currently used in EFP literature (FitzGibbon, Plummer, & Summers, 2000a; Robinson, 2006a; Smithers & Furman, 2003) is the overall program participation rate of eligible producers. This measure is coupled with the completion rate of program participants to gauge the proportion of eligible farmers who complete an EFP in Ontario. This rate can be measured by workshop participation, workbook completion, or during the peer review stage. In this system, long-run adherence rates are not measured, and there is no quantifier of actions taken to improve environmental outcomes once a plan is made. The participation and completion rates appropriately assess the first three OMAFRA program measurement objectives (farm strengths, areas of concern, and setting Action Plans), but fail to measure the final objective (EFP Action Plan implementation and improving environmental conditions). The purpose of the current research is to address the latter question.

Smithers and Furman (2003, p. 348) detail an Ontario EFP performance evaluation approach that counts the manner in which producers participate in the program, taking data at three participation stages: workshop attendance, workbook completion, and peer review. The authors examine the causation of the decision at each stage to identify impediments to total program completion. A weakness of this approach is that implementation of actions is not measured, and linking COFSP participation in the data would give an even stronger indication of the environmental benefits resulting from the EFP Program.

A performance measurement approach utilized in the UK introduces a graduated measure of participation, placing participants on a continuum (Lobley & Potter, 1998; Morris & Potter, 1995). It determines the furthest stage of the program that a participant completes, and places them along the spectrum relative to all participants. In the Lobley and Potter study, 55% of program participants said they omitted some portion of their farming system in their completed EFP. The measure attempts to quantify what proportion of a producer's farm was included in their environmental assessment and to what extent actions were taken.

A 1999–2000 survey of EFP participants went beyond participation to measure the degree to which the EFP Action Plans had been implemented (FitzGibbon, Plummer, & Summers, 2000a; Plummer, Spiers, Summer, & FitzGibbon, 2008; Summers, Plummer, & FitzGibbon, 2008). That study surveyed 179 farmers and assessed which portions of their Action Plans had been implemented, which were underway, and which were not yet implemented, and the reasons behind the status. The 179 respondents identified a total of 4,127 worksheet concerns, of which

2,173 or 52.7% had been acted upon. Respondents spent an average of $10,800 and 53.23 hours addressing concerns raised by the EFP. This study provides a starting point for the present study and a point of comparison.

EFPs utilize an ordinal grading system, ranking various farm conditions on a scale of 1 to 4 (Best), based on readily recognizable qualitative and quantitative diagnostic criteria. While this measure initially provides an indication of farm areas needing improvement, it can also serve as a progress monitoring tool over time. As actions are implemented, and farms conditions reviewed in subsequent risk assessments, the scores of current conditions can be contrasted to the benchmark established in the first year of implementation. When aggregated across many farms, the degree of progress in EFP workbook scores can be used as a proxy for the results of the Program, and extended to measure the progress being made on the environment as a whole.

By determining the number of worksheet concerns identified per farm, a baseline environmental quality measure can be quantified. This measure can be contrasted with the number of worksheet concerns addressed per farm, as well as the number of actions completed, underway, or yet to be addressed. When aggregated, these figures can provide a gauge for the status of the environment on participants' farms.

One perceived weakness of this measurement approach is the nature of the ordinal assessment, but the qualitative and quantitative diagnostic criteria for each of the 300+ ratings provide an objective basis for the ratings. A producer who puts time and financial resources toward achieving a particular improvement may hold bias in assessing the improvements over time, and over or understate conditions in their reporting. Furthermore, even if environmental conditions are reported without bias, causality for improvements in environmental outcomes are difficult to determine with certainty.

Similarly, data from EFP workbooks can be utilized to measure the number of agri-environmental actions implemented. Knowing the type of each action and the growth in number of actions taken, the progress of program performance can be estimated.

6.0 Encouraging agri-environmental change

EFPs, as currently structured in Ontario, empower the individual producer to identify environmental problems and improve on-farm conditions. The EFP model is based on education, awareness building, farm organization, leadership, and confidentiality (OFA, 2010b). The program is designed to have producers assess their own farm's environmental risks and to establish a strategy for amelioration. Responsibility is largely placed on the individual producer to voluntarily participate and to correctly examine and remedy environmental issues on their farm.

The element of high producer responsibility has been praised in the literature, as many conclude that farmers have the best understanding of the conditions on their farms. Surveys of producers indicate that voluntary environmental programming on farms is preferred to regulation, and land stewardship will increase with greater producer input into program design (Smithers & Smit, 1989). The program logic assumes that a participant who voluntarily takes part has a stake in correctly identifying environmental issues, and with guidance from program officials and documentation, is capable of designing and executing an environmental Action Plan (Robinson, 2006b).

The Canada-Ontario EFP Program encourages voluntary environmental compliance and stewardship by utilizing education and outreach to improve the long-term acceptance of sustainability among agricultural producers. By promoting awareness of environmental issues on farms to producers, the EFP Program may viably achieve a sustainable approach to accomplishing widespread stewardship.

This section discusses producers' experiences with the educational component of the EFP.

6.1 Workshop attendance

As described in Section 4, the first stage influencing behaviour change is knowledge, where producers are exposed to the innovation. As part of the EFP development process, the program uses workshops to educate producers (this is one activity listed in the EFP logic model presented in Section 5. Producer satisfaction with the workshops is discussed in Section 12).

It is important to reinforce the value producers will receive by attending workshops, whether they complete the program or not. Workshops are praised in the literature for their effectiveness in promoting EFP and BMP value to producers (Robinson, 2006a). It may be easier to "convert" non-adopters during face-to-face interaction rather than trying to sell the idea of an EFP through impersonal advertising. For some producers, the interpersonal engagement and discussion among producers that occurs at workshops can be more effective than messages being delivered by a representative (Journeaux, 2009; Lamba et al., 2009; Rogers, 1995).

All producers responding to the 2010 EFP survey had participated in a 3rd edition EFP workshop. However, 63% of these producers had previously participated in a 1st or 2nd edition workshop and were returning users to the program. On average, producers had attended their first EFP workshop 10 years ago. (Refer to Section 6.2 for a discussion of reasons for attending an EFP workshop.)

About one-third of participants (31%) had joined the program within the past five years. In other words, they had not participated in a 1st or 2nd edition EFP workshop.

It appears the EFP is attracting some of the smaller producers (less than 600 acres) to the Program. Producers with smaller farms (65%) are somewhat more likely than those with larger farms (over 600 acres, 48%) to say they first attended a 3rd edition workshop within the past four years.

6.2 Reasons for workshop attendance

The 2010 survey of EFP participants asked respondents why they decided to attend an EFP workshop. Table 1 provides a list of motivations for participation. The two most common motivations—funding and education—are discussed in the following sections.

Table 1: Reasons for EFP workshop attendance
Q5: Thinking of the last EFP workshop you attended, why did you decide to attend?

Reason	n=189
Funding	
So that I can apply for any cost-share programs	94%
Education	**87%**
To evaluate environmental concerns on my farm	78%
To increase knowledge of agricultural environmental issues	57%
To learn more about current environmental regulations	48%
Regulations	
To help meet the requirements of the *Nutrient Management Act*	21%
Program reputation	
Because I heard it was a worthwhile program	30%
Because I wanted to receive the recognition of completing the program	16%
Request of others	
Because my business partners asked me to	4%
Because my family asked me to	3%

Note: Respondents could provide more than one answer; totals may not equal 100%.

6.2.1 Cost-share funding

There is a long history of debate regarding the relative importance of financial incentives in inducing conservation behaviour. Economists have traditionally weighed economic factors more heavily than sociologists, but have much broader concepts of what constitutes an economic benefit (Pannell et al., 2006, p. 5). By viewing non-economic factors from an economic perspective, it can illustrate the economic importance of social factors in decision-making.

The use of market-based agri-environmental instruments has a long history and has become more widespread in recent years, as approaches other than regulatory methods have become more popular. Lewis, Moran, and Cocklin (2002) assert that "greater responsibility has been transferred to the individual, either through the market as a policy instrument or through policy discourses individualizing the primary responsibility for land management" (p. 106).

The 2010 Survey of EFP Participants found that virtually all producers (94%) attended an EFP workshop so they could access cost-share funding, and a majority had a specific agri-environmental project they wanted to implement to address a specific known issue (Section 7 notes that 62% of respondents came to the workshop with a specific project in mind). Regardless

of when producers first attended a 3rd edition EFP, the availability of cost-share funding is a strong motivator for participation.

In Europe, financial incentives have been used as a primary instrument to induce agri-environmental program participation and BMP adoption coupled with cross compliance. Latacz-Lohmann and Hodge (2003) indicate that varying types of financial incentive structures have been successful in increasing participation rates. They argue that this is an indicator of the financial burdens that limit agri-environmental participation for marginal producers. Similarly, Robinson (2006a) illustrates that a critical assumption for the COFSP to function is that producers have adequate access to credit to implement changes. While findings show this assumption may hold true for participants, it is unclear whether non-participants have equally uninhibited finances. The literature raises the question of whether access to credit may be a limiting factor that can be investigated for non-participants as well as EFP participants who fail to adopt BMPs. Since much of the literature has been published, there have been significant changes in the credit markets, and credit access may hold even greater relevance to producers in the current economic climate. This topic may require frequent monitoring in an uncertain economic climate.

6.2.2 Education

On their own, financial incentives are unable to promote altered behaviour in the same manner as other methods. They do not address the root cause of environmental problems, and do not cause the long-term changes in perception that are required for sustainable change in practices (Cocklin et al., 2007). In Ontario, the education (EFP and extension) coupled with incentives (COFSP) provides a mixture of instruments to motivate participants.

The EFP workshops and workbooks are successfully helping producers identify and understand the nature of potential environmental concerns on their farms. The 2010 Survey of EFP Participants found that the vast majority of producers (87%) attended an EFP workshop for educational purposes such as evaluating agricultural concerns on their farm, increasing their knowledge of agri-environmental issues and concerns, and learning more about environmental regulations (refer to Section 8 for a discussion of the impacts of the EFP workshops).

The survey found some differences in the educational motivations of producers based on their personal characteristics:

- Producers who first attended a 3rd edition workshop five or more years ago (53%) are slightly more likely than those who attended within the past four years (44%) to say their reason for attending was to learn more about environmental regulations.
- Those who first attended five or more years ago (27%) are slightly more likely than those who attended within the past four years (16%) to say they attended to help meet the requirements of the *Nutrient Management Act*.
- Few producers (16%) said they attended a workshop to receive the recognition of completing the program. However, those who first attended a 3rd edition workshop within the past four years (21%) were more likely than those who first attended five or more years ago (10%) to provide this reason.

6.3 Completing workbooks and Action Plans

The outputs of the EFP development process are risk assessments and Action Plans (see logic model in Section 5). At the EFP workshops, producers are guided through the process of completing their risk assessments and developing their Action Plan. Theoretically, by the time producers finish the workshop stage of the program, they should be in a position to submit their completed Action Plan for peer review.

6.4 Time requirement

The creation of an EFP requires a time investment from producers, including preliminary efforts before physical changes are completed. Such an investment imposes opportunity costs on producers, which may be overshadowed in literature by the direct financial costs of adoption. Successful implementations have been credited by McCallum (2003) as possessing limited paperwork obligations, or offering paperwork assistance from program agents.

In Ontario, the initial cost that EFP participation requires is a producer's time. Producers are required to attend workshops, which cut into their productive workday, as well as fill out workbooks, and complete farm assessments. If a workbook is completed, actions to address the topics highlighted in the workbook require planning, delivery, and follow-up to execute successfully. Each step requires a time investment that offers no immediate direct reward to producers. Sattler and Nagel (2010) argue that in countries with heavy agri-environmental financial incentives, one of the most overlooked barriers to agri-environmental participation is time costs to producers. Therefore, to alleviate time constraints to EFP participation, the EFP Program in Ontario holds workshops in the off-peak season, when producers have more free time to attend seminars and are not forgoing productive labour to learn EFP practices (OMAFRA, 2010a).

Based on the 2010 EFP survey results, for those who participated in the EFP workshop and developed an Action Plan, time commitment does not appear to be a barrier. Almost all respondents (91%) said they had enough time between the first and last day (evening) of the workshop they attended to complete their workbook. However, livestock producers (13%) were more likely than crop producers (6%) to say they did *not* have enough time, which may reflect the number of worksheets they are required to complete.

Table 2 shows that most participants (80%) said it took them six hours or less outside of the workshop to complete the workbook.

Table 2: Time taken to complete workbook
Q13: Approximately how many hours did it take you to complete the workbook? Please exclude the hours you were at the workshop.

Time (hours)	n=189
2 or less	14%
3	15%
4	28%
5 to 6	23%
7 or more	17%
No response	4%
Total	101%
Average	5 hours

Note: Totals may not equal 100% due to rounding.

The length of time taken to complete the workbook may reflect producers' age and education.

- It appears that older producers spend more time completing the workbook. About 54% of the producers older than 55 said it took them five or more hours to complete it. This compares to 45% of those between the ages of 45 and 55 and 31% of those younger than 45.

- It also seems that producers without post-secondary education take longer to complete the workbook. Over half of the producers (54%) whose highest level of education is high school or less said it took them five or more hours to complete the workbook. This compares to 31% of those who have at least some college/technical school and 42% of those who graduated from university or professional school.

6.5 Risk assessments and Action Plans

The immediate outcomes of the EFP development process are:

- Increased awareness/identification of agri-environmental benefits and risks.

- Increased awareness/identification of potential agri-environmental actions (see logic model in Section 5).

- The EFP Program achieves these outcomes by having producers complete a risk assessment and develop an Action Plan. By completing their EFP workbook, producers become aware of the areas of their farm where there are potential agri-environmental concerns. For every workbook question where an agri-environmental risk is identified, producers propose a course of action to address the concerns in their Action Plan. The process of developing the Action Plan increases producers' awareness/identification of potential agri-environmental actions.

6.5.1 Worksheets with concerns

Information gathered from the Action Plans prepared by producers participating in the 2010 EFP survey provides some insight into the areas with potential agri-environmental concerns. However, it is important to recognize that the survey results do not necessarily indicate all of the worksheets and questions producers completed; rather, they identify the areas of producers' farms where potential concerns exist.

The EFP workbook comprises 23 worksheets. The 2010 EFP survey found that, on average, producers included a potential concern and associated activity in their Action Plan for 11 worksheets (out of a possible 22[6]). Additionally, on average, they identified a potential concern and associated activity for 35 questions (out of a possible 319), which is up from 23 questions in 1999.

[6] The workbook contains 23 worksheets. However, worksheet 1 is for Soil and Site Evaluation. This worksheet is excluded from the analysis because producers are not asked to identify on-farm actions.

Table 3 shows the percentage of responding producers who, in their Action Plan, identified an activity for at least one question by worksheet. It also provides the average number of questions for which activities were identified by worksheet.

- Activities were most commonly associated with the following worksheets, which tend to be covered in the EFP workshops and relate to all farms regardless of the type of commodities produced:
  - 2: Water Wells (92%), which link to farm family health, a known motivator for BMP adoption (Traore, Landry, & Amara, 1998)
  - 5: Storage of Petroleum Products (86%), which are subject to regulatory requirements (Ontario Regulations 213/01 and 217/01)
  - 15: Soil Management (86%), which are often motivated by production benefits, economic returns, and environmental benefits

- Activities were least commonly associated with the following worksheets:
  - 11: Milking Centre Washwater (7%)[7]
  - 18: Horticultural Production (9%)

  The questions addressed in these worksheets reflect specific commodities such as dairy and horticulture.

- Typically, producers identified an activity for an average of 1 or 2 questions per worksheet. The worksheets that tend to have the most questions with concerns were:
  - 2: Water Wells (5 questions)
  - 5: Storage of Petroleum Products (4 questions)
  - 3: Pesticide Handling and Storage (3 questions)
  - 15: Soil Management (3 questions)

Compared to 1999, aside from two worksheets, a higher percentage of producers identified at least one concern per worksheet, which suggests there are educational gains to be made by attending workshops and completing newer editions of the workbook. The five worksheets with the greatest increases are:

- 23: Woodlands and Wildlife (up 48%)
- 8: On-Farm Storage of Livestock Manure and Other Prescribed Materials (up 38%)
- 13: Water Efficiency (up 18%)
- 20: Pest Management (up 17%)
- 19: Field Crop Management (up 17%)

[7] Ontario's *Milk Act* and regulations have many provisions related to milking centre washwater, which dairy producers are required to comply with.

Table 3: Worksheets addressed in Action Plan				
Worksheet	**2010 n=189**		**1999 n=179**	
	%	**Average # of Qs**	**%**	**Average # of Qs**
Farmstead				
2 – Water Wells (13 questions)	92%	5	83%	3
3 – Pesticide Handling and Storage (15 questions)	67%	3	65%	2
4 – Fertilizer Handling and Storage (20 questions)	37%	1	27%	1
5 – Storage of Petroleum Products (27 questions)	86%	4	79%	3
6 – Disposal of Farm Wastes (18 questions)	43%	1	31%	1
7 – Treatment of Household Water (21 questions)	56%	1	49%	1
8 – On-Farm Storage of Livestock Manure and Other Prescribed Materials (16 questions)	60%	2	42%	1
9 – Livestock Yards and Outdoor Confinement Areas (OCAs) (7 questions)	42%	1	33%	1
10 – Silage Storage (9 questions)	21%	<1	17%	<1
11 – Milking Centre Washwater (13 questions)	7%	<1	5%	<1
12 – Nuisances under the *Farming and Food Production Protection Act*, 1998 (12 questions)	48%	1	35%	1
13 – Water Efficiency (11 questions)	50%	1	32%	<1
Field				
14 – Energy Efficiency (10 questions)	62%	1	63%	1
15 – Soil Management (16 questions)	86%	3	77%	3
16 – Nutrient Management in Growing Crops (10 questions)	46%	1	44%	1
17 – Use and Management of Manure and Other Organic Materials (17 questions)	57%	2	48%	1
18 – Horticultural Production (25 questions)	9%	<1	12%	<1
19 – Field Crop Management (9 questions)	67%	1	50%	1
20 – Pest Management (13 questions)	66%	2	49%	1
Natural areas				
21 – Stream, Ditch, and Floodplain Management (10 questions)	50%	1	40%	1
22 – Wetlands and Wildlife Ponds (5 questions)	18%	<1	10%	<1
23 – Woodlands and Wildlife (11 questions)	68%	2	20%	<1

As shown in Table 4, while all producers are likely to identify activities for worksheets 2 and 15, there are some variations by farm type for other worksheets. Excluding worksheets 2 and 15:

- Crop producers are most likely to identify activities for worksheet 5 – Storage of Petroleum Products (88%); worksheet 19 – Field Crop Management (79%); worksheet 20 – Pest Management (79%); and worksheet 3 – Pesticide Handling and Storage (77%).
- Horticultural producers are most likely to identify activities for worksheet 23 – Woodlands and Wildlife (100%) and worksheet 3 – Pesticide Handling and Storage (81%).
- Livestock producers are most likely to identify activities for worksheet 5 – Storage of Petroleum Products (87%); worksheet 8 – On-Farm Storage of Livestock Manure and Other Prescribed Materials (84%); and worksheet 17 – Use and Management of Manure and Other Organic Materials (83%).

Table 4: Worksheets addressed in Action Plan

Worksheet	% 2010			
	All farms n=189	Crop n=81	Horticulture n=16	Livestock n=92
Farmstead				
2 – Water Wells (13 questions)	92%	90%	94%	94%
3 – Pesticide Handling and Storage (15 questions)	67%	77%	81%	55%
4 – Fertilizer Handling and Storage (20 questions)*	37%	54%	19%	25%
5 – Storage of Petroleum Products (27 questions)	86%	88%	69%	87%
6 – Disposal of Farm Wastes (18 questions)	43%	38%	31%	50%
7 – Treatment of Household Water (21 questions)	56%	59%	44%	55%
8 – On-Farm Storage of Livestock Manure and Other Prescribed Materials (16 questions)*	60%	41%	19%	84%
9 – Livestock Yards and Outdoor Confinement Areas (OCAs) (7 questions)*	42%	31%	6%	58%
10 – Silage Storage (9 questions)*	21%	10%	0%	34%
11 – Milking Centre Washwater (13 questions)	7%	1%	0%	14%
12 – Nuisances under the *Farming and Food Production Protection Act*, 1998 (12 questions)*	48%	30%	25%	67%
13 – Water Efficiency (11 questions)	50%	43%	63%	53%
14 – Energy Efficiency (10 questions)	62%	63%	56%	62%
Field				
15 – Soil Management (16 questions)	86%	93%	88%	80%
16 – Nutrient Management in Growing Crops (10 questions)	46%	56%	25%	41%
17 – Use and Management of Manure and Other Organic Materials (17 questions)*	57%	36%	13%	83%
18 – Horticultural Production (25 questions)*	9%	9%	63%	0%
19 – Field Crop Management (9 questions)*	67%	79%	25%	63%
20 – Pest Management (13 questions)	66%	79%	56%	57%
Natural areas				
21 – Stream, Ditch, and Floodplain Management (10 questions)	50%	63%	19%	45%
22 – Wetlands and Wildlife Ponds (5 questions)	18%	15%	25%	20%
23 – Woodlands and Wildlife (11 questions)	68%	64%	100%	66%
*statistically significant difference				

6.5.2 Number of activities included in Action Plans

Producers who participated in the 2010 survey listed a total of 15,708 *individual* activities (or 83 per farm) in their Action Plans. Those who participated in the 1999 survey listed a total of 4,127 *individual* activities (or 23 per farm). In comparing these numbers, it is important to remember:

- the number of workbook questions increased with each edition of the EFP: 251 in the 1st edition, 258 in the 2nd edition, and 319 in the 3rd edition
- participants in the 1999 survey had completed the 1st or 2nd edition workbook, while participants in the 2010 survey had completed the 3rd edition workbook
- the sample sizes for the two surveys were slightly different with 179 producers surveyed in 1999 and 189 producers surveyed in 2010

Additionally, it is also important to recognize that:

- A single Action Plan activity may provide a solution to one or more workbook question and therefore may be included more than once.
- The solution to a single workbook question may require the implementation of one or more activities.
- A single activity may need to be implemented several times if it applies to multiple farm sites. For example, a farm may have three wells, each of which may require repairs, which would generate three activities.

Compared to the 1999 survey, there was a 281% increase in the number of *individual* activities listed. While this result may suggest that producers' Action Plans have become more comprehensive, caution should be used while interpreting the result as it may reflect differences in the EFP Program, differences in the data collection approaches for the two surveys, or both.

In 2010, of the *individual* activities listed in the Action Plan, 5% (n=788) did not identify a specific activity to be undertaken.

- For 8% of the activities without a description, producers recognized the presence of a potential risk and indicated that they are currently seeking a solution.
- For the remaining activities, producers provided various explanations as to why no solution would be implemented. For example:
  - No action was needed. For example, for the Farm Review topic Nutrient Management Plan[8], one producer indicated "small animal numbers, no action."
  - There was no realistic solution to the problem. For example, for the Farm Review topic "distance of wastewater treatment system to nearest surface water,[9]" one producer indicated that he "can't move Lake Ontario for treatment system."

[8] Worksheet 17, Question 3.
[9] Worksheet 7, Question 9.

- Implementing a solution would create another problem for their operation. For example, for the Farm Review topic "resources for wildlife,[10]" one producer indicated that "wildlife is not encouraged around livestock buildings for disease reasons."

See Table 5.

Table 5: Number of activities listed in Action Plan

Items	Number of activities	% of total activities
Total	15,708	n/a
No description	723	5%
Seeking solution	65	<1%

On average, producers included 83 activities in their Action Plan. The number of activities per Action Plan ranged from 8 to 380. These activities may address one or more workbook question and therefore translate into an average of 27 unique activities, with a range of 6 to 84 unique activities per producer. Table 6 shows the average number of total and unique activities included in the Action Plan by farm type.

Table 6: Average number of unique activities by farm type

Farm type	Unique activities
Crop	28
Livestock	27
Horticulture	20
All farms	27

6.5.3 Categorization of Action Plan activities

OSCIA program representatives who conducted the producer interviews categorized the activities listed in the Action Plan as "actions," "compensating factors," and "monitoring" activities. In reviewing the figures below, it is important to recognize that the categorization of an individual activity may vary depending on its application. Additionally, OSCIA program representatives reported that the distinction between these categories is sometimes unclear; therefore, they may not have applied the definitions consistently.

Of the 15,708 activities listed in the Action Plans:

- 77% were *actions*, which are activities that change the risk rating for a particular workbook question from 1 or 2 to 3 or Best 4.
- 4% were *compensating factors*, which are activities to manage risks but do not change the risk rating to 3 or Best 4.
- 14% were *monitoring* activities, which involves inspecting various aspects of the farm operation for potential concerns. Clearly, these do not alter the risk rating for a workbook question.

[10] Worksheet 23, Question 11.

6.6 Submitting Action Plans for peer review

After drafting their Action Plan, to receive recognition as an environmental steward and to become eligible to participate in cost-share programs, producers must submit their Action Plan for peer review (see logic model in Section 5). Producers may choose to complete the EFP process because they value the information gained through their participation, want the recognition of completing the program, or plan to access cost-share funding (Section 6.2 discussed motivations for participating and Section 7 describes the impacts of the EFP).

The EFP has a high level of program completion once producers decide to attend a workshop. The majority of respondents (80%) submitted their Action Plan for peer review within one month of the workshop, including 31% who submitted it at the workshop. Producers who first attended a 3rd edition workshop within the past four years (76%) are somewhat less likely than those who first attended five or more years ago to submit their Action Plan for peer review within one month of the workshop. Additionally, in recent years, cost-share funding has been in high demand and has been fully committed within days of the application deadlines. Therefore, given that most producers said one of the reasons they attended the workshop was to become eligible for cost-share funding (94%), it is reasonable to conclude that some producers may not submit their Action Plan for peer review if they hear that all of the cost-share funding available for the year has been fully committed.

Since submitting their Action Plan for peer review, most (82%) have gone back to their EFP workbook at least once to review the information or update their Action Plan, including 44% who have gone back to the workbook more than once. Compared to 1999 (51%), more producers are reviewing their workbooks and/or updating their Action Plans. This may result from the requirement to update the Action Plan to be eligible to participate in cost-share programs.

7.0 Impact of workshops

Given the educational nature of the EFP workshops, one would expect the knowledge gained may change producers' environmental priorities for their farm. Therefore, the survey asked producers if they came to the EFP workshop with a clear priority in mind and whether their priorities changed because of the workshop.

Just under two-thirds (62%) of responding producers went to the EFP workshop with a clear environmental project in mind. The projects spanned a wide range of management practices from livestock management to chemical management and wildlife/habitat management. See Table 7 for a complete list of projects.

Table 7: Type of environmental project in mind when attending workshop
Q6b: Did you come to the workshop with a clear environmental project in mind? If you answered yes, what was it?

Project type	n=117
Livestock management	
Improve manure handling and/or storage	23%
Other livestock management (barn, watering systems, rotation)	8%
Fencing livestock from water or trees	7%
Soil/crop management	
Improve application accuracy (GPS)	16%
No till/drill	15%
Soil conservation/management (reduce compaction)	4%
Cover crops	<1%
Protect crops from pests	2%
Chemical management	
Upgrade sprayer/spreader (nozzles, flow rate controller)	12%
Fuel storage	6%
Fertilizer, chemical, or pesticide storage	5%
Erosion control	
Erosion control/reduction	11%
Windbreak/shelterbelt establishment	8%
Water management	
Well improvements	10%
Water source protection/management	10%
Run-off management	9%
Well decommissioned or sealed	4%
Wildlife/habitat management	
Wildlife habitat	2%
Wetland establishment/management	<1%
Other	
Energy efficiency	3%
Irrigation	2%
Other	5%

Note: Respondents could provide more than one answer; totals may not equal 100%.

Almost half of the respondents (45%) said, because of what they learned in the workshop, their priorities for environmental projects for their farm changed. While they did not provide specific examples of how the priorities changed, they spoke of how the workshops increased their awareness and knowledge of agri-environmental issues and concerns, motivated them to take action, and helped them prioritize projects. All of these changes to priorities are consistent with the outcomes of the EFP development process (see the logic model in Section 5). It also reflects the persuasion stage of the behaviour change process, where producers weigh the pros and cons of changing practices and implementing projects. Table 8 provides a complete list of responses.

Table 8: Reasons for changes to priorities
Q7b: Did your priorities for environmental projects for your farm change because of the workshop? If you answered yes, please explain.

Change	n=84
Increased awareness/knowledge	
Identified/examined (additional) areas of environmental concern	30%
Raised awareness of my operation's impact on the environment	19%
Understand more about environmental risks and mitigating practices	18%
Helped motivate/prioritize	
Convinced me to begin/follow through with practicing new techniques	21%
Helped prioritize concerns to identify most urgent	19%
Funding increased feasibility/priority of project	18%
Helped understand regulations and to make choices with them in mind	7%
Other	
Expanded my original project	6%
No response	2%

Note: Respondents could provide more than one answer; totals may not equal 100%.

8.0 Implementing Action Plans

In transitioning from EFP development to implementing Action Plans, producers may require additional information on how to proceed. This process forms part of the decision and confirmation stages of the behaviour change model (refer to Section 4).

The 2010 Survey of EFP Participants found that almost all producers said that while implementing their Action Plan they were either able to access (77%) or did not require (18%) technical information about how to proceed. Producers reported using a variety of written materials, advice from agricultural representatives, and other information to implement the actions identified in their Action Plans. The most frequently used sources were:

- Booklets on BMPs (62%)
- Fact sheets from OMAFRA (51%)
- OMAFRA staff (42%)

See Table 9 for a complete list of sources.

Table 9: Resources used to implement actions
Q15: Thinking about your Action Plan, what resources have you used to help you implement the actions identified in it?

Resources	n=189
Written material	
Booklets on BMPs	62%
Fact sheets from OMAFRA	51%
Internet resources	31%
Other fact sheets	12%
Newspaper/magazine articles	1%
Agricultural representatives	
OMAFRA staff	42%
Crop/nutrient management advisors	36%
Agribusiness sales staff	34%
Conservative authority staff	29%
EFP program representative (OSCIA)	9%
Contractors	3%
Other	
Neighbours and friends	26%
Family	15%
Other	5%
No response	2%

Note: Respondents could provide more than one answer; totals may not equal 100%.

This information confirms the importance of extension staff and educational materials for implementation of EFP Action Plans. As further discussed in Sections 14.1 and 14.5, this reflects a strong theme in the literature that emphasizes the key role of extension staff and educational materials (Prokopy et al., 2008).

The data also confirms the important role of social networks—neighbours, family, and friends—as information sources. Again, as further discussed in Section 14.7, this is a strong theme in the literature on BMP adoption (e.g., Prokopy et al., 2008). The EFP Program may want to examine ways to maximize the influence of social networks.

8.1 Status of Action Plan implementation

By implementing agri-environmental practices, producers demonstrate increased agri-environmental stewardship. To illustrate the extent to which producers are changing behaviours, as part of the 2010 EFP survey interview process, OSCIA program representatives asked producers to report on the status of each activity listed in their Action Plan. Table 10 shows the percentage and total number of all activities listed in the Action Plan that are completed, ongoing, started, or not started.

- In 2010, 61% of activities identified in the Action Plans were completed or ongoing. This is up from 46% in 1999.
- In 2010, producers completed 51 activities and started 3. They had yet to start an average of 26 activities.

Table 10: Implementation of Action Plan

Status	2010		1999	
	% n=15,708	Total number of activities	% n=4,127	Total number of activities
Completed/ongoing	61%	9,557	46%	1,895
Started	3%	495	7%	278
Not started	31%	4,909	47%	1,954
Not applicable/don't know/no response	5%	747	n/a	n/a
Total	100%	15,708	100%	4,127

Using the status of an activity, it is possible to estimate the extent to which producers have implemented their Action Plan. On average, producers have completed and/or are in the process of implementing 65% of their Action Plan. This is up from 54% in 1999. Table 11 shows the percentage of producers that have implemented various portions of their Action Plan.

Table 11: Implementation of Action Plan

Percent of Action Plan…	2010 n=189			1999 n=179	
	Completed/ ongoing	Started	Not started	Completed/ started	Not started
Zero	-	58%	4%	-	4%
Less than 25%	5%	39%	39%	13%	17%
25% to 49%	20%	3%	41%	27%	37%
50% to 75%	48%	-	15%	37%	27%
75% or more	27%	-	2%	23%	15%
Total	100%	100%	101%	100%	100%
Average	61%	4%	30%	54%	46%

Note: Totals may not equal 100% due to rounding.
On average, the status of an activity is not indicated for 5% of the Action Plan.

The percentage of the Action Plan ongoing or completed does not appear to vary by the age of the producer. However, it tends to increase with the number of years the producer has been farming since the age of 16. About 21% of those who have been farming for less than 15 years have started or completed 75% to 100% of their Action Plan. This compares with 39% of those who have been farming for 40 or more years.

Similarly, those who prepared their Action Plan earlier are more likely to have implemented a greater percentage of it. For example, about 30% of producers who prepared their Action Plan in 2008 or earlier have started or completed 75% to 100% of it. This compares to 16% who prepared their Action Plan in 2009 or later.

Farm revenue and the contribution of off-farm income also appears to influence the level of Action Plan implementation.

- About 20% of producers with farm revenues of less than $100,000 have started or completed 75% to 100% of their Action Plan. This compares with 27% of those who have farm revenues between $100,000 and $499,999 and 33% of those with revenues of $500,000 or more. This is consistent with trends in the literature showing farm income as a factor in adoption of agri-environmental measures (e.g., Yiridoe et al., 2010; Prokopy et al., 2008).
- Those who said off-farm income makes a somewhat significant contribution to their farm are most likely to have started or completed 75% to 100% of their Action Plan (42%). This compares with 18% who said off-farm income made a very significant contribution and about 30% who said off-farm income made little or no contribution to their farm.

It also seems that producers' level of education may influence Action Plan implementation. About 36% of producers whose highest level of education is high school or lower completed 75% to 100% of their Action Plan compared to 17% who completed university or professional school. This is a somewhat unusual finding given that the level of education is often found to lead to greater action (Yiridoe et al., 2010; Prokopy et al., 2008).

8.1.1 Implementation by worksheet

Table 12 shows the percentage of activities completed/ongoing, started, or not started by worksheet.

- The worksheets with the greatest portion of activities completed (between 73% and 75%) are 6 – Disposal of Farm Wastes; 15 – Soil Management; and 20 – Pest Management.
- The worksheets with the greatest portion of started activities are 22 – Wetlands and Wildlife Ponds (12%) and 18 – Horticultural Production (11%).
- The worksheets with the greatest portion of activities that have not been started (between 42% and 54%) are 13 – Water Efficiency; 5 – Storage of Petroleum Products; 17 – Use and Management of Manure and Other Organic Materials; and 23 – Woodlands and Wildlife.

Compared to 1999, aside from two worksheets, the percentage of activities completed and ongoing has increased. The greatest increases are associated with the following worksheets:

- 18: Horticultural Production (up 42%)
- 11: Milking Centre Washwater (up 25%)
- 19: Field Crop Management (up 22%)
- 12: Nuisances under the *Farming and Food Production Protection Act* (up 21%)
- 20: Pest Management (20%)

Implementation of activities decreased for worksheet 13: Water Efficiency (down 17%) and 23: Woodlands and Wildlife (down 10%).

Table 12: Implementation by worksheet

Worksheet	% of activities in worksheet…				
	2010			1999	
	Completed /ongoing	Started	Not started	Completed/ started	Not started
2 – Water Wells (13 questions)	68%	1%	28%	59%	41%
3 – Pesticide Handling and Storage (15 questions)	56%	4%	38%	47%	53%
4 – Fertilizer Handling and Storage (20 questions)	59%	4%	34%	49%	51%
5 – Storage of Petroleum Products (27 questions)	51%	2%	44%	37%	63%
6 – Disposal of Farm Wastes (18 questions)	75%	3%	20%	66%	35%
7 – Treatment of Household Water (21 questions)	64%	4%	28%	59%	41%
8 – On-Farm Storage of Livestock Manure and Other Prescribed Materials (16 questions)	57%	2%	37%	56%	44%
9 – Livestock Yards and Outdoor Confinement Areas (OCAs) (7 questions)	66%	3%	28%	48%	52%
10 – Silage Storage (9 questions)	49%	-	38%	37%	64%
11 – Milking Centre Washwater (13 questions)	56%	5%	28%	36%	64%
12 – Nuisances under the *Farming and Food Production Protection Act*, 1998 (12 questions)	57%	3%	28%	39%	61%
13 – Water Efficiency (11 questions)	39%	2%	54%	58%	43%
14 – Energy Efficiency (10 questions)	56%	4%	34%	55%	45%
15 – Soil Management (16 questions)	75%	3%	20%	67%	33%
16 – Nutrient Management in Growing Crops (10 questions)	53%	1%	31%	53%	47%
17 – Use and Management of Manure and Other Organic Materials (17 questions)	49%	1%	42%	38%	62%
18 – Horticultural Production (25 questions)	68%	11%	20%	37%	63%
19 – Field Crop Management (9 questions)	64%	8%	22%	50%	50%
20 – Pest Management (13 questions)	73%	3%	20%	56%	44%
21 – Stream, Ditch, and Floodplain Management (10 questions)	59%	9%	27%	68%	32%
22 – Wetlands and Wildlife Ponds (5 questions)	51%	12%	35%	58%	42%
23 – Woodlands and Wildlife (11 questions)	40%	8%	42%	58%	42%

8.1.2 Cost and time to implement Action Plan[11]

Results from the EFP survey show that producers are making significant investments in agri-environmental projects. Overall, producers implemented agri-environmental activities valued at almost $69,600 per farm or $13,076,488 in total for the 189 producers surveyed. Moreover, for 42% of the activities completed, producers reported there were no implementation costs. Producers devoted just over 160 hours per farm or a total of 30,726 hours (for the 189 producers surveyed) of their time to implementing activities.

Table 13 provides the total and average cost and hours associated with activities by worksheet.

- Activities associated with the following four worksheets account for 72% of the total implementation costs and represent the highest average cost per farm.
  - 8 – On-Farm Storage of Livestock Manure and Other Prescribed Materials
    - Cost of $4.3 million for the producers surveyed (33% of total cost)
    - Average cost of $53,400 per farm

    Implementing these activities also involved the highest producer time commitment: about 100 hours per farm and almost 7,700 hours for the 189 producers surveyed.
  - 15 – Soil Management
    - Cost of $2.5 million for the producers surveyed (19% of total cost)
    - Average cost of $21,000 per farm
  - 14 – Energy Efficiency
    - Cost of $1.4 million for the producers surveyed (11% of total cost)
    - Average cost of $20,200 per farm
  - 20 – Pest Management
    - Cost of $1.3 million for the producers surveyed (10% of total cost)
    - Average cost of $13,200 per farm
- Activities associated with the following five worksheets have the lowest average cost per farm (between $1,200 and $1,900):
  - 6 – Disposal of Farm Wastes
  - 7 – Treatment of Household Water
  - 5 – Storage of Petroleum Products
  - 3 – Pesticide Handling and Storage
  - 4 – Fertilizer Handling and Storage

[11] Costs and/or hours were not reported for 14% of the activities that have been completed.

- Activities associated with the following four worksheets (aside from 8 – On-Farm Storage of Livestock Manure and Other Prescribed Materials, which was mentioned above) have the highest average time commitment per farm:
  - 23 – Woodlands and Wildlife (71 hours)
  - 19 – Field Crop Management (48 hours)
  - 18 – Horticultural Production (41 hours)
  - 2 – Pesticide Handling and Storage (41 hours)

Table 13: Implementation by worksheet

Worksheet	Cost		Hours	
	$ '000 n=189		Hours n=189	
	Total	Average	Total	Average
2 – Water Wells (13 questions)	$440	$3.0	1,138	8
3 – Pesticide Handling and Storage (15 questions)	$141	$1.7	3,423	41
4 – Fertilizer Handling and Storage (20 questions)	$79	$1.9	451	11
5 – Storage of Petroleum Products (27 questions)	$158	$1.4	660	6
6 – Disposal of Farm Wastes (18 questions)	$62	$1.2	352	7
7 – Treatment of Household Water (21 questions)	$83	$1.3	96	2
8 – On-Farm Storage of Livestock Manure and Other Prescribed Materials (16 questions)	$4,326	$53.4	7,659	95
9 – Livestock Yards and Outdoor Confinement Areas (OCAs) (7 questions)	$465	$10.8	1,441	34
10 – Silage Storage (9 questions)	$28	$1.4	97	5
11 – Milking Centre Washwater (13 questions)	$59	$9.8	107	18
12 – Nuisances under the *Farming and Food Production Protection Act*, 1998 (12 questions)	$259	$6.8	244	6
13 – Water Efficiency (11 questions)	$158	$3.3	540	11
14 – Energy Efficiency (10 questions)	$1,412	$20.2	559	8
15 – Soil Management (16 questions)	$2,460	$21.0	3,228	28
16 – Nutrient Management in Growing Crops (10 questions)	$119	$2.7	492	11
17 – Use and Management of Manure and Other Organic Materials (17 questions)	$274	$4.4	663	11
18 – Horticultural Production (25 questions)	$78	$7.1	455	41
19 – Field Crop Management (9 questions)	$546	$9.9	2,643	48
20 – Pest Management (13 questions)	$1,265	$13.2	988	10
21 – Stream, Ditch, and Floodplain Management (10 questions)	$409	$9.7	1,260	30
22 – Wetlands and Wildlife Ponds (5 questions)	$33	$3.0	105	9
23 – Woodlands and Wildlife (11 questions)	$221	$3.8	4,127	71
Total	$13,076	$69.6	30,726	163
Note: Totals may not sum due to rounding.				

The 189 producers surveyed used just over $10 million of their own finances to cover over three-quarters (78%) of the cost of implementing activities. The remaining 22% of the costs or about $3 million for the producers surveyed was financed through cost-share funding. In other words, every cost-share dollar is leveraging over $3 in producer investment in projects. On average, the cost of activities implemented by each farm was about $69,600 (of which $53,900 was self-financed and $15,600 in cost-share funding), which is up 544% from about $10,800 per farm in 1999.

As shown in Table 14, activities implemented by:

- The 92 livestock producers surveyed cost $6.6 million (or $72,600 per farm). Producers self-financed 73% of the cost of these activities and on average, devoted $52,700 per farm of their own resources.
- The 81 crop producers surveyed cost $6.0 million (or $73,700 per farm). They covered 83% of the activity costs. The average amount spent per farm was $60,900.
- The 16 horticulture producers surveyed cost $496,600 (or $30,900 per farm). They paid for 82% of the activity costs, with an average expenditure of $25,400 per farm.

Table 14: Total cost to implement Action Plan

Amount	2010			
	Total n=189	Crop n=81	Livestock n=92	Horticulture n=16
Total by funding source ($ '000)				
Self-funded	$10,137	$4,933	$4,798	$406
Program funding	$2,940	$1,041	$1,810	$89
Total	$13,076	$5,973	$6,608	$496
Total cost				
$0 to $4,999	19%	15%	26%	12%
$5,000 to $24,999	26%	32%	17%	50%
$25,000 to $99,999	31%	29%	34%	32%
$100,000 and over	23%	25%	24%	6%
Total	99%	101%	101%	100%
Averages ($)				
Average total cost per farm	$69,600	$73,700	$72,600	$30,900
Average amount self-funded per farm	$53,900	$60,900	$52,700	$25,400
Average amount cost-share funding per farm	$15,600	$12,800	$19,900	$5,600

Note: Totals may not equal 100% due to rounding.

Table 15 shows the percentage of producers who used various sources of funding. Over 8 producers in 10 have used OSCIA-delivered funding to implement at least one activity.

Table 15: Sources of cost-share financing to implement Action Plan

Source	2010 n=189			
	Total n=189	Crop	Livestock	Horticulture
OSCIA-delivered programs	87%	82%	92%	92%
Conservation authority	14%	9%	19%	17%
Other	13%	12%	14%	17%
Not specified	11%	17%	6%	8%

Note: Respondents could provide more than one answer; totals may sum to more than 100%.

Table 16 shows the percentage of producers who spent various amounts of time implementing activities. Over one-third of producers spent more than 100 hours implementing activities. The average amount of time each producer spent completing activities was 163 hours, which is up 207% from 53 hours in 1999.

Table 16: Hours to implement Action Plan

Hours	2010 n=189			
	Total n=189	Crop n=81	Livestock n=91	Horticulture n=16
0 to 5.4	13%	9%	20%	-
5.5 to 59	42%	52%	35%	37%
60 or more	45%	40%	47%	63%
Total	100%	101%	102%	100%
Statistics				
Average	163	184	131	248
Total	30,725	14,871	11,891	3,963

Note: Totals may not equal 100% due to rounding.

Robinson (2006a) illustrates that a critical assumption for the COFSP to function is that producers have adequate access to credit to implement changes. Findings show that this assumption may hold true for participants; however, it is unclear whether non-participants have equally uninhibited finances. The literature raises the question of whether access to credit may be a limiting factor that can be investigated for non-participants as well as EFP participants who fail to adopt BMPs. Since much of the literature has been published, there have been significant changes in the credit markets, and credit access may hold even greater relevance to producers in the current economic climate. This topic may require frequent monitoring in an uncertain economic climate. This section discusses the financial and time resources expended on projects. Section 8.1.4 identifies some of barriers to implementing projects that have yet to be started.

8.1.3 Started activities

Producers are in the process of implementing 3% of activities identified in Action Plans. Almost half (45%) of the activities that have been started will be completed by 2011. Producers plan to complete another 25% of the activities by 2015. Table 17 shows the percentage of producers who plan to complete various types of activities by 2015.

Table 17: Description of activities started

Activity description	% n=80
Knowledge	100%
Storage	90%
Minimize use of resources/pollution prevention	89%
Control structures	89%
Water	85%
Crop production	80%
Energy/water saving equipment	73%
Safety and protection	73%
Equipment	71%
Manure	55%
Natural areas	46%
Livestock production	43%
Unspecified	73%
Other	73%
No response	3%

Note: Respondents could provide more than one answer; totals may sum to more than 100%.

8.1.4 Activities not started

A total of 31% of the activities identified in Action Plans have not been started. Producers plan to begin implementing about one-third (33%) of these activities by 2012. However, they have not decided when they would begin implementing about half (49%) of the activities. Table 18 shows the percentage of producers who plan to start implementing various activities in the future.

Table 18: Description of activities not started

Activity description	% n=189
Knowledge	99%
Water	88%
Storage	87%
Control structures	82%
Minimize use of resources/pollution prevention	81%
Crop production	76%
Safety and protection	74%
Equipment	71%
Energy/water saving equipment	60%
Manure	44%
Livestock production	42%
Natural areas	39%
Unspecified	70%
Other	66%
No response	5%

Note: Respondents could provide more than one answer; totals may sum to more than 100%.

Producers were asked to identify barriers to beginning the projects they have yet to start. In 2010 and 1999, producers did not identify specific barriers to implementing 23% and 18% of activities, respectively. Further, the most common barriers have not changed since 1999:

- 30% of producers said it is not an immediate priority, which may suggest they have not been persuaded about the importance of the project or there are other projects they would like to complete first.

- 23% said they lacked finances to implement the project, which may suggest they do not have adequate access to credit to fund the project, they could not access cost-share funding, or they are currently spending resources on other projects.

Table 19 shows, by barrier, the percentage of activities that have not been started. It also indicates the average number of activities by producer to which the barrier applies.

Table 19: Barriers to implementation

Barrier	2010 % of activities not started n=4,909	1999 % of activities not started n=1,412
Barriers		
Personally, not an immediate priority	32%	30%
Lack of finances	23%	23%
The cost is too high/need cost-share funding	17%	15%
Solution is not realistic	5%	8%
No time/no access/too much work/too difficult	5%	n/a
Need to determine how to proceed	4%	n/a
Expertise or information is not available	2%	1%
Materials or services are not available	1%	1%
Legislation or bylaws prevent using the best solution	1%	-
Other	5%	1%
No barriers		
No barriers to action	23%	18%
Don't believe any action is needed/no longer needed	9%	n/a
Not applicable	1%	n/a
Don't know/no response	41%	n/a

Note: Respondents could provide more than one answer; totals may sum to more than 100%.

9.0 Impact of Environmental Farm Plans

9.1 Impact on farming operation

Virtually all producers (95%) said their EFP had at least some impact on their farming operation. Consistent with the expected outcomes of the EFP development process, and as shown in Table 20, producers reported that the EFP:

- Increased their awareness and understanding of agri-environmental issues and concerns
- Increased their implementation of actions to address agri-environmental issues
- Helped them observe environmental and financial benefits

The range of impacts provided in 2010 and 1999 were similar, although there are slight variations in the category percentages. In part, these may reflect differences in the way responses were grouped.

Table 20: Reasons for impacts on farm operation
Q20b: In your opinion, what kind of impact has your EFP had on your farming operation? If some, please explain.

Impact	2010 n=180	1999 n=174
Increased awareness and understanding		
We understand more about environmental risks and mitigation practices	33%	12%
Identified/examined (additional) areas of environmental concern	15%	14%
Raised awareness of my operation's impact on the environment	14%	35%
Helped prioritize concerns	9%	-
Helped understand regulations and to make choices with them in mind	4%	-
Motivated action		
Motivated me to take action	19%	
Now practicing new techniques	17%	13%
Funding increased feasibility/priority of project	15%	5%
Observed benefits		
Have seen environmental improvements	15%	-
Seeing benefits to farm operation (e.g., financial)	10%	-
Used as selling feature/improved farm image	2%	-
Generally positive		
Positive impact	10%	30%
Other	4%	4%
No response	3%	-

Note: Respondents could provide more than one answer; totals may not equal 100%.

As further evidence the EFP is achieving its intended outcomes, about half of the respondents (48%) said that by completing an EFP, they identified some unexpected environmental benefits for their operation. As Table 21 shows, many of the stated benefits related to increased awareness and understanding or improvements to specific farm management practices.

Table 21: Types of unexpected benefits
Q21b: By completing an EFP, what unexpected environmental benefits, if any, did you identify for your farm? If some, please explain.

Benefit	n=90
Increased awareness and understanding	
Increased awareness of environmental issues and mitigating actions	23%
Increased knowledge of sources of funding	3%
Improved management practices	
Improved water source protection/management/quality/buffer zones	21%
Controlled/reduced erosion	13%
Controlled run-off	12%
Improved wildlife habitat	11%
Improved well	10%
Implemented no-till practices	9%
Established windbreak/shelterbelt	8%
Established or improved manure storage	7%
Improved fuel storage	6%
Fenced livestock from water/trees	3%
Upgraded sprayer/spreader	2%
Improved irrigation	2%
Improved fertilizer/pesticide/chemical storage	2%
Improved livestock management	2%
Conserved/improved soil	2%
Improved application accuracy (GPS)	2%
Improved energy efficiency	2%
Decommissioned/sealed well	1%
Established/managed wetland	1%
Other	
Reduced costs (fertilizer/chemical application and fuel)	11%
Received recognition of environment efforts (gate sign, neighbours)	3%
Other	12%
No response	4%

Note: Respondents could provide more than one answer; totals may not equal 100%.

Many producers reported that their EFP resulted in some or significant improvement to various aspects of their farm operation. Table 22 shows that:

- 74% saw improvement to soil quality:
  - Of those who said they saw significant improvement to their soil quality, 40% had implemented 75% to 100% of their Action Plan and 44% had implemented 50% to 74% of it.
  - Producers with higher levels of farm revenue were more likely to say they saw significant improvement to soil quality. About one-quarter of those with revenue of $500,000 and over (27%) or $100,000 to $499,999 (25%) said there were significant improvements. This compares to 14% of those with revenue of less than $100,000.

- 71% noticed improvement to water quality:
  - Water quality issues are a growing concern given the E. coli outbreak in Walkerton, Ontario in 2000 and emerging issues in the Great Lakes.
  - Of those who said they saw significant improvement to their water quality, 33% had implemented 75% to 100% of their Action Plan and 46% had implemented 50% to 74% of it.

- 63% found improvement to family health and safety.

- 48% saw improvement to fish and wildlife habitat.

Table 22: Level of change resulting from Action Plan implementation
Q22: Thinking of your Action Plan implementation, please rate the level of change to the following aspects of your farm operation.

Farm aspect	Significant improvement	Some improvement	No change	Some deterioration	No response
Water quality	30%	41%	23%	-	5%
Soil quality	23%	51%	20%	-	6%
Family health and safety	16%	47%	31%	<1%	6%
Fish and wildlife habitat	14%	34%	44%	<1%	7%
Air quality	3%	24%	66%	-	7%
Other	2%	1%	-	-	97%

Note: Totals may not equal 100% due to rounding.

In 1999, participants in the EFP survey were asked to rank, from 1 to 5 in order of most to least, five areas of their farm that were better off because of knowledge gained through their participation in the EFP Program. Family health and safety, soil resources, and water resources were ranked fairly equally at about 2.0. Air resources ranked lowest at 3.9.

9.2 Use of Environmental Farm Plan

Respondents were asked if they had voluntarily used their EFP for four reasons. A minority of producers have used their EFP to:

- Meet *Nutrient Management Act* (NMA) requirements (20%).[12]
  - Not surprisingly, livestock producers (35%) are more likely than crop producers (7%) to have used the EFP to meet NMA requirements. No horticultural producers used their EFP for this purpose.
  - Those with revenues of $500,000 more (40%) were more likely than those with revenues of $100,000 to $499,999 (13%) or less than $100,000 (12%) to have used their EFP for this reason.
  - Additionally, those who have been farming for 30 years or more (23%) were more likely than those who have been farming for less than 30 years (17%) to have used their EFP to meet NMA requirements.

- Counter accusations made by others regarding environmental neglect on their farm (9%). This is up from 2% in 1999.
  - Those with farm revenues of less than $100,000 (16%) were more likely than those with revenue of $500,000 or more (10%) to say they used their EFP to counter accusations.
  - Additionally, those who have been farming for less than 30 years (12%) were more likely than those who have been farming for 30 years or more (5%) to say they used their EFP to counter accusations.

  About 8% of producers said they used their EFP to qualify for other programs/opportunities such as:
  - Local Food Plus, which certifies farms and processors for environmentally and socially sustainable practices. It is committed to growing local sustainable food systems. Producers selling to this organization must demonstrate they have an EFP that is deemed appropriate.
  - Corn-Fed Beef, which certifies that its animals have been fed a strict diet consisting of corn. Having an EFP deemed appropriate is part of the certification process.
  - Quota purchase.[13]

  Livestock producers (13%) are more likely than horticultural producers (6%) and crop producers (3%) to have used the EFP for marketing purposes.

- Achieve a favourable loan rate or insurance premium (3%). This is down slightly from 5% in 1999.

[12] Not asked in 1999.
[13] Not asked in 1999.

10.0 Confidentiality

Many studies that cite mistrust over confidentiality as a barrier to participation were published in 2006 or earlier, and utilized data from the mid-2000s and older. The Canada-Ontario EFP has taken measures to limit confidentiality concerns, and the continued existence of the program may have increased trust over time. Thus, confidentiality concerns may be overstated in the current program.

The 2010 Survey of EFP Participants found that the confidentiality of their EFP workbook and Action Plan continues to be important. As shown in Table 23, most producers (80%) said it is important or very important.

Table 23: Importance of confidentiality of workbook and Action Plan
Q19a: How important to you is the confidentiality of your workbook and Action Plan?

Rating	n=189
Very important	38%
Important	42%
Not important	19%
No response	1%
Total	100%

Note: Totals may not equal 100% due to rounding.

However, a minority of producers said the confidentiality of their workbook and Action Plan was *important* or *very important* because they contain general business-related information that need not be shared with others or sensitive information that could be used against the farm. See Table 24.

Table 24: Reasons for confidentiality
Q19b: How important to you is the confidentiality of your workbook and Action Plan? Please explain your answer.

Reason	n=189
Business information	
My private business	16%
Don't want the government to know my business	6%
Information should not be public knowledge	4%
Don't want other farmers to know my business	2%
Sensitive information	
Could be used against me	13%
Don't want others to know my environmental risks	13%
Ashamed of current practices or conditions	2%
Other	
Promise of confidentiality was the only reason I participated	3%
To ensure all farmers are judged equally	2%

Note: Respondents could provide more than one answer; totals may not equal 100%.

Producers who reported that the confidentiality of their workbook and Action Plan was *not important* said they do not contain sensitive information and they are willing to share them with others. See Table 25.

Table 25: Reasons for little concern about confidentiality
Q19b: How important to you is the confidentiality of your workbook and Action Plan? Please explain your answer.

Reason	n=189
Willing to share	
Willing to share with other farmers	7%
Willing to share so others can follow	4%
Standard business information	
Reflects standard operating procedures	3%
No concerns	
Nothing to hide	7%
Not really concerned	1%

Note: Respondents could provide more than one answer; totals may not equal 100%.

During the first few years of the program in Ontario, only 25% of farm producers had adopted the program (Yiridoe, 2000). One reason for the low initial participation numbers was because of the misperception by some that participants might disclose what could be considered sensitive and confidential information regarding their farming operation. Yiridoe determined that reluctance of farmers to participate in a voluntary program like the EFP may stem from "a rational decision-making response to avoid or minimize the possibility of negative consequences [from] disclosing potentially incriminating environmental information" (2000, p. 117).

The sentiment of mistrust felt by producers is heightened when governmental bodies are involved in the proceedings, and mistrust of government increases the aversion to sharing environmental information (Holmes, 1998). Many producers, including those who submit peer evaluations, express concern that information within their EFP files could be used against them in possible legal action by provincial or federal governments (Smithers & Furman, 2003).

Smithers and Furman (2003) determined that in Ontario, 55% of producer respondents omitted some of their farming system in an EFP. Of these respondents, 78% stated their reviews only covered areas of their farm operations where they believed problems existed, and several others strategically chose to omit information. A segment of producers participated in EFP workshops and skipped one or more stages of the formal program in favour of implementing actions on their own. The resulting funding ineligibility indicates inhibitions regarding the EFP Program or the handling of information exposed in EFPs rather than of conservation stewardship itself (p. 349).

Several past participants in agri-environmental programs, including the Ontario EFP in some cases, admit that they intentionally exclude sections of their property in an assessment because of concerns over confidentiality. Producers who doubt the confidential nature of the EFP Program are also less likely to undergo peer review, to identify environmental "hot spots," and to trust the objectives of the program (Smithers & Furman, 2003).

McCallum (2003) identifies mistrust of government programs to be the foremost barrier to participation in the EFP Program. It should be noted that the degree of mistrust toward the higher levels of government supersedes that of OMAFRA or OSCIA representatives. While literature does not indicate any direct reason for this sentiment, some interviewees denoted a fear of rules, changes, abolishment of programming, and suspicion of white collar officials (Holmes, 1998). In Ontario, OSCIA and OMAFRA representatives interact with producers face-to-face in workshops and in some cases live in the communities. If seen as individuals with a stake in the well-being of the community, the representatives could appear to have greater interest in the success of the program.

11.0 Satisfaction with workshops

Overall, all producers (100%) were satisfied with the last EFP workshop they attended, including 61% who were very satisfied. Additionally, as shown in Table 26, about 9 in 10 producers were satisfied with each of the 10 aspects of the workshops they were asked to rate.

Table 26: Satisfaction with workshops
Q9: Thinking of the last EFP workshop you attended, how satisfied were you with the following aspects of the workshop?

Aspect of workshop	Very satisfied	Satisfied	Not satisfied	No response
Amount of one-on-one assistance provided	61%	29%	2%	7%
How to apply to cost-share programs	55%	37%	3%	6%
Type of technical information provided	48%	41%	5%	6%
Range of environmental issues discussed	46%	46%	2%	6%
Examples of actions provided	45%	46%	3%	6%
Length of the workshop	44%	48%	2%	6%
Development of your Action Plan	44%	47%	3%	6%
Time to complete example worksheets during workshop	43%	48%	4%	6%
Number of worksheets covered in the workshop	42%	50%	2%	6%
Amount of discussion with other farmers	41%	49%	4%	7%

Note: Totals may not equal 100% due to rounding.

There are some statistically significant differences in satisfaction with the workshops depending on when producers attended a 3rd edition workshop. Those who attended a 3rd edition workshop within the past four years compared to those who attend the workshop five or more years ago are significantly more likely to be *very satisfied* with:

- The amount of one-on-one assistance provided (65%). This compares to 56% of those who attended the workshop five years or more ago.
- Information on how to apply to cost-share programs (61%). This compares to 45% of those who attended the workshop five years or more ago.

There is also some variation in satisfaction levels based on the length of time respondents have been farming since the age of 16. Those who have been farming for less than 30 years are significantly less likely than those who have been farming for 30 years or more to be *very satisfied* with the following aspects:

- Type of technical information provided
- Development of their Action Plan
- Time to complete example worksheets during workshop
- Range of environmental issues discussed
- Examples of actions provided
- Number of worksheets covered during workshop

This may suggest that producers with less farming experience are more detailed in the review of their farm and desire more technical information. See Table 27.

Table 27: Satisfaction with workshops by number of years farming since the age of 16
Q9: Thinking of the last EFP workshop you attended, how satisfied were you with the following aspects of the workshop?

Aspect of workshop	Very satisfied	
	Less than 30 years	30 years or more
Type of technical information provided	41%	55%
Development of your Action Plan	40%	48%
Time to complete example worksheets during workshop	39%	47%
Range of environmental issues discussed	38%	54%
Examples of actions provided	36%	54%
Number of worksheets covered in the workshop	34%	50%

Given participants' extreme levels of satisfaction with the workshops, it is difficult to draw any conclusions about the factors that may discourage others from attending.

12.0 Potential improvements

An adoption of new techniques has two distinct aspects: (i) accessing and evaluating information and (ii) the application of new information (Pannell et al., 2006, p. 2). By increasing the access and quantity of information available, producers can expect reduced uncertainty and better decision-making. Therefore, to provide insight into potential areas for enhancement, the 2010 Survey of EFP Participants was to suggest improvements to the workshops and indicate what additional services would be helpful to complete worksheets and implement Action Plans.

12.1 Workshops

Respondents were asked to provide suggestions for improvements to the EFP workshops. Their feedback did not reveal any overwhelming areas of concern. Although many comments revolved around workshop logistics, some requested additional or more in-depth educational opportunities. See Table 28 for a complete list of responses.

Table 28: Improvements to workshops
Q11: What suggestions do you have for improvements to the EFP workshops?

Suggestions	n=189
Workshop logistics	
Improve certain administrative details (e.g., locations, coffee breaks, lunch, list of contacts, and more assistance)	7%
More time to discuss possible actions, share ideas, and develop Action Plan	5%
Increase computer usage (e.g., online option, computers in class, CD version)	3%
Shorter workshops	2%
Shorter workshop of EFP update	2%
Keep class size small	1%
Workshop content	
Expand/improve educational piece; environment/project awareness	7%
Customize workshops to farm/industry group types	5%
Hold more workshops or follow-ups that are more in-depth	2%
Funding	
More funding or cost-share opportunities	3%
No changes	
None	21%
Good program	12%
No response	34%

Note: Respondents could provide more than one answer; totals may not equal 100%.

Respondents were also asked whether six forms of assistance would have made it easier for them to complete the worksheets. As shown in Table 29:

- About 6 in 10 said additional technical information (67%), on-farm assistance to complete the Action Plan (64%), or more one-on-one assistance in person (61%) would or may have been helpful.
- About 4 in 10 said group sessions to complete the Action Plan (44%), a CD version of the workbook (39%), or more assistance over the phone or by email (38%) would or may have been helpful.

Table 29: Additional assistance with worksheets
Q14: Thinking about the process of completing your worksheets, would any of the following have made it easier for you to complete it?

Type of assistance	Yes	Maybe
a. Additional technical information	20%	47%
e. On-farm assistance to complete the Action Plan	20%	44%
c. More one-on-one assistance in person	18%	43%
f. CD version of the workbook	14%	25%
d. Group sessions to complete the Action Plan	12%	32%
b. More assistance over the phone or by email	7%	31%
g. Other	2%	1%

12.2 Services to implement Action Plans

Respondents were asked what additional services would help them implement their Action Plan. The top three helpful services involved on-farm activities:

- Tours of environmental practices used on other farms (67%):
  - Those with more farming experience (over 30 years – 64%) are more likely than those with less farming experience (under 30 years – 52%) are to say this service would be helpful.

- One-to-one on-farm visits by technical specialists (52%):
  - Those with more farming experience (over 30 years – 54%) are more likely than those with less farming experience (under 30 years – 48%) are to say this service would be helpful.
  - Similarly, older producers are more likely to say this would be helpful; 61% of those over 55 years of age said it would be helpful compared to 45% of those who are younger than 45.

- On-farm demonstrations of specific practices or technologies (47%).

Two other helpful services involved social interaction between producers:

- Discussions with other farmers about how to implement certain practices (44%):
  - Producers with small (under 300 acres – 54%) or medium-sized (300 to 599 acres – 61%) farms are more likely than those with large farms are (over 600 acres – 44%) to find this service helpful.

- Supplemental workshops/presentations on specific topics or practices (43%):
  - Producers with smaller farms (under 300 acres – 51%) are more likely than those with medium-sized farms (300 to 599 acres – 41%) or large farms are (over 600 acres – 38%) to find this service helpful.
  - Those with college (45%) or university (49%) education are more likely than those with high school or lower are (38%) to find this helpful.

See Table 30 for a complete set of responses.

Table 30: Additional services to implement Action Plans
Q17: What additional services would help you implement your EFP Action Plan?

Service	n=189
Tours of environmental practices used on other farms	67%
One-to-one on-farm visits by technical specialists	52%
On-farm demonstrations of specific practices or technologies	47%
Discussions with other farmers about how to implement certain practices	44%
Supplemental workshops/presentations on specific topics or practices	43%
Picture/slide show/virtual tours	3%
More funding	2%
One-on-one with EFP representative	<1%
More technical information	<1%
Other	2%
None needed	1%
No response	2%

Note: Respondents could provide more than one answer; totals may not equal 100%.

These results suggest that customized services offered to specific groups or targeted one-to-one services might increase many farmers' capacity to implement their Action Plans. This approach and need is often cited in the literature (Franz et al., 2010).

The EFP Program has already been successful in targeting certain services to different groups such as Mennonite and First Nations farmers.

- Efforts to engage the Mennonite community in the early 1990s, primarily centered in the Waterloo Region, were met with limited success. Once OSCIA was able to secure a local Program Representative who had direct ties to the community and possessed a better appreciation of the religious and cultural values, participation in workshops rose. In some instances, the material made available at workshops was appropriately modified to meet the needs of participants. Partnering with the Grand River Conservation Authority, which had already enjoyed support for environmental programs in the community, added to the EFP Program's acceptance. Workshop participation in the communities and support for the educational program remains strong. Although participants are not always interested in the cost-share programs, those who are have completed many projects.

- Involvement by the First Nations communities in EFP was extremely low until concerted efforts were initiated in 2007–2008. The EFP Partnership aligned with the Indian Agriculture Program of Ontario (IAPO), a long-established agency in the community that provides lending and agricultural extension to farmers in First Nation communities. With some financial support provided annually to IAPO by the EFP Program, the agricultural specialists work closely with their clients to offer encouragement and guidance. The EFP workshops are held within the First Nation communities, and are delivered in the normal fashion by OSCIA. Program Representatives were provided sensitivity training by IAPO staff and have successfully built a very good rapport with their clients. Peer review is conducted in the regular procedure by OSCIA county/district committees. The material presented at workshops by OSCIA and OMAFRA is modified to suit the community's farm types and cultures. Since launching the effort in 2008, participation has steadily increased in EFP workshops and in the Canada-Ontario Farm Stewardship Program.

Further development of these approaches might be considered.

The five services mentioned in Table 30 that received high levels of approval suggest additional services and activities that could assist producers in understanding BMPs and implementing EFP Action Plans. Some of these are already in place or have been used in the past.

13.0 Recommending Environmental Farm Plans to others

The majority of producers (83%) have recommended other farmers to consider developing an EFP.

- Those who had recommended the Program spoke of the ability to access cost-share funding (52%), environmental responsibility (29%), and educational opportunities (20%).
- Those who had not recommended the Program spoke positively about it, but were not comfortable suggesting that others participate.

See Table 31.

Table 31: Reasons for recommending / not recommending Environmental Farm Plans
Q38b: Have you recommended to other farmers that they consider developing an Environmental Farm Plan? Please explain why or why not.

Reason	n=189
For recommending	
Ability to access cost-share funding/program	52%
Encouragement to be environmentally responsible/solve their problems	29%
Educational – raise awareness/understanding of issues	20%
Help them evaluate/solve their problems or improve their practices	15%
Good program/worthwhile program/believe in its benefits	14%
For not recommending	
Never came up in discussion	5%
Everyone I know has one	4%
Individual decision/none of my business	2%
May not be interested in learning/listening to me	2%
Other	2%

Note: Respondents could provide more than one answer; totals may not equal 100%.

14.0 Potential barriers and mitigating strategies

Approximately 70% of Ontario agricultural producers had participated in EFP workshops; however, the level of implementation was unknown and therefore is the subject of this study. An estimated 53% of concerns in a sample of EFPs had been acted on in 1999 (FitzGibbon, Plummer, & Summers, 2000; Plummer, Spiers, Summers, & FitzGibbon, 2008; Summers, Plummer, & FitzGibbon, 2008). In 2002, Robinson (2006b, p. 209) estimated that one-quarter of Ontario farmers had begun to implement peer-reviewed EFPs. Approximately 25% of producers in Ontario have completed the most current (third) edition of the EFP workbooks, and the Program seeks to encourage the remaining 75% of producers to complete up-to-date EFPs.

This research was not able to determine the reasons for non-participation; that is proposed for a second stage of research. The current research does examine barriers to implementing actions among EFP participants. EFP participants are overwhelmingly positive about and satisfied with the Program. A wide range of characteristics can influence a producer's innovation decision. These include age, education, financial means, goals, family circumstances, support networks, culture, and interaction with researchers and extension agents (Journeaux, 2009). This section, based on a review of literature about EFP participation and related topics in similar fields or jurisdictions, discusses potential barriers to participation and to action, and offers suggestions for possible mitigating strategies that have been successfully applied or offer theoretical solutions to existing barriers.

14.1 Information about Environmental Farm Plans

Producers who do not have sufficient information or understanding about EFPs may decide not to participate in the Program. They may come to this decision because they do not think that pollution from their operations has an impact on the surrounding environment or they do not view their farm as part of the larger ecosystem. Conversely, they may be aware of the potential environmental impacts associated with farming, but see a farm as too large an area to attempt to solve environmental problems. Others may believe they are already practicing good environmental stewardship and therefore cannot visibly observe the environmental benefits resulting from EFP implementation (McCallum, 2003).

Extension programs mitigate this barrier by educating producers about agri-environmental issues and helping them devise plans to address potential risks associated with their operation. In implementing extension programs, it is important to recognize that adoption of new techniques has two distinct aspects: (i) accessing and evaluating information and (ii) the application of new information (Pannell et al., 2006, p. 2). Therefore, by increasing the access and quantity of information available, producers can expect reduced uncertainty and better decision-making. Producers must then apply innovation to their own practices, requiring some combination of training, knowledge, and skill. Learning methods include listening, observing, or learning by doing (Franz et al., 2010; Fulton et al., 2003, p. 12; Journeaux, 2009; Rogers, 1995). The EFP Program helps producers assess, evaluate, and apply new information.

The geographic proximity of the producer's property to information sources can have significant impacts on the likelihood of adoptive behaviour. This may result from decreased direct exposure to the information or the perception that the information is less relevant to them. This indicates

the need for regional workshops (Lidner, Pardey, & Jarrett, 1982), which the EFP Program provides.

By decentralizing the information sources, it may (a) increase the interpersonal interaction with producers, and (b) increase the reputability of information. Information may appear to be more relevant to producers' specific needs and may be considered more credible (Lidner et al., 1982). For these reasons, the EFP Program is delivered by the OSCIA, which has strong relationships with the agricultural community.

Innovations in adult education strategies may provide examples of tactics that can be applied in educational programs for producers. Journeaux (2009) examined diffusion of innovation, highlighting the segments of a producer population and how to most effectively target their needs to induce adoption.

14.2 Time constraints

The creation of an EFP requires a time investment from producers, including preliminary efforts before physical changes are completed. In countries with heavy agri-environmental financial incentives, one of the most overlooked barriers to agri-environmental participation is time costs to producers (Sattler & Nagel, 2010). The EFP Program requires producers to attend a two-day workshop and spend some time outside of the workshop completing a workbook. The 2010 survey of participants found that the majority of respondents (80%) spent six hours or less outside of the workshop completing their workbook.

To alleviate time constraints to EFP participation, the EFP Program in Ontario holds workshops in the off-peak season, when producers have more free time to attend seminars and are not forgoing productive labour to learn EFP practices (OMAFRA, 2010a). Further, it is important to reinforce the value producers will receive from their attendance, whether they complete the Program or not.

Workshops are praised in the literature for their effectiveness in promoting EFP and BMP value to producers (Robinson, 2006a). It may be easier to "convert" non-adopters during face-to-face interaction rather than trying to sell the idea of an EFP through impersonal advertising. The interpersonal engagement and discussion among producers that occurs at workshops can be more effective than messages being delivered by a representative for some producers (Journeaux, 2009; Lamba et al., 2009; Rogers, 1995).

14.3 Confidentiality

In the mid-1990s, some producers suggested they might omit some of their farming system when developing an EFP (Smithers & Furman, 2003). For example, they may omit sections of the farming system where they do not believe any environmental problems exist, or they may strategically choose to omit information on areas of risk or areas where the costs of mitigation are high. One reason producers might have omitted information from their EFP or chose not to go through the peer review process is concern that information within their EFPs might have been used against them in possible legal action by provincial or federal governments (Smithers & Furman, 2003), a perception that was fairly common in the 1990s, but has since been reduced. The sentiment of mistrust felt by producers is heightened when governmental bodies are involved in

the proceedings, and mistrust of government increases the aversion to sharing environmental information (Holmes, 1998). Other concerns centre on the potential that lenders may see a financial risk to farms with environmental hazards and this could constrain access to capital.

One caution is that many studies citing mistrust over confidentiality as a barrier to participation were published in 2006 or earlier, and utilized data from the mid-2000s and older. The Ontario EFP has taken measures to limit confidentiality concerns, and the continued existence of the Program may have increased trust over time. Thus, confidentiality concerns may be overstated in the current Program and the current era. Notably, recent literature (Lamba et al., 2009) highlights assured confidentiality as a reason for participating, rather than an obstacle inhibiting the Program's recent success.

To address confidentiality concerns, trust between producers and representatives needs to be highlighted and promoted (Journeaux, 2009; Phillips, 1985). This blend of networking and information may facilitate discussion among peers to ease confidentiality concerns that may be difficult to resolve for a representative. Further, a producer may hold judgment against information given from a representative that he or she may otherwise trust coming from a peer (Lamba et al., 2009).

Unlike complete non-participants, partial participants may believe in the benefits of the EFP Program, but may not complete the process due to concern about confidentiality at one or more stages in particular. Limited risk of environmental audit exists for participating producers that have submitted EFPs, but the risk is no greater than for those who did not.

An especially vital component of confidentiality concern is the perceived legal ramifications of recording on-farm environmental issues (Holmes, 1998). The perception of increased legal liability resulting from EFP Program participation is a myth that requires additional clarification to producers (Yiridoe, 2000).

14.4 Individual farmer characteristics

Lack of compatibility with an existing farm plan is a critique often cited by non-adopters of an EFP (Robinson, 2006a; Wilson & Hart, 2001). Producer characteristics, such as inherent motivation, financial pressures, risk tolerance, age, education, and experience, may influence their receptiveness to adoption (Robinson, 2006a; Yiridoe, 2000). Thus, a lack of individualized programming based on personal characteristics could explain why some producers see little value in utilizing EFPs for their farming operations (Journeaux, 2009). For example, the type of farming performed will affect the likelihood of adoption, as small-scale and hobby farmers may have less exposure to industry innovations than those who depend on farm income as their primary income source do (Claassen, 2003).

The literature suggests that continued efforts to improve the personalized qualities of the EFPs will increase the likelihood of adoption (Manderson et al., 2007). Therefore, to address the barrier, extension programs may tailor services to the different needs of different types of producers. Smithers and Furman (2003) recognize the improvement that can be made in extension when individual learning characteristics are considered. Information is disseminated and processed in different ways for different producers, and enhanced learning outcomes may be

achieved if the method and type of information is better formatted to suit its intended audience. Generational differences cause differences in the ways producers access information.

There is a wide range of computer capabilities, literacy, and comfort with paperwork that must be considered in program design. These differences should not be viewed as barriers or limiting factors to adoption. Different teaching styles must be utilized by extension representatives to highlight the value of EFP use. Teaching styles that can be utilized include one-on-one technical teaching sessions, electronic multimedia (e.g., computer software, Internet), technology trials, and peer workshops. Visual-style learners are more receptive to learning through the use of media, audio-style learners to workshops, and tactile and kinaesthetic learners to technical trials and physical involvement. While individual learning styles may not require identification, program teachings may be more successful if presented in multiple formats (Franz et al., 2010; Reid, 1987). Opportunities exist for the EFP Program to tailor its services to the different needs of different types of producers (see Recommendation 3 in Section 15.1.2).

14.5 Extension agents

On-farm advisors and workshop representatives have "potentially the most important role in supporting farmers to prepare and implement [BMPs]" (Ingram & Morris, 2007, p. 102). Change agents are the primary source of interaction between producers and a program. Enthusiastic and educated representatives are vital in providing a good first impression, as well as a trusted information source for producers to use when they have questions or concerns (Ingram & Morris, 2007). However, the literature suggests that inconsistencies in the farm knowledge of extension agents can inhibit outcomes and compromise the overall objective of the initiative (Fulton et al., 2003).

In attempting to improve the focus and knowledge of producers, it is important to consider the development of the extension representative. To facilitate improved knowledge among agents, the level of competencies of all agents must be assessed. Skill recognition and professional development training sessions have been cited by Fulton et al. (2003) as integral steps to enhancing extension services to producers. Such training exists for the OSCIA and OMAFRA staff delivering the EFP Program.

Ingram and Morris (2007) indicate that producers have an increasing reliance on support staff for technical advice, but insist that no single advisor can have complete knowledge of the wide range of issues they may be required to address. These issues can range from market information, production technologies, legislation changes, environmental processes, and other farm-related issues. The authors suggest it is vital to program success to determine deficiencies in each producer's knowledge and to formulate knowledge-sharing platforms to facilitate effective exchange between advisors.

The importance of individualized and regional approaches to EFP implementation is well established, and the representatives who are assessing farms and assisting producers in formulating EFPs must be adept in overcoming obstacles they may confront in the field. Specialized training for specific regional issues is cited by some literature as a useful approach in standardizing the services received by all potential program participants (Rodriguez et al., 2009). OSCIA and OMAFRA representatives can also be trained to facilitate grassroots associations and clubs for producers with shared interests. These skills go beyond assessments and

consultations, and there should be support and training in place for agents to develop such leadership skills (Rodriguez et al., 2009, p. 70).

Furthermore, the extension workshops should not be viewed as a one-way exchange of information. The interaction among representatives and producers can be useful in allowing them to discuss their specific views on EFPs and environmental agriculture (Fulton et al., 2003). The representatives should be aided in learning how to identify, record, and report useful pieces of information to help the growth of policy. Agents are the frontline interaction between policy-makers and producers, and will observe the most frequent and candid dialogue regarding agri-environmental policy and producer needs. The representatives should be encouraged by program developers to probe the *whys*, *hows*, and *whats* when receiving positive or negative feedback about the Program.

14.6 Finances

Even if an EFP is produced, financial barriers are the single biggest obstacle to implementing actions to develop BMPs (Holmes, 1998; Robinson, 2006a; Rodriguez et al., 2009). Although the use of incentives and other market-based agri-environmental instruments has a long history and has become more widespread in recent years (Baylis et al., 2006), there is a long history of debate regarding the relative importance of financial incentives in inducing conservation behaviour. Economists have traditionally weighed economic factors more heavily than sociologists have, but also have much broader concepts of what constitutes an economic benefit (Pannell et al., 2006, p. 5). Reduced funding in COFSP since 2009, as compared with 2005 to 2009, has led to reduced numbers of projects and reduced EFP participation. Similarly, participation increased in 2005 to 2009 (compared to pre-2005), when significant cost-share funding became available under the Agricultural Policy Framework.

Profitability and economic gain are widely cited among producers as one of the most important elements required to feasibly implement a new agri-environmental practice (Robinson, 2006a, p. 867). EFPs are frequently regarded as extras by non-participants, outside of their job requirements, and producers may feel justified in demanding compensation for the time and energy required to develop one (AAFC, 2007, p. 6).

Robinson (2006a) illustrates that a critical assumption for the COFSP to function is that producers have adequate access to credit to implement changes. Findings show this assumption may hold true for participants; however, it is unclear whether non-participants have equally uninhibited finances. The literature raises the question about whether access to credit may be a limiting factor that can be investigated for non-participants as well as EFP participants who fail to adopt BMPs. Since much of the literature has been published, there have been significant changes in the credit markets, and credit access may hold even greater relevance to producers in the current economic climate. This topic may require frequent monitoring in an uncertain economic climate.

One caution is that financial incentives are unable to promote altered behaviour in the same manner as other methods. They do not address the root cause of environmental problems, and do not cause the long-term changes in perception that are required for sustainable change in practices (Cocklin et al., 2007). Coupling education and incentives, as with EFP and COFSP, provides a powerful combination of instruments.

14.6.1 Marketing EFP-produced products

Another method to increase the financial incentive for adhering to EFPs is to market EFP-produced products to consumers. Literature has concluded that much of the pressure to achieve improved environmental outcomes on farms originates from non-farmers. These individuals are the consumers of agricultural outputs, and may wish to see certifications on their agricultural purchases to ensure environmental standards are met (Jayasinghe-Mudalidge, Weersink, Deaton, Beaulieu, & Trant, 2005). If price premiums can be charged on products that meet such standards, producers can begin to recoup some of the economic rent that exists in consumers' enjoyment of sustainably produced agriculture (Nunes & Riyanto, 2005). However, there is evidence that sustainability requirements like the EFP are simply becoming the cost of doing business or the price for continuing access to markets, rather than measures that may bring a price premium (for example, refer to Section 9.2 for a discussion on the Local Food Plus and Corn-Fed Beef programs in Ontario).

Policy-makers can put resources toward establishing a new market for trade, where producers with EFPs sell to consumers who demand environmentally sustainable production. An appealing feature of this tool is that government or associated groups do not have a direct role in the market, as their responsibility is only to facilitate the market by ensuring participating producers meet the market's minimum agri-environmental standards (Nunes & Riyanto, 2005). This may resolve a portion of the confidentiality concerns producers have. Furthermore, this method offers an alternative to financial incentive schemes. The costs of the environmental externalities are shared more equitably by government (costs of market facilitation), consumers (product price premiums), and producers (direct costs of EFP compliance).

The logistics of implementing a certification standard have been described in the literature as time-consuming, and the upfront costs of developing such a standard needs consideration. The cost of monitoring compliance should also not be overlooked as an impediment to adopting a certification strategy. To retain validity in name, a credential must be enforced and a standard of compliance ensured. Doing so may result in greater costs than for the current voluntary EFP structure, and thus may be uneconomical in both the short and long term.

Wall et al. (2001) indicate that an agriculture producer's certification decision is strongly dependent on the cost-savings or revenue-generating potential it offers. Wall et al. (2001) also indicate that international or national standards are preferred over regional/provincial standards. For Ontario producers who have already completed EFPs, the major costs of implementing a certification standard are vastly reduced. The greatest cost for converting to a certification standard is the cost of changing practices to conform to standards that an EFP would deem appropriate. The second greatest cost for a certification standard is the cost of auditing producers, but auditing expenses per producer declines with an increasing number of participating producers.

14.7 Social networks

Decision-making is often a social process, requiring input from a variety of sources. Few farms are run by single operators, and decisions include input from multiple family members or personal contacts. When considering the implementation decision of an EFP, one must consider that changes in processes are more complex than using a different fertilizer. The effects of this decision have wider implications for all people involved on a farm, and it is more likely to be a socially shared decision (Pannell et al., 2006, p. 4).

Producers who are not active in farming organizations miss recruiting and publicity information sessions and lack overall exposure to farming innovation (Lamba et al., 2009; McCallum, 2003). Furthermore, producers put greater emphasis on information obtained from their peers than they do from scientific readings, or information from the media or government. This trust of information from peers is valued by some producers irrespective of the informant's technical qualifications or background (Lamba et al., 2009; Rogers, 1995).

Therefore, in solving collective action problems, investments in improving social networks can result in lasting long-term improvements to outcomes. Lubell and Fulton (2007) state that "local policy networks spread information about behaviours and policies, provide reservoirs of social capital, and enable cultural change" (p. 21). Phillips (1985) determined that a typical farmer may begin up to 30 conservation projects per year. With limited learning time available, and a desire for additional information on issues, producers often seek the advice of peers and contacts. These individuals are often regarded as the producers' own technical experts, in spite of what is frequently limited investigation into their true technical qualifications. The physical proximity to other adopters has been shown to have strong positive effects on the likelihood of adoption (Ruttan, 1996).

Quebec agri-environmental schemes utilize social networking to promote sustainable farming practices through environmental advisory clubs such as *Clubs conseils en agroenvironment* or agri-environmental advisory clubs (AEAC). The groups are voluntary and utilize some farm planning techniques such as an agri-environmental fertilization plan (*plan agroenvironmental de fertilisation*) (*Clubs conseils en agroenvironment*, 2009). The clubs have a total of 305 'eco-advisors' on staff to support members and enhance networking (*Clubs conseils en agroenvironment*, 2009). Agri-environmental clubs treat farming landscapes as a public good that is best provided on a scale larger than an individual farm (Franks & McGloin, 2007). By treating environmental outcomes as "environmental goods," an agri-environmental club informally "redistributes" the property rights concerning farmland to solve the Coase (1960) problem of public goods. A successful agri-environmental club requires land areas to have similar geographical, geological, and climate characteristics, so members can address issues collectively (Franks & McGloin, 2007).

Community-Based Social Marketing (CBSM) utilizes a number of broad categories of tools to encourage/discourage certain types of behaviour. They include mass media (e.g., websites, television, newsprint advertisements, radio interviews); norm appeals (a way of making group standards apparent); personalized communication; commitment (a pledge to carry out a specific action); visual reminders to perform a particular action; and word of mouth (information received from people they interact with in their communities and whom they trust).

Opportunities exist for the EFP Program to enhance social interaction among producers (see Recommendation 4 in Section 15.1.2).

14.8 Technical skills

To achieve widespread compliance, adoption cannot be confined to producers with inherent technical learning capabilities or a personal interest in activism. Literature suggests that an obstacle, which impedes EFP participation in almost all regions and countries, is the lack of understanding about how to implement conservation farming techniques (Journeaux, 2009).

The ability to "trial" a method or technology is acknowledged as a factor influencing the likelihood of BMP adoption. If a trial is prohibited by costs, or does not develop the skills to implement a BMP effectively, adoption is less likely. Also, for a trial to be effective in persuading producers, it must have easily observable outcomes to confirm to producers themselves that a skill has been properly learned and the technology is useful (Journeaux, 2009).

Smithers and Furman (2003) indicate that successful BMP adoption does not necessarily ensure long-term participation in a program. The authors specify that extended implementation requires technical support after implementing a BMP. They conclude that EFP development requires an action strategy to prepare producers to implement variations of the skills they have already acquired to ensure long-term adherence.

15.0 Conclusion and recommendations

This section makes conclusions about the performance of the EFP Program and offers recommendations for future performance monitoring.

The EFP Program can be divided into three stages: EFP development, EFP peer review, and implementation of agri-environmental projects.

Environmental Farm Plan development

The core activities associated with EFP development are workshops and, to a lesser degree, one-on-one consultation, where necessary. The typical producer attending an EFP workshop is middle-aged (between 35 and 55), has about 27 years of farming experience (since the age of 16), and has participated in some form of post-secondary education. Crop and livestock producers are equally as likely to participate in the program. The average farm size is 590 acres, of which 348 are owned. Small farmers are less likely to participate; only 16% of producers reported having farm revenues of less than $50,000. Off-farm income tends to make at least a somewhat significant contribution to the farm operation.

A majority of participants are returning producers who had previously attended a 1st or 2nd edition workshop. About one-third of the respondents were new participants in the EFP. Producers mostly commonly decided to attend a workshop to become eligible to apply for cost-share funding and for educational purposes. Producers reported overwhelming satisfaction with the workshops.

The primary outputs of the EFP development process are completed risk assessments (commonly referred to as workbooks) and Action Plans. The vast majority of producers found they had enough time between the first and second day of the workshop to complete their workbook. On average, they spent about five hours outside of the workshop completing their workbook. The typical producers identified potential concerns in 11 worksheets and for 35 questions.

The outcomes of the EFP development process are increased awareness/identification of agri-environmental benefits and risks and increased awareness/identification of potential agri-environmental actions. The worksheets for which producers most commonly identified actions for are Water Wells (worksheet 2), Storage of Petroleum Products (worksheet 5), and Soil Management (worksheet 15). On average, they included 83 activities in their Action Plan, which may include a combination of actions, compensating factors, and monitoring activities. The most common activities related to increasing knowledge, water-related improvements, development or upgrading of storage facilities, and changes to crop production practices.

Further evidence of the educational aspect of the EFP development process is that producers said the program increased their understanding of environmental risks and mitigation practices, enabled them to identify and examine areas of environmental concern, and raised their awareness of the impact of their operation on the environment. Almost half of the producers who participated in the program said, because of attending the workshop, they changed their priorities for environmental projects.

Environmental Farm Plan Peer Review

The main activity of the EFP peer review process involves producers submitting their Action Plan for peer review. The majority of producers reported submitting their Action Plan for peer review within one month of completing the workshop.

The output of the EFP peer review process is Action Plans that are deemed appropriate. All producers who participated in the survey were required to have an EFP that had been deemed appropriate.

Outcomes of the EFP peer review process are the recognition of producers as environmental stewards and eligibility for cost-share programs.

Implementation of agri-environmental projects

The main activity of the final stage of the EFP Program is implementation of agri-environmental projects. The output of this activity is completed projects.

Producers implemented or initiated 61% of the activities (9,557 activities) identified in their Action Plans. On average, each producer had completed 51 activities and started another three. Most commonly, they had completed or started projects related to Disposal of Farm Wastes (worksheet 6), Soil Management (worksheet 15), and Pest Management (worksheet 20). Producers plan to complete another 223 activities by the end of 2011.

The value of activities implemented was $69,600 per farm or just over $13 million for the 189 producers surveyed. Producers devoted $53,900 per farm of their own finances to these projects (over $10 million for the producers surveyed) and obtained the remaining $15,600 per farm from cost-share programs (or $3 million for the producers surveyed). The most common source of cost-share funding was OSCIA-delivered programs. These activities took an average of 160 hours per farm to implement (more than 30,000 hours for the producers surveyed).

The outcomes of the implementation of agri-environmental projects are increased agri-environmental stewardship, which lead to enhanced agri-environmental benefits and reduced agri-environmental risks. This, in turn, results in the enhanced environmental sustainability of soil, water, air, and biodiversity. Over 7 in 10 producers found that their EFP resulted in improvements to soil and water quality.

15.1 Recommendations

The following are recommendations for future consideration.

15.1.1 Continue existing program

Recommendation 1 – Continue Successful Education Through EFP Program Implementation

Through education, the EFP workshops are raising awareness of agri-environmental issues and influencing behaviour change. For example, although the majority of producers (62%) attended an EFP workshop with a clear project in mind, many (45%) changed their priorities due to what they learned in the workshop and by doing their Action Plans. This study found that producers who attend an EFP workshop are overwhelmingly satisfied with the Program. Producers provided few suggestions for changes to the workshop. Given the high-level of program satisfaction and successes in educating producers and influencing their behaviours, the main elements of the program are highly successful and should be maintained.

Recommendation 2 – Continue Powerful Linkage of Education and Cost Sharing

This study confirmed the extensive evidence in the literature that education, in combination with access to cost-sharing, is a strong motivator in encouraging producers to agri-environmental issues. However, some evidence in the literature suggests that inadequate access to credit prevent some producers from accessing cost-share programs such as the Canada-Ontario Farm Stewardship Program (COFSP). The survey of EFP participants suggests that smaller farms are less active in the EFP program than larger farms. Further work should be done to assess whether access to credit is an issue for certain types of farms. Additionally, the EFP program should continue coordinating its services with cost-share programming.

15.1.2 Enhance existing program

Recommendation 3 – Offer More Services Tailored to Different Needs of Different Types of Producers

The survey found that producers are using the services currently available through the EFP workshops and technical advice from staff at OMAFRA and other organizations or publications. While virtually all survey respondents said they could access or did not require technical information about how to implement their Action Plan, about two-thirds of the producers surveyed said additional services and assistance would or might help them implement their Action Plans to address agri-environmental risks (refer to Section 12.2 for additional information). Additionally, the literature suggests that individual participant characteristics such as age and experience may discourage participation in workshops. Therefore, the EFP program should consider offering specialized services based on farm and farmer characteristics such as type of commodity experience, age, size of operation, and education. The program could accomplish this by building on its past successes in reaching out to Mennonite and First Nation farmers, which involved considering cultural and religious beliefs in outreach efforts and workshop materials (refer to Section 12.2).

Recommendation 4 – Consider Additional Ways to Encourage Farmers to Implement EFP Action Plans

This study tested producer interest in a number of additional services to assist them in implementing their EFP Action Plans. Current as well as potential participants in the EFP Program may benefit from additional services such as:

1. Tours of environmental practices used on other farms
2. One-to-one on-farm visits by technical specialists
3. On-farm demonstrations of specific practices or technologies
4. Discussions with other farmers about how to implement certain practices
5. Supplemental workshops/presentations on specific topics or practices

These services may help further educate producers about how to address on-farm agri-environmental risks and inform their decisions about what practices to implement.

Recommendation 5 – Consider Additional Services to Enhance Social Interaction among Farmers regarding EFP implementation

The literature emphasizes the importance of social factors improving farmers' participation and action in agri-environmental programs. In this study, family, friends and neighbours are identified as an important source of information on how to implement EFP Action Plans. Social factors are already integrated into the existing EFP Program. Nevertheless, the EFP program should consider further enhancing social interaction among farmers regarding their EFP implementation. This may involve establishing forums for peer discussion, mentorship, or environmental clubs. Enhanced social interactions may result in increased implementation of agri-environmental practices and raise the profile of the EFP program which may encourage other producers to participate. Many of the additional services suggested in recommendation 4 will help facilitate enhanced social interaction.

Recommendation 6 – Conduct Research to understand motivation farmers not participating in EFP

While some insight into barriers to participation have been gathered through the literature, research on the motivations and opinions of producers who have not attended an EFP workshop or submitted an Action Plan for peer review is needed to identify approaches to facilitate participation. This information would enable the EFP Program to identify potential methods of increasing participation. Appendix C includes a draft questionnaire for research on non-participants.

Roughly one-quarter of Ontario farmers have never participated in EFP and another 65% to 70% have participated in the past but do not have an up-to-date 3rd edition EFP. Additional techniques to attract these groups of farmers into the EFP program are needed. Not all will choose to participate, but presumably many will given the right approach. Research will help identify the right techniques and perhaps how many more farmers might be expected to participate.

15.1.3 Performance measurement

Recommendation 7 – Expand Performance Measures to Show Success of EFP

Ongoing performance measurement and monitoring, such as through the 1999 and 2010 surveys of EFP participants, will enable the EFP Program to track and communicate its effectiveness at promoting environmental stewardship and encouraging producers to implement actions to mitigate or manage agri-environmental risks. The EFP Program's greatest area of influence is education-oriented. The process of behaviour change begins by attracting producers to EFP workshops and encouraging them to complete workbooks and submit Action Plans for peer review. Once completing the educational aspects of the EFP Program, in order for the EFP Program to have contributed to an environmental impact, producers must implement their Action Plan. Therefore, any performance measurement strategy must include the educational and implementation aspects of the EFP Program.

The current information and statistics collected regarding EFP participation remain useful and should continue to be tracked (see Section 5). Consideration should be given to collecting additional information through the EFP workshops that might help show the success of the EFP including reasons for attending an EFP workshop, satisfaction with workshops, and the number of worksheets and questions completed as part of the risk assessment. Additionally, to further enhance performance monitoring of the EFP Program, the following indicators should be tracked:

- Number of worksheets and questions included in the Action Plan
- Number of activities included in the Action Plan
- Length of time taken to submit the Action Plan for peer review
- Number of activities implemented
- Percentage of Action Plan completed or initiated
- Amount of financial and time resources expended implementing projects
- Percentage of actions implemented that affect soil, water, air quality, and biodiversity (by worksheet)

Direct measurement and modeling of environmental benefits of EFP implementation on soil, water, air and biodiversity is outside the scope of this project. Nevertheless, linking performance measurement within the EFP Program with scoped empirical measurement and modeling of environmental effects could be useful for corroborating effects of actions.

Recommendation 8 – Use Action Plan Data to Document the Value of EFP

To monitor and measure the EFP's educational and environmental impacts, it is important to maintain detailed information on the nature of the Action Plans prepared by producers while maintaining confidentiality. Analysis of Action Plan data can be used to assess the extent to which producers identify and take action on environmental concerns on their farms. Electronically capturing the content of completed Action Plans would facilitate the performance monitoring process, perhaps from a sample of farms. The electronic version of the EFP workbook and Action Plan may provide an opportunity in this regard. To protect the confidentiality of producers, the database should not contain any private information. The 1999 and 2010 surveys are good examples of the ability to both collect information on EFP Action Plans and maintain confidentiality.

Linking the Action Plan databases to databases maintained by cost-share programs would facilitate assessment of the contribution of educational programs and funding programs to environmental change. Additionally, by understanding the nature of the concerns identified and actions implemented/to be implemented, one can estimate the cumulative impact of the EFP and cost-share programs on the environment.

Recommendation 9 – Ongoing EFP Performance Measurement

Future surveys of producers participating in the EFP Program should attempt to contact two subsets of producers:

1. A random sample of participants to assess the overall progress of the EFP Program
2. A sample of participants who have participated in previous surveys to assess the implementation of Action Plans over time.

These two samples would provide a picture of the EFP Program as a whole and its ability to continue to influence change over time.

15.1.4 Enable producers to identify reduced risk ratings

Recommendation 10 – Revise the EFP Action Plan to Enable Farmers to Identify Changes in Risk Ratings Resulting from Activities Undertaken

The goal of the EFP Program is to improve environmental conditions and reduce risks on farms. A measure of such improvement would be changes in the risk ratings (up to 319 ordinal ratings of 1 to 4) in the EFP workbook arising from the implementation of the Action Plan. To better enable this type of identification of the extent of risk change, the EFP Program should consider revising the EFP workbook Action Plan template to make it easier for producers to determine how individual actions may improve a particular risk rating. This action would assist producers in undertaking continuous improvement of risk ratings over time. There is an educational goal in producers identifying what activities identified in their Action Plan will actually improve their risk ratings and the extent of the improvements, relative to the risk rating categories specified for each workbook question.

In support of the change above, the definitions of actions, compensating factors, and monitoring activities should be clarified. The research found that the definitions included in the workbooks are not well-understood or consistently applied. Classification of the activities in the Action Plan based on these definitions may help establish the magnitude of the EFP Programs' impact on the environment.

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Appendix A: Interview guide

Environmental Farm Plan (EFP) Research
Interview Guide

Ontario Federation of Agriculture (OFA) is undertaking research to assess the success of the Environmental Farm Plan (EFP) program and to identify opportunities for improvement. The research includes a literature review, key informant interviews, and a survey of producers who have a peer reviewed EFP. These interviews, and the literature review, will be used to inform the development of the questionnaire for the survey. These interviews will contribute to our understanding of the factors that encourage and discourage producers from participating in the program as well as their experience in the program. Your responses to these questions will be reported in aggregate. Your will not be identified in any reports.

1. Please tell me about your involvement in the EFP program. How long have you been involved in the program? What are your main roles and responsibilities?

Awareness of the EFP program

2. In your opinion, how aware are producers of the EFP program? Do they know that it exists? Do they know how it works? Do they know who to contact to ask questions about the program? Do they know how to register for a workshop?

3. Are there producers who tend to not be well-informed about the EFP program (e.g., producers in a specific geographic area, producers in certain age groups, producers involved in certain types of commodity production, etc.)?

Participation in the EFP program

4. To your knowledge, what are some of the reasons producers decide to participate in the EFP program?

5. What are some the reasons that producers may decide not to complete the EFP program?

    a. Why would a producer attend an EFP workshop and then decide not to complete the Risk Assessment and develop an Action Plan?

    b. Why would a producer complete the Risk Assessment and then not develop an Action Plan?

    c. Why would a producer complete an Action Plan and then not submit it for peer review?

Experience with the EFP program

6. Considering those producers who have at least participated in an EFP workshop: How would you describe their experience with the program? What aspects are well-received? What aspects are not well-received?
7. Considering those producers who participated in an EFP workshop, but decided not to complete the Risk Assessment and Action Plan: What challenges do these producers face in completing the worksheets included in the EFP workbook and identifying/selecting potential beneficial management practices (BMPs) to implement on their farm?

8. To your knowledge, what encourages/discourages producers with a peer reviewed EFP from implementing their Action Plan?

Reporting on program performance

9. What advice can you give us about how to report on the performance of the EFP program? What indicators could be used to demonstrate the success of the program?

10. For purposes of reporting on the use of public funds for this program, how can we obtain access to aggregate-level performance data, while protecting the privacy of individual-level information, to demonstrate changes in agr-environmental risks and benefits resulting from the EFP program?

Opportunities for program improvement

11. What changes to the program/additional assistance would encourage more producers to:

    a. Participate in an EFP workshop?

    b. Complete a Risk Assessment and develop an Action Plan for their farm?

    c. Have their Action Plan peer reviewed?

    d. Implement their Action Plan?

    e. Regularly update their Action Plan?

12. Do you have any additional comments?

Thank you for your assistance.

Appendix B: Questionnaires for Survey of EFP Participants

SURVEY OF ENVIRONMENTAL FARM PLAN PARTICIPANTS IN ONTARIO

Please take a few minutes to complete this questionnaire and then give it to your OSCIA representative at the beginning of your Action Plan interview.

ENVIRONMENTAL FARM PLAN PROGRAM

The following questions ask about your involvement in the Environmental Farm Plan (EFP) Program.

Involvement in the EFP Program

1. Did you participate in an EFP workshop prior to 2005 (1st or 2nd edition)?

   ○1 Yes ○0 No

2. Approximately how many years ago did you first attend an EFP workshop? (The first workshops were held in 1993.)

   _____ years

3. Approximately how many years ago did you attend a 3rd edition (2005 or later) EFP workshop?

   _____ years

4. Thinking of the Action Plan you completed as part of your 3rd edition (2005 or later) EFP, how long after attending the workshop did you submit your Action Plan for peer review? ***(Check one only)***

   ○1 I submitted it at the workshop
   ○2 I submitted it within one month after the workshop
   ○3 I submitted it within one year of the workshop
   ○4 I submitted it more than one year after the workshop

EFP Workshops

5. Thinking of the last EFP workshop you attended, why did you decide to attend? ***(Check all that apply)***

   ○1 To increase my knowledge of agricultural environmental issues
   ○1 To evaluate environmental concerns on my farm
   ○1 So that I can apply for any cost-share programs
   ○1 Because I wanted to receive the recognition of completing the program (for example, I wanted a certificate of completion and/or a gate sign)
   ○1 To learn more about current environmental regulations
   ○1 To help meet the requirements of the *Nutrient Management Act*
   ○1 Because I heard it was a worthwhile program
   ○1 Because my family asked me to
   ○1 Because my business partners asked me to
   ○1 Other *(specify)* _____

6. Did you come to the workshop with a clear environmental project in mind? .....

Yes	No
O_1	O_0

If you answered yes, what was it?

_____

_____

_____

7. Did your priorities for environmental projects for your farm change because of the workshop? .....

Yes	No
O_1	O_0

If you answered yes, please explain.

_____

_____

_____

8. How long was the EFP workshop you attended?

O_2 Two days O_1 Multiple evenings O_6 Other

9. Again, thinking of the last EFP workshop you attended, how satisfied were you with the following aspects of the workshop? ***(Check one for each item)***

	Very satisfied	Satisfied	Not satisfied
a. Length of the workshop.....	O_3	O_2	O_1
b. Range of environmental issues discussed	O_3	O_2	O_1
c. Number of worksheets covered in the workshop.....	O_3	O_2	O_1
d. Time to complete example worksheets during the workshop.....	O_3	O_2	O_1
e. Type of technical information provided	O_3	O_2	O_1
f. Examples of actions provided.....	O_3	O_2	O_1
g. Development of your Action Plan	O_3	O_2	O_1
h. How to apply to cost-share programs.....	O_3	O_2	O_1
i. Amount of discussion with other farmers.....	O_3	O_2	O_1
j. Amount of one-on-one assistance provided	O_3	O_2	O_1

10. Overall, how satisfied were you with the last EFP workshop you attended?

O_3 Very satisfied O_2 Satisfied O_1 Not satisfied

If you were not satisfied, please explain.

_____

_____

11. What suggestions do you have for improvements to the EFP workshops?

_____

_____

_____

Completing the EFP Workbook

12. Thinking of the last EFP workshop you attended, did you have enough time between the first and last day/evening of the workshop to complete your workbook? .....

Yes	No
○1	○0

13. Approximately how many hours did it take you to complete the workbook? Please exclude the time you were at the workshop. ..... _____ **hours**

14. Thinking about the process of completing your worksheets, would any of the following have made it easier for you to complete it? Note, the assistance could be provided by a variety of resources (for example, the Ontario Ministry of Agriculture, Food and Rural Affairs [OMAFRA], conservation authorities, nutrient management specialists). ***(Check one for each item)***

	Yes	Maybe	No
a. Additional technical information	○3	○2	○1
b. More assistance over the phone or by email	○3	○2	○1
c. More one-on-one assistance in person	○3	○2	○1
d. Group sessions to complete the Action Plan	○3	○2	○1
e. On-farm assistance to complete the Action Plan	○3	○2	○1
f. CD version of the workbook	○3	○2	○1
g. Other *(specify)* _____	○3	○2	○1

Action Plans

15. Thinking about your Action Plan, what resources have you used to help you implement the actions identified in it? ***(Check all that apply)***

○01 Booklets on Best Management Practices (BMPs)
○01 Fact sheets from OMAFRA
○01 Other fact sheets
○01 OMAFRA staff
○01 Crop/nutrient management advisors
○01 Conservation authority staff
○01 Agribusiness sales staff
○01 Neighbours and friends
○01 Family
○01 Internet resources
○66 Other (*specify*) _____
_____

16. While implementing your Action Plan, have you been able to obtain specific technical information about how to proceed?

○2 Yes ○1 No ○0 No information was needed

If no, what information was not available?

_____

_____

_____

17. What additional services would help you implement your EFP Action Plan? ***(Check all that apply)***

- ○01 Supplemental workshops/presentations on specific topics or practices
- ○01 On-farm demonstrations of specific practices or technologies
- ○01 Tours of environmental practices used on other farms
- ○01 Discussions with other farmers about how to implement certain practices
- ○01 One-to-one on-farm visits by technical specialists
- ○66 Other *(*specify*)* _____

18. Thinking of the most recent Action Plan you submitted for peer review, how many times have you gone back to your EFP workbook to review the information or to update your Action Plan?

○0 Never ○1 Once ○2 More than once

19. How important to you is the confidentiality of your workbook and Action Plan?

○3 Very important ○2 Important ○1 Not important

Please explain your answer.

_____

_____

Impact of completing an EFP

20. In your opinion, what kind of impact has your EFP had on your farming operation?

_____

_____

_____

○0 None

21. By completing an EFP, what unexpected environmental benefits, if any, did you identify for your farm?

_____

_____

_____

○0 No unexpected benefits identified

22. Thinking of your Action Plan implementation, please rate the level of change to the following aspects of your farm operation. ***(Check one for each item)***

	Significant improvement	Some improvement	No change	Some deterioration	Significant deterioration
a. Soil quality	O5	O4	O3	O2	O1
b. Water quality	O5	O4	O3	O2	O1
c. Air quality	O5	O4	O3	O2	O1
d. Family health and safety	O5	O4	O3	O2	O1
e. Fish and wildlife habitat	O5	O4	O3	O2	O1
f. Other *(specify)* _____	O5	O4	O3	O2	O1

If you answered "some" or "significant" deterioration to any of the above, please explain.

_____

_____

_____

23. Have you voluntarily used your EFP to help… ***(Check one for each item)***

	Yes	No	Don't know
a. Achieve a favourable loan rate or insurance premium?	O1	O0	O8
b. Counter accusations made by others regarding environmental neglect on your farm?	O1	O0	O8
c. Meet Nutrient Management Act requirements / obtain a permit for a livestock-related building?	O1	O0	O8
d. Qualify for other programs/opportunities (for example, Local Food Plus, Corn-Fed Beef, quota purchase)?	O1	O0	O8
e. Other	O1	O0	O8

If you answered yes to any of the above, please explain.

_____

_____

_____

DEMOGRAPHIC QUESTIONS

The following questions will help us place your responses in the context of other farmers like you.

24. Please select the Primary Commodity Group that best describes your operation. ***(Check one only)***

○01 Beef: cow-calf ○02 Beef: feeder ○03 Dairy
○04 Hogs ○05 Poultry ○06 Sheep/goat
○07 Field crops (for example, grains, corn, and oilseeds)
○66 Horticulture/greenhouse *(specify predominant crop)* _____
○66 Other *(specify)* _____

25. Please select the Secondary Commodity Group that best describes your operation. Must contribute at least 25% of gross income. ***(Check one only)***

○01 Beef: cow-calf ○02 Beef: feeder ○03 Dairy
○04 Hogs ○05 Poultry ○06 Sheep/goat
○07 Field crops (for example, grains, corn, and oilseeds)
○66 Horticulture/greenhouse *(specify predominant crop)* _____
○66 Other *(specify)* _____
○77 Not applicable

26. If you are involved in livestock production, please indicate the number of livestock on the farm operation(s) in the past 12 months.

	Number of livestock
a. Beef	_____
b. Dairy	_____
c. Hogs	_____
d. Poultry	_____
e. Other (*specify*) _____	_____

○77 Not applicable

27. How many acres of farmland do you own, rent, and/or lease?

	Number of acres
a. Acres owned (crop or pasture)	_____
b. Acres owned (non-crop or non-pasture, including bush/woodlot and wetlands)	_____
c. Acres rented/leased or in share-crop arrangements from others	_____
d. Total acres	_____

28. Thinking of your owned acres, how many have you rented or leased ***to others*** and how many do you have in share-crop arrangements ***with others***?

_____ acres

29. How many acres of each crop type do you have?

	Number of crop acres
a. Annual crop (for example, grains, corn, and oilseeds)	_____
b. Horticulture/greenhouse	_____
c. Forage/pasture (for example, hay or alfalfa)	_____
d. Other (*specify*) _____	_____
e. Total crop acres	_____

30. What is the ownership structure of your operation? ***(Check one only)***

- ○01 Sole proprietorship
- ○02 Partnership *without* a written agreement
- ○03 Partnership *with* a written agreement
- ○04 Family corporation (including corporations with one shareholder)
- ○05 Non-family corporation
- ○66 Other *(specify)* _____

31. How many people work on the farm?

	Number of workers including…	
	Owners and family members (including yourself)	All other workers
a. Full time	_____	_____
b. Part time and/or seasonal	_____	_____

32. Thinking of the next five years, what is the likelihood that you will… ***(Check one for each item)***

	Very likely	Somewhat likely	Not likely
a. Become involved in another line of production?	○3	○2	○1
b. Expand size of the farm (for example, acquire/rent additional land or increase the size of your herd/flock)?	○3	○2	○1
c. Decrease size of the farm (for example, sell/rent a portion of your land or decrease the size of your herd/flock)?	○3	○2	○1
d. Retire?	○3	○2	○1
e. Transfer your farm to your children?	○3	○2	○1
f. Sell your farm?	○3	○2	○1
g. Do not plan to make any changes to the operation	○3	○2	○1

33. Since the age of 16, how many years have you been farming?

_____ years

34. Which category best describes your age? ***(Check one only)***

- ○1 Under 25 years old
- ○2 26 to 30 years old
- ○3 31 to 34 years old
- ○4 35 to 39 years old
- ○5 40 to 44 years old
- ○6 45 to 50 years old
- ○7 51 to 55 years old
- ○8 56 to 60 years old
- ○9 61 to 65 years old
- ○10 66 to 70 years old
- ○11 71 to 75 years old
- ○12 76 to 80 years old
- ○13 Over 80 years old

35. What is your highest level of education? ***(Check one only)***

- O_1 Completed Grade 8 or less
- O_2 Completed some high school
- O_3 Graduated high school
- O_4 Completed some university/college/technical school
- O_5 Graduated college/technical school
- O_6 Graduated from university (undergraduate degree)
- O_7 Completed graduate/professional school

36. Which category best describes your total *gross* farm revenue (before expenses) for the 2009 crop year? Please do not include off-farm income earned by you or other household members. ***(Check one only)***

- O_1 Under $7,000
- O_2 $7,000 to $9,999
- O_3 $10,000 to $24,999
- O_4 $25,000 to $49,999
- O_5 $50,000 to $99,999
- O_6 $100,000 to $249,999
- O_7 $250,000 to $499,999
- O_8 Over $500,000

37. How significant of a contribution does off-farm income earned by any member of your household make to your household income? ***(Check one only)***

- O_3 Very significant contribution
- O_2 Somewhat significant contribution
- O_1 Not very significant contribution
- O_0 None, off-farm income does not contribute to the farm operation

CONCLUSION

38. Have you recommended to other farmers that they consider developing an Environmental Farm Plan? .....

Yes	No
O_1	O_0

Please explain why or why not.

_____

_____

_____

39. Are you willing to participate in a similar follow-up survey in a couple of years?? .....

Yes	No
O_1	O_0

40. Do you have any other comments?

_____

_____

_____

_____

_____

Thank you for taking time to participate in this survey.

ACTION PLAN

Please complete the following table **for each action or compensating factor** identified in your Action Plan.

Worksheet number: _____ **Question number:** _____ **Site:** _____

Description of action/compensating factor/monitoring: _____

_____

Type: ○1 Action ○2 Compensating factor ○3 Monitoring

Timing: ○1 Short-term ○2 Long-term

What is the status of the action or compensating factor?

○2 Completed
○3 Monitoring ongoing →
Have the costs and hours associated with this action or compensating factor already been reported?
○1 Yes ○0 No
What was the total cost of implementing the action?
$ _____
How much of the total cost was covered by cost-share programming?
$_____
What sources of cost-share programming did you use? (select all that apply)
○01 OSCIA programs
○01 Ducks Unlimited programs
○01 Conservation authority programs
○66 Other (specify) _____
How many hours did it take to implement the action?
_____ hours

○1 Started but not completed →
In what year do you anticipate this action will be completed?
_____ Year

○0 Not started
○4 Monitoring not started →
In what year do you plan to start implementing this action?
_____ Year

What is the PRIMARY barrier that has prevented you from starting to implement this action? (select one only)
○1 Legislation or bylaws prevent using the best solution
○2 Expertise or other information is not available
○3 Materials or services are not available
○4 Solution is not realistic
○5 The cost is too high
○6 Lack of finances
○7 Personally, not an immediate priority
○8 No barriers to action
○9 Other (specify) _____
What is the SECONDARY barrier that has prevented you from starting to implement this action? (select one only)
○1 Legislation or bylaws prevent using the best solution
○2 Expertise or other information is not available
○3 Materials or services are not available
○4 Solution is not realistic
○5 The cost is too high
○6 Lack of finances
○7 Personally, not an immediate priority
○8 No barriers to action
○9 Other (specify) _____

OTHER ACTIONS

The next set of questions asks about actions taken outside of those identified in your Action Plan to lower environmental risks on your farm. Please complete the following table **for each action** identified.

Action/compensating factor: _____

What is the status of the action?

○$_2$ Action completed

What was the total cost of implementing the action?
$ _____
How many hours did it take to implement the action?
_____ hours

○$_1$ Action planned

In what year do you plan to start implementing the action?
_____

Thank you for taking the time to participate in this survey.

Appendix C: Questionnaire for Survey of Non-participants

SURVEY OF FARMERS ABOUT ENVIRONMENTAL FARM PLANS ON-LINE/PHONE-BASED QUESTIONNAIRE

Methodology: We will send participants a letter in the mail asking them to complete the survey on the web or to call us to schedule a time to complete it over the phone. If they do not complete the survey online or call us by a certain date, we will call them to do the survey over the phone. We will develop a script for telephone interviewers to use to introduce the survey.

PART A: General attitudes

The first set of questions asks about your opinions about agri-environmental issues.

1. Thinking of the past five years, do you think farmers in Ontario have faced increasing demands to manage the environmental impact of their operations?

   ○1 Yes ○0 No ○8 Don't know ○9 No response

2. Do you think the expectations placed on Ontario farmers to manage the environmental impact of their operation are too high, about right, or too low? ***(READ RESPONSES)***

   ○3 Too high ○2 About right ○1 Too low ○8 Don't know **(DO NOT READ)** ○9 No response **(DO NOT READ)**

3. At this point, what adverse impact do you think your farm has on the environment? ***(READ RESPONSES)***

   ○0 None ○1 Minor ○2 Substantial ○3 Very large ○8 Don't know **(DO NOT READ)** ○9 No response **(DO NOT READ)**

4. Thinking of the past five years, have you changed your production practices to reduce the adverse impact of your farm operation on the environment?

   ○1 Yes ○0 No ○8 Don't know ○9 No response

5. If yes, what changes have you made? ***(if more than one change has been made, record the most significant change)***

   _____ ○8 Don't know ○9 No response

   _____

PART B: Awareness and perceptions of the EFP Program

The next set of questions asks about Ontario's Environmental Farm Plan Program.

Environmental Farm Plans (EFP) are assessments voluntarily prepared by farm owners and/or operators to increase their environmental awareness in up to 23 different areas on their farm. Through the EFP local workshop process, farmers will highlight their farm's environmental strengths identify areas of environmental concern, and set realistic action plans with time tables to improve environmental conditions. Environmental cost-share programs are available to assist in implementing projects.

6. Have you heard anything about the EFP Program through the following sources? As I read the list of sources, please indicate yes or no for each.

	Yes	No	Don't know	No response
a. Recommendations and/or feedback from other producers.....	○1	○0	○8	○9
b. Local media (e.g., newspapers, newsletters, radio, or TV).....	○1	○0	○8	○9
c. Government (e.g., OMAFRA, AAFC, conservation authorities)....	○1	○0	○8	○9
d. Farm organizations.....	○1	○0	○8	○9
e. Other *(specify)*_____	○1	○0	○8	○9

7. Do you know any neighbours, friends, or relatives who have participated in the EFP Program?

○1 Yes (GO TO Q8) ○0 No (GO TO Q10) ○8 Don't know (GO TO Q10) ○9 No response (GO TO Q10)

8. To your knowledge, how did your neighbours, friends, or relatives find the EFP Program? I am going to read you a series of statements. For each one, please answer yes or no.

Generally speaking, they said…	Yes	No	Don't know	No response
a. It helped them identify environmental risks associated with their farm	○1	○0	○8	○9
b. It gave them useful information about how to implement changes	○1	○0	○8	○9
c. It required too much time	○1	○0	○8	○9
d. The questions made them uncomfortable	○1	○0	○8	○9

9. What else, if anything, did they tell you about the EFP Program?
_____
_____

○0 Nothing ○8 ○9

10. In your opinion, how knowledgeable are you about the EFP Program? Would you say you know… ***(READ RESPONSES)***

○1 Something about it (GO TO Q11) ○0 Nothing about it. (GO TO Q12) ○8 Don't know ***(DO NOT READ)*** (GO TO Q12) ○9 No response ***(DO NOT READ)*** (GO TO Q12)

11. I am going to read you a series of statements about Ontario's Environmental Farm Plan Program. For each statement, please indicate whether you strongly agree, agree, disagree, or strongly agree.

	Strongly agree	Agree	Disagree	Strongly disagree	Don't know	No response
a. The EFP Program helps producers *identify* the environmental risks associated with their farm operation.	O4	O3	O2	O1	O8	O9
b. It is difficult to complete an EFP.	O4	O3	O2	O1	O8	O9
c. It takes a lot of time to complete an EFP.	O4	O3	O2	O1	O8	O9
d. The EFP Program is relevant to all types of farm operations.	O4	O3	O2	O1	O8	O9
e. The EFP Program helps producers *find ways* to reduce the impact of their farm operation on the environment.	O4	O3	O2	O1	O8	O9
f. An EFP helps a producer to show the general public that the impact of the farm operation on the environment is being managed.	O4	O3	O2	O1	O8	O9
g. Having an EFP helps producers negotiate better insurance premiums and/or financing terms with lenders.	O4	O3	O2	O1	O8	O9
h. Having an EFP helps producers get access local markets.	O4	O3	O2	O1	O8	O9
i. It is not worthwhile for me to complete an EFP.	O4	O3	O2	O1	O8	O9

12. Producers who complete the EFP Program are eligible to apply for cost-share funding to implement Best Management Practices that address the agri-environmental risks identified in their plan. Best Management Practices, or BMPs, are farm practices that encourage farmers to adopt measures to support environmental protection. I am going to read you a series of potential benefits. For each one, please indicate whether you strongly agree, agree, disagree, or strongly agree that implementing BMPs can produce the stated benefit.

	Strongly agree	Agree	Disagree	Strongly disagree	Don't know	No response
a. Increase air and/or soil quality	O4	O3	O2	O1	O8	O9
b. Increase water quality and/or quality	O4	O3	O2	O1	O8	O9
c. Improve the health of crops or livestock.....	O4	O3	O2	O1	O8	O9
d. Improve wildlife habitat.....	O4	O3	O2	O1	O8	O9
e. Decrease production costs.....	O4	O3	O2	O1	O8	O9
f. Decrease labour requirements.....	O4	O3	O2	O1	O8	O9
g. Increase farm profitability	O4	O3	O2	O1	O8	O9
h. Improve relations with neighbours	O4	O3	O2	O1	O8	O9

13. What other benefits can implementing BMPs produce?

O0 None

O8 Don't know

O9 No response

_____

14. In your opinion, does implementing BMPs require time and money for largely, someone else's benefit, rather than the producer's benefit?

O1 Yes O0 No O8 Don't know O9 No response

PART C: Involvement in the EFP Program

The following questions ask about your past involvement in the EFP Program.

15. Have you or someone from your farm business ever participated in an EFP workshop? **(*Read responses)***

O_2 Yes, someone from my farm business participated in a workshop in 2005 or later (3rd edition EFP). (GO TO PART C-3)

O_1 Yes, someone from my farm business participated in a workshop prior to 2005 (1st or 2nd edition). (GO TO PART C-2)

O_0 No, no one from my farm business has ever participated in an EFP workshop. (GO TO PART C-1)

PART C-1: NEVER PARTICIPATED IN AN EFP WORKSHOP

16. I am going to read a list of factors that may have affected your decision to *not participate* in the EFP Program. For each factor, please tell me if it was very important, somewhat important, or not important in your decision not to participate in the Program.

	Very important	Somewhat important	Not important	Don't know	No response
a. I don't think the program will provide me with relevant information for my farm operation	O_3	O_2	O_1	O_8	O_9
b. My farm is too small to support an EFP	O_3	O_2	O_1	O_8	O_9
c. It would be too complicated to complete an EFP for my farm operation	O_3	O_2	O_1	O_8	O_9
d. I did not know when and/or where workshops were being held	O_3	O_2	O_1	O_8	O_9
e. I do not like attending workshops	O_3	O_2	O_1	O_8	O_9
f. I don't want to reveal information about my farm in a workshop setting	O_3	O_2	O_1	O_8	O_9
g. I am concerned that information about my farming operation will not be kept confidential	O_3	O_2	O_1	O_8	O_9
h. I don't have enough time to deal with the environmental problems on my farm operation	O_3	O_2	O_1	O_8	O_9
i. I believe that if I complete an EFP, the government will require me to spend money to deal with the environmental problems on my farm operation	O_3	O_2	O_1	O_8	O_9
j. I am planning to stop farming in the near future and therefore am not concerned about addressing any environmental problems	O_3	O_2	O_1	O_8	O_9

17. What other factors, if any, affected your decision not to participate in the EFP Program?

_____

_____

O_1 None

18. Would any of the following encourage you to participate in an EFP workshop? Please indicate yes, maybe, or no for each item.

	Yes	Maybe	No	Don't know	No response
a. Receiving a brochure about the program in the mail	O2	O1	O0	O8	O9
b. Talking with someone from OSCIA about how the program can benefit your farm operation	O2	O1	O0	O8	O9
c. Being able to complete the program workbook one-on-one with someone from OSCIA	O2	O1	O0	O8	O9
d. Being able to complete the workbook at home using a CD version of the materials	O2	O1	O0	O8	O9
e. Being able to complete the workbook on the internet	O2	O1	O0	O8	O9
f. Distance learning opportunities (e.g., online workshop)	O2	O1	O0	O8	O9
g. Attending a workshops geared toward my type of farm operation	O2	O1	O0	O8	O9

19. What else would encourage you to participate in the EFP Program?

_____

_____

O0 Nothing O8 O9

20. Would you like someone from OSCIA to c all you to discuss how an EFP might add to the economic and environmental health of your farm?

O1 Yes — If yes, collect contact information at the end of the questionnaire (GO TO Q39)

O0 No (GO TO Q39)

O8 Don't know (GO TO Q39)

O9 No response (GO TO Q39)

PART C-2: PARTICIPATED IN AN EFP WORKSHOP PRIOR TO 2005

21. Did you …

(Move to Q22 once no, DK, or NR is indicated)	Yes	No	Don't know	No response
a. Complete a Risk Assessment for your farm?	O1	O0	O8	O9
b. Complete an Action Plan for your farm?	O1	O0	O8	O9
c. Submit your Action Plan for peer review?	O1	O0	O8	O9

22. Do you plan to…

(Only ask relevant questions based off of response to Q21)	**Yes**	**No**	**Don't know**	**No response**
a. Complete a Risk Assessment for your farm?	○1	○0	○8	○9
b. Complete an Action Plan for your farm?	○1	○0	○8	○9
c. Submit your Action Plan for peer review?	○1	○0	○8	○9

23. How often have you reviewed your EFP materials since _____? ***(INSERT APPROPRIATE RESPONSE BASED ON Q21 / SKIP IF No, DK, NR to Q21a)***: attending the workshop, completing the risk assessment, completing an action plan, or having your action plan peer reviewed)?

○0 Never ○1 Once ○2 More than Once ○8 Don't know ○9 No response

Please explain why not:

_____

_____

24. I am going to read a list of reasons for *not completing* the EFP Program. As I read each reason, please indicate whether it was very important, somewhat important, or not important in your decision not to complete the Program yet?

	Very important	**Somewhat important**	**Not important**	**Don't know**	**No response**
a. My farm does not have a significant negative impact on the environment	○3	○2	○1	○8	○9
b. The information presented at the workshop was not relevant to my farm operation	○3	○2	○1	○8	○9
c. It was too complicated to complete an EFP for my farm operation	○3	○2	○1	○8	○9
d. It was taking too long to complete the workbook	○3	○2	○1	○8	○9
e. The EFP workbook was not available electronically	○3	○2	○1	○8	○9
f. I was concerned that information about my farming operation would not be kept confidential ..	○3	○2	○1	○8	○9
g. I don't have enough *time* to address the environmental problems on my farm operation	○3	○2	○1	○8	○9
h. I don't have enough *money* to address the environmental problems on my farm operation	○3	○2	○1	○8	○9
i. I believe that if I complete an EFP, the government will require me to spend money to deal with the environmental problems on my farm operation	○3	○2	○1	○8	○9

25. What other factors, if any, affected your decision not to complete the EFP Program?

_____

_____

○1 None ○8 ○9

26. Would any of the following encourage you to complete the EFP Program? Please indicate yes, maybe, or no for each item.

	Yes	Maybe	No	Don't know	No response
a. Talking with someone over the phone about how to address the environmental problems on your farm	O2	O1	O0	O8	O9
b. Having someone come your farm to help you complete the workbook	O2	O1	O0	O8	O9
c. Being able to complete the workbook at home using a CD version of the materials	O2	O1	O0	O8	O9
d. Being able to complete the workbook on the internet	O2	O1	O0	O8	O9
e. Receiving technical information about BMPs	O2	O1	O0	O8	O9
f. Being able to complete the program workbook one-on-one with someone from OSCIA	O2	O1	O0	O8	O9
g. Being able to attend a refresher workshop	O2	O1	O0	O8	O9
27. What else would encourage you to complete the EFP Program? _____			O0 Nothing	O8	O9

28. Did you know that a new edition of the EFP program is available?

O1 Yes (GO TO Q29) O0 No (GO TO Q31) O8 Don't know (GO TO Q31) O9 No response (GO TO Q31)

29. Why has no one from your farm business participated in the new edition of the program? I am going to read you a series of reasons. Please answer yes or no for each.

	Yes	No	Don't know	No response
a. I obtained all the information I needed through the last edition	O1	O0	O8	O9
b. My farm operation does not have sufficient environmental problems to do the program again	O1	O0	O8	O9
c. I think it would require too much work and/or writing	O1	O0	O8	O9
30. What other reasons, if any, kept you from participating in the new edition of the program? _____		O0 No other reasons	O8	O9

31. Would you be interested in receiving more information about the new edition of the EFP program?

O1 Yes — If yes, collect contact information at the end of the questionnaire (GO TO Q39)

O0 No — Please explain why not: _____

O8 Don't know O9 No response

PART C-3: PARTICIPATED IN AN EFP WORKSHOP IN 2005 OR LATER

32. Did you …

(Move to Q33 once no, DK, or NR is indicated)	**Yes**	**No**	**Don't know**	**No response**
a. Complete a Risk Assessment for your farm?	O1	O0	O8	O9
b. Complete an Action Plan for your farm?	O1	O0	O8	O9
c. Submit your Action Plan for peer review?	O1	O0	O8	O9

33. Do you …

(Only ask relevant questions based off of response to Q32)	**Yes**	**No**	**Don't know**	**No response**
a. Plan to complete a Risk Assessment for your farm?	O1	O0	O8	O9
b. Plan to complete an Action Plan for your farm?	O1	O0	O8	O9
c. Plan to submit your Action Plan for peer review?	O1	O0	O8	O9

34. How often have you reviewed your EFP materials since _____? ***(INSERT APPROPRIATE RESPONSE BASED ON Q32 / SKIP IF No, DK, NR to Q32a)***: attending the workshop, completing the risk assessment, completing an action plan, or having your action plan peer reviewed)?

O0 Never O1 Once O2 More than Once O8 Don't know O9 No response

Please explain why not:

_____

_____

35. I am going to read a list of reasons for *not completing* the EFP Program. As I read each reason, please indicate whether it was very important, somewhat important, or not important in your decision not to complete the Program yet?

	Very important	Somewhat important	Not important	Don't know	No response
a. My farm does not have a significant negative impact on the environment	O3	O2	O1	O8	O9
b. The information presented at the workshop was not relevant to my farm operation	O3	O2	O1	O8	O9
c. It was too complicated to complete an EFP for my farm operation	O3	O2	O1	O8	O9
d. It was taking too long to complete the workbook	O3	O2	O1	O8	O9
e. The EFP workbook was not available electronically	O3	O2	O1	O8	O9
f. I was concerned that information about my farming operation would not be kept confidential ..	O3	O2	O1	O8	O9
g. I don't have enough *time* to address the environmental problems on my farm operation	O3	O2	O1	O8	O9
h. I don't have enough *money* to address the environmental problems on my farm operation	O3	O2	O1	O8	O9
i. I believe that if I complete an EFP, the government will require me to spend money to deal with the environmental problems on my farm operation	O3	O2	O1	O8	O9

36. What other factors, if any, affected your decision not to complete the EFP Program?

_____

_____

O1 None

O8 O9

37. Would any of the following encourage you to complete the EFP Program? Please indicate yes, maybe, or no for each item.

	Yes	Maybe	No	Don't know	No response
a. Talking with an expert over the phone or by email about how to address the environmental problems on your farm	O2	O1	O0	O8	O9
b. Having someone come your farm to help you complete the workbook	O2	O1	O0	O8	O9
c. Being able to complete the workbook at home using a CD version of the materials	O2	O1	O0	O8	O9
d. Being able to complete the workbook on the internet	O2	O1	O0	O8	O9
e. Receiving technical information about BMPs	O2	O1	O0	O8	O9
f. Being able to complete the program workbook one-on-one with someone from OSCIA	O2	O1	O0	O8	O9
g. Being able to attend a refresher workshop	O2	O1	O0	O8	O9

38. What else would encourage you to complete the EFP Program?

_____

_____

O0 Nothing O8 O9

PART D: Implementation of environmental projects (ALL RESPONDENTS)

39. Have you implemented any projects (e.g., BMPs) to minimize any environmental risks associated with the following aspects of your operation? As I read the list of possible risk areas, please indicate whether you have implemented a project or if the risk area is not applicable to you.

	Yes	No	Not applicable	Don't know	No response
a. Water wells	O1	O0	O7	O8	O9
b. Pesticide and/or fertilizer handling and storage	O1	O0	O7	O8	O9
c. Storage of petroleum products	O1	O0	O7	O8	O9
d. Pest management	O1	O0	O7	O8	O9
e. Soil management	O1	O0	O7	O8	O9
f. Nutrient management	O1	O0	O7	O8	O9
g. Field crop management	O1	O0	O7	O8	O9
h. Manure management and/or livestock yards/milking centres	O1	O0	O7	O8	O9
i. Disposal of farm wastes	O1	O0	O7	O8	O9
j. Stream, ditch, and floodplain management	O1	O0	O7	O8	O9
k. Water conservation and/or energy efficiency	O1	O0	O7	O8	O9
l. Woodland, wetlands and/or wildlife protection	O1	O0	O7	O8	O9

40. What other kinds of projects, if any, did you implement?

_____ O0 None O8 O9

_____

If no to each item in Q39 and none to Q40 GO TO Q44

Thinking of all the projects mentioned in the question (Q39) …

41. In the last five years, how much do you estimate the projects cost to implement these changes?
$_____

42. Which of the following funding sources did you use to implement these activities? I am going to read a list of sources. For each one, please tell me if you used it.

	Yes	No	Don't know	No response
a. EFP incentives	O1	O0	O8	O9
b. Conservation authority funding	O1	O0	O8	O9
c. Farm's own money/bank financing	O1	O0	O8	O9

43. What other funding sources, if any, did you use?

_____ O0 None O8 O9

_____

44. If you were wishing to implement environmental projects in the next two years, what additional services would help you?

	Yes	No	Don't know	No response
a. Supplemental workshops/presentations on specific topics or practices	O1	O0	O8	O9
b. On-farm demonstrations of specific practices or technologies	O1	O0	O8	O9
c. Tours of environmental practices used on other farms	O1	O0	O8	O9
d. Discussions with other farmers about how to implement certain practices	O1	O0	O8	O9
e. On-farm visits by technical specialists	O1	O0	O8	O9
f. More technical information available on-line	O1	O0	O8	O9
g. Social networking sites to exchange information (e.g., Facebook or Twitter)	O1	O0	O8	O9

45. What other services, if any, would be helpful?

_____ O0 None O8 O9

_____

PART F: Demographics (ALL RESPONDENTS – don't know/no response is a response category for all questions)

The following questions will help us place your responses in the context of other farmers like you.

46. Please select the Primary Commodity Group that best describes your operation. ***(Check one only.)***

○01 Beef: cow-calf ○02 Beef: feeder ○03 Dairy
○04 Hogs ○05 Poultry ○06 Sheep/goat
○07 Field crops (for example, grains, corn, and oilseeds)
○66 Horticulture/greenhouse *(specify predominant crop)* _____
○66 Other *(specify)* _____

47. Please select the Secondary Commodity Group that best describes your operation. It must contribute to at least 25% of gross income. ***(Check one only.)***

○01 Beef: cow-calf ○02 Beef: feeder ○03 Dairy
○04 Hogs ○05 Poultry ○06 Sheep/goat
○07 Field crops (for example, grains, corn, and oilseeds)
○66 Horticulture/greenhouse *(specify predominant crop)* _____
○66 Other *(specify)* _____
○77 Not applicable

48. If you are involved in livestock production, please indicate the number of livestock on the farm operation(s) in the past 12 months.

	Number of livestock
a. Beef	_____
b. Dairy	_____
c. Hogs	_____
d. Poultry	_____
e. Other (*specify*) _____	_____

○77 Not applicable

49. How many acres of farmland do you own, rent, and/or lease?

	Number of acres
a. Acres owned (crop or pasture)	_____
b. Acres owned (non-crop or non-pasture, including bush/woodlot and wetlands)	_____
c. Acres rented/leased or in share-crop arrangements from others	_____
d. Total acres	_____

50. Thinking of your owned acres, how many have you rented or leased ***to others*** and how many do you have in share-crop arrangements ***with others***?

_____ acres

51. How many acres of each crop type do you have?

	Number of crop acres
a. Annual crop (for example, grains, corn, and oilseeds)	_____
b. Horticulture/greenhouse	_____
c. Forage/pasture (for example, hay or alfalfa)	_____
d. Other (*specify*) _____	_____
e. Total crop acres	_____

52. What is the ownership structure of your operation? ***(Check one only.)***

- ○01 Sole proprietorship
- ○02 Partnership *without* a written agreement
- ○03 Partnership *with* a written agreement
- ○04 Family corporation (including corporations with one shareholder)
- ○05 Non-family corporation
- ○66 Other *(specify)* _____

53. How many people work for pay on the farm?

	Number of workers including…	
	Owners and family members (including yourself)	All other workers
a. Full time	_____	_____
b. Part time and/or seasonal	_____	_____

54. Thinking of the next five years, what is the likelihood that you will… ***(check one for each item)***

	Very likely	Somewhat likely	Not likely
a. Become involved in another line of agricultural production?	○3	○2	○1
b. Expand size of the farm (for example, acquire/rent additional land or increase the size of your herd/flock)?	○3	○2	○1
c. Decrease size of the farm (for example, sell/rent a portion of your land or decrease the size of your herd/flock)?	○3	○2	○1
d. Retire from farming completely?	○3	○2	○1
e. Transfer/sell your farm to your children?	○3	○2	○1
f. Sell your farm to someone outside your family?	○3	○2	○1
g. Make no changes to the operation?	○3	○2	○1

55. Since the age of 16, how many years have you been farming?

_____ years

56. Which category best describes your age? ***(Check one only.)***

- ○1 Under 25 years old
- ○2 26 to 30 years old
- ○3 31 to 34 years old
- ○4 35 to 39 years old
- ○5 40 to 44 years old
- ○6 45 to 50 years old
- ○7 51 to 55 years old
- ○8 56 to 60 years old
- ○9 61 to 65 years old
- ○10 66 to 70 years old
- ○11 71 to 75 years old
- ○12 76 to 80 years old
- ○13 Over 80 years old

57. What is your highest level of education? ***(Check one only.)***

- ○1 Completed Grade 8 or less
- ○2 Completed some high school
- ○3 Graduated high school
- ○4 Completed some university/college/technical school
- ○5 Graduated college/technical school
- ○6 Graduated from university (undergraduate degree)
- ○7 Completed graduate/professional school

58. Which category best describes your total *gross* farm revenue (before expenses) for the 2009 crop year? Please do not include off-farm income earned by you or other household members. ***(Check one only.)***

- ○1 Under $7,000
- ○2 $7,000 to $9,999
- ○3 $10,000 to $24,999
- ○4 $25,000 to $49,999
- ○5 $50,000 to $99,999
- ○6 $100,000 to $249,999
- ○7 $250,000 to $499,999
- ○8 Over $500,000

59. How significant of a contribution does off-farm income earned by any member of your household make to your household income? ***(Check one only.)***

- ○3 Over half the household income
- ○2 Between 25% and 50% of household income
- ○1 Between 10% and 25% of household income
- ○0 Less than 10% of household income

PART G: Conclusion (ALL RESPONDENTS don't know/no response is a response category for all questions)

CONCLUSION

60. Are you willing to participate in a similar follow-up survey in a couple of years?

Yes	No
○1	○0

61. Another part of this study involves focus groups with producers like you. Participants in the groups will discuss potential improvements to the EFP Program. The focus groups will be held in major Ontario centres and will last about two hours. Participants will receive $125 for their participation. If you are interested in being a focus group participant, please provide your name and telephone number and/or email address below.

Name _____

Phone number _____

Email address _____

62. Do you have any other comments?

_____

_____

_____

_____

Thank you for taking time to participate in this survey.

Appendix D: Profile of respondents

1.0 Profile of respondents

The EFP Program is attracting producers with a wide range of characteristics. This section discusses the personal and farm-related attributes of the survey respondents.

1.1 Producer characteristics

This section provides information about producer attributes.

1.1.1 Age

As shown in Table 32, the majority (66%) of producers who participated in the EFP Survey were between the ages of 35 and 55.

- About 11% of respondents were younger farmers (under 35), which is similar to the percentage of young farmers reported in the 2006 Census of Agriculture.
- It appears that, compared to the 2006 Census of Agriculture, fewer older farmers participated in the EFP Survey. Only 11% of the EFP respondents were over 55 years old whereas, according to the census, 43% of producers in Ontario were 55 or older.[14]

Table 32: Age
Q34: What category best describes your age?

EFP 2010		2006 Census of Agriculture		
Age (years old)	**n=189**	**Age (years old)**	**Ontario**	**Canada**
Under 35	11%	Under 35	9%	9%
35 to 39	12%	35 to 54*	49%	50%
40 to 44	12%			
45 to 50	21%			
51 to 55*	21%			
56 to 60*	7%	55 and older*	43%	41%
Over 65	4%			
No response	9%	No response	n/a	n/a

Note: Totals may not equal 100% due to rounding.
*Note that the age categories differ slightly.

[14] Note that the age categories used in the EFP Survey and the 2006 Census of Agriculture differ slightly.

1.1.2 Farming experience

Producers who participate in the EFP tend to be experienced farmers. On average, they have been farming for 27 years, since the age of 16. Only 7% of the responding producers reported having farmed for less than 10 years. See Table 33.

Table 33: Number of years farming since the age of 16
Q33: Since the age of 16, how many years have you been farming?

Number of years	n=189
15 or less	18%
16 to 24	20%
25 to 29	12%
30 to 34	23%
35 to 39	17%
40 and above	9%

Note: Totals may not equal 100% due to rounding.

1.1.3 Education

The majority (62%) of producers who participate in the EFP have completed some form of post-secondary education. Less than 1 in 10 (7%) did not graduate high school. See Table 34. The level of education appears higher than the general farm population; 22% of respondents had university degrees compared to 11% in the 2006 Census of Agriculture (Statistics Canada 2008).

Table 34: Education
Q35: What is your highest level of education?

Highest level	n=189
Completed Grade 8 or less	2%
Completed some high school	5%
Graduated high school	22%
Completed some university/college/technical school	9%
Graduated college/technical school	40%
Graduated from university (undergraduate degree)	19%
Completed graduate/professional school	3%

Note: Totals may not equal 100% due to rounding.

1.2 Farm characteristics

This section describes characteristics of the farms included in the EFP survey.

1.2.1 Commodities produced

The sample of participants in the EFP survey was designed to be representative of the different types of agricultural production occurring in the counties included in the survey. Livestock and crop production were equally represented and as a result, about half of the responding producers (52%) were primarily involved in crop production and about half (49%) were primarily involved in livestock production. The split between livestock and crop producers is also representative of Ontario and Canada.

- Just over 6 in 10 respondents (62%) reported producing a primary and secondary commodity.
- The primary commodities most commonly produced were cash crops (41%), dairy (19%), and beef (13%).
- Other crop includes "organic" (n=1) and tobacco (n=1).
- Other animal includes poultry (n=12), hogs (n=11), sheep/goat (n=8), and horses (n=1).

Compared to 1999, more producers were involved in other animal production in 2010. Additionally, in 2010, mixed production was not a valid response option.

See Table 35.

Table 35: Farm type
Q24: Please select the Primary Commodity Group that best describes your operation.
Q25: Please select the Secondary Commodity Group that best describes your operation. Must contribute at least 25% of gross income.

Type	Environmental Farm Plan			2006 Census of Ag	
	Primary commodity*	Secondary commodity*	1999 (n=179)	Ontario	Canada
	2010 (n=189)				
Crops					
Cash crop**	41%	36%	36%	23%	27%
Horticulture	9%	4%	11%	11%	10%
Other plant**	2%	-	2%	15%	12%
Livestock					
Dairy	19%	2%	15%	9%	6%
Beef	13%	12%	14%	19%	27%
Other animal	17%	7%	7%	22%	18%
Other					
Mixed	n/a	-	15%	n/a	n/a
Other	1%	1%	-	n/a	n/a
Not applicable/no response	-	38%	-	n/a	n/a

* Respondents could provide more than one answer; totals may sum to more than 100%.
**Differences may be due to variations in commodity definitions.

1.2.2 Farm size

Producers participating in the 2010 survey owned or rented over 111,400 acres. This is up 120% from the 1999 survey where producers owned or rented almost 50,600 acres.[15] In 2010, EFP total farm size per participant ranged from 25 to 5,000 acres.

The 2010 EFP Survey producers tend to have large operations. In 2010, the average farm size was 590 acres, which is 108% greater than1999, when the average farm size was 284 acres. Additionally, compared to the 2006 Census of Agriculture, the average size of an EFP farm is 153% greater than the average Ontario farm (233 acres).

On average, 2010 EFP participants owned 348 acres of crop or pasture land and farmed 283 acres that were rented, leased, and/or in crop-share from others. Less than 1 in 5 producers (18%) reported having a crop-share arrangement with others. Producers grew annual crops on an average of 468 acres and had an average of 157 acres of forage or pasture land.

The number of livestock that 2010 EFP participants had on-farm varied from one animal to a flock of 205,000 birds. The average herd/flock size by type of production is about 90 beef cattle, 165 dairy cattle, 5,400 hogs, and 34,000 birds.

1.2.3 Ownership structure

Table 36 shows that the majority of respondents (68%) operated a sole proprietorship or partnership. The majority of respondents had family-run farm operations.

- 86% said at least one family member (including the owner) works *full-time* on the farm.
- 63% said at least one family member (including the owner) works on the farm *part-time* or *seasonally*.

Less than half reported hiring others to work on the farm.

Only 3% of respondents said they ran a non-family corporation.

Table 36: Ownership structure
Q30: What is the ownership structure of your operation?

Ownership structure	n=189
Sole proprietorship	36%
Partnership without a written agreement	20%
Partnership with a written agreement	12%
Family corporation (including corporations with one shareholder)	28%
Non-family corporation	3%
No response	1%
Total	100%

Note: Totals may not equal 100% due to rounding.

[15] Please use caution in reviewing these differences as they may reflect changes in the way the question was asked.

1.2.4 Farm revenue

Almost half the respondents (45%) said their total gross farm revenue for the 2009 crop year was between $100,000 and $499,999. Compared to the 2006 Census of Agriculture, participants in the EFP tended to report higher farm revenues.

- 28% of EFP participants had revenues greater than $500,000, compared to less than 10% of producers in Ontario and Canada.
- 9% of EFP participants had revenues less than $25,000, compared to 44% and 39% in Ontario and Canada, respectively.

See Table 37.

Table 37: Farm revenue
Q36: Which category best describes your total gross farm revenue (before expenses) for the 2009 crop year? Please do not include off-farm income earned by you or other household members.

Farm revenue	EFP 2010 n=189	2006 Census of Ag	
		Ontario	Canada
Under $7,000	1%	25%	22%
$7,000 to $9,999	2%		
$10,000 to $24,999	6%	19%	17%
$25,000 to $49,999	7%	13%	13%
$50,000 to $99,999	12%	11%	14%
$100,000 to $249,999	21%	14%	17%
$250,000 to $499,999	24%	10%	10%
Over $500,000	28%	8%	7%
No response	<1%	n/a	n/a
Total	101%	100%	100%

Note: Totals may not equal 100% due to rounding.

1.2.5 Off-farm income

The majority of respondents (58%) said off-farm income made a somewhat significant or very significant contribution to their farm operation. A minority (29%) said off-farm income did not contribute to their farm operation. See Table 38.

Table 38: Significance of off-farm income to farm operation
Q37: How significant of a contribution does off-farm income earned by any member of your household make to your farm operation?

Significance	n=189
None, off-farm income does not contribute to the farm operation	29%
Not very significant contribution	12%
Somewhat significant contribution	19%
Very significant contribution	39%
No response	1%
Total	100%

Note: Totals may not equal 100% due to rounding.

1.2.6 Likelihood of changes to the farm operation

We asked respondents how likely they were to make various changes to their operation over the next five years.

- Most respondents are somewhat or very likely to grow their operations by expanding the size of the farm (69%) or becoming involved in another line of production (41%).

- Few respondents are somewhat or very likely to reduce their involvement in farming by:
  - Transferring the farm to their children (14%)
  - Decreasing the size of the farm (12%)
  - Retiring (7%)
  - Selling the farm (6%)

Appendix E: Profile of PRA Inc.

Profile of PRA Inc.

PRA is a Canadian-owned, client-focused research firm based in Winnipeg with offices in Ottawa, Regina, and Edmonton. We provide clients with innovative methodologies, accurate analysis, and an independent perspective using a broad range of services, including program evaluation, performance measurement, operational reviews, market and opinion research, economic analysis, statistical analysis, and qualitative research.

PRA has provided research services, including evaluation services, to all levels of government as well as the non-profit sector for over 20 years, since the inception of the company in 1988. PRA is one of Canada's largest evaluation and research consulting firms and has extensive experience in the fields of agriculture, environment, natural resources, and climate change.

PRA has a full-time professional and technical staff of 38 and a part-time, casual staff of 80. The firm offers clients a comprehensive set of skills to support all forms of quantitative and qualitative research. PRA also manages a 40-station computer-aided telephone/web interviewing call centre in Winnipeg that supports surveys in both official languages and national samples of up to 25,000.

PRA's team of professional researchers, management consultants, and technical support personnel is dedicated to collecting reliable data and helping clients make informed, effective decisions. The company's quality assurance and project management system has been certified to ISO-9001 standards since 1998, reflecting our commitment to the highest standards of research and client service. PRA is also a Gold Seal member of the Marketing Research and Intelligence Association (MRIA), demonstrating our compliance with MRIA standards for quantitative and qualitative research.