

**SURVEY OF
SOUTHWESTERN ONTARIO FARMERS
FOR THE EVALUATION OF SWEEP**

JUNE 1988

Prepared for:

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However, the views and opinions contained herein are those of the authors and do not necessarily reflect the views of Agriculture Canada or the SWEEP Management Committee.

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1.0 INTRODUCTION

In May 1986, a \$30 million federal-provincial agreement to improve soil and water quality in southwestern Ontario was announced. The five year Soil and Water Environmental Enhancement Program (SWEET) is intended to reduce phosphorous loadings in the Lake Erie basin from cropland runoff and also to reduce soil and erosion degradation. The program entails working with farmers to improve soil conservation practices. The agreement included a commitment to evaluate the program.

Two issues of concern in the evaluation are the impact of SWEET on farmers' awareness of soil and water quality issues and on their attitudes towards conservation practices. An evaluation assessment conducted in early 1987 proposed that farmers in the SWEET area be surveyed at the beginning and end of the program. The initial survey will establish baseline data and provide information on the status of conservation attitudes and practices. The subsequent data collection is scheduled for 1993 and will constitute a longitudinal study of the sample used in the first survey.

The longer term objective of the longitudinal study is to determine changes in:

- awareness of soil quality issues;
- awareness of water quality issues;
- perceived importance of soil and water quality issues;
- level of knowledge and understanding of agricultural conservation practices; and
- the degree to which soil and water quality issues are considered in farm management decisions.

The purpose of this study is to conduct the initial survey. As stated in the terms of reference, this survey is intended:

"To determine the current level of farmers' awareness of soil and water quality issues, attitudes toward conservation practices, and the prevalence of the conservation ethic in southwestern Ontario."

2.0 SCOPE AND APPROACH

2.1 Overview

DPA's originally proposed approach involved a telephone survey. However, difficulties in obtaining a representative list from which to draw a sample of 240 farms required that an alternative approach be adopted.

Statistics Canada was engaged to prepare a sample of 1,196 farms from the 1986 Census of Agriculture. DPA prepared a questionnaire and introductory letter suitable for mail out. Once the content and format of the survey package was approved by Agriculture Canada and the questionnaire was field tested, DPA delivered 1,196 sealed survey packages to Statistics Canada for mailing. (Each package contained a survey, a covering letter and a stamped self addressed return envelope. The survey and covering letter appear in Appendix A.) Statistics Canada used a computer program to select 1,196 farms for the sample and attached the required mailing labels. This process allowed DPA to use Statistics Canada's 1986 Census of Agriculture data base for the sample mailout without violating the confidentiality of the census information. However, the actual farms which received questionnaires remain in the confidence of Statistics Canada. Follow-up could be achieved to the degree that respondents provided their names and phone numbers. The longitudinal study could use the same 1,196 farm sample which is currently on file with Statistics Canada.

2.2 Sample Parameters

The area covered by the survey includes the following 13 counties in southwestern Ontario:

Essex	Kent
Lambton	Middlesex
Elgin	Oxford
Haldimand-Norfolk	Waterloo
Wellington	Huron
Hamilton-Wentworth	Perth
Brant	

The only county covered by SWEEP but specifically excluded in the study was Dufferin.

The 1986 Census of Agriculture indicated the existence of 46,727 registered farms located in these 13 counties. This represents an average of 3594 farmers per county. The sample was selected randomly, but the following conditions were also met:

- 92 farms were selected from each county constituting an average 2.6 percent of each county's farm population; and
- 20 percent of the sample was drawn from farms which generated sales of less than \$10,000.00 in 1986. These were included to ensure representation from the hobby farm segment.

In addition, the sample selection specifically excluded institutional farms (i.e., operated by prisons and universities) and multi-farm holdings (i.e., Green Giant and Canada Packers).

2.3 Population Representation

Exhibit 2.1 shows the basic distribution of farm population for southwestern Ontario, the mailout sample and the survey responses both by county and economic class. These figures suggest that the sample has provided a good representation of the population,

EXHIBIT 2.1: REPRESENTATIVENESS OF THE DATA BASE

County	Economic Class (Gross Sales)	Population (1986 Census)		Sample		Data Base,	
		Farms		Farms		Farms*	
Essex	Less Than \$10,000	674	25.9%	18	19.6%	5	22.7%
	\$10,000 to \$50,000	1019	39.1%	43	46.7%	12	54.5%
	Greater Than \$50,000	913	35.0%	31	33.7%	5	22.7%
	Total of County	2606		92		22	
	% of All Counties		8.1%		7.7%		9.5%
Lambton	Less Than \$10,000	613	21.3%	18	19.6%	2	10.0%
	\$10,000 to \$50,000	1149	39.9%	35	38.0%	11	55.0%
	Greater Than \$50,000	1121	38.9%	39	42.4%	7	35.0%
	Total of County	2883		92		20	
	% of All Counties		9.0%		7.7%		8.7%
Elgin	Less Than \$10,000	358	19.1%	18	19.6%	1	6.3%
	\$10,000 to \$50,000	539	28.8%	33	35.9%	4	25.0%
	Greater Than \$50,000	973	52.0%	41	44.6%	11	68.8%
	Total of County	1870		92		16	
	% of All Counties		5.8%		7.7%		6.9%
Haldimand-Norfolk	Less Than \$10,000	762	23.4%	18	19.6%	4	26.7%
	\$10,000 to \$50,000	855	26.2%	33	35.9%	5	33.3%
	Greater Than \$50,000	1641	50.4%	41	44.6%	6	40.0%
	Total of County	3258		92		15	
	% of All Counties		10.1%		7.7%		6.5%
Waterloo	less Than \$10,000	301	18.6%	18	19.6%	0	0.0%
	\$10,000 to \$50,000	366	22.6%	18	19.6%	2	14.3%
	Greater Than \$50,000	954	58.9%	56	60.9%	12	85.7%
	Total of County	1621		92		14	
	% of All Counties		5.0%		7.7%		6.1%
Perth	Less Than \$10,000	363	12.6%	18	19.6%	1	4.8%
	\$10,000 to \$50,000	845	29.3%	23	25.0%	10	47.6%
	Greater Than \$50,000	1676	58.1%	51	55.4%	10	47.6%
	Total of County	2884		92		21	
	% of All Counties		9.0%		7.7%		9.1%
Huron	Less Than \$10,000	478	10.5%	18	19.6%	0	0.0%
	\$10,000 to \$50,000	1063	14.2%	26	28.3%	3	16.7%
	Greater Than \$50,000	1826	31.6%	48	52.2%	15	83.3%
	Total of County	3367		92		18	
	% of All Counties		54.2%		7.7%		7.8%

EXHIBIT 2.1: REPRESENTATIVENESS OF THE DATA BASE (Continued)

County	Economic Class (Gross Sales)	Population (1986 Census)		Sample		Data Base	
		Farms		Farms		Farms*	
Kent	Less Than \$10,000	337	11.7%	18	19.6%	3	21.4%
	\$10,000 to \$50,000	1110	38.5%	31	33.7%	5	35.7%
	Greater Than \$50,000	1433	49.8%	43	46.7%	6	42.9%
	Total of County	2880		92		14	
	% of All Counties		9.0%		7.7%		6.1%
Middlesex	Less Than \$10,000	707	22.3%	18	19.6%	3	18.8%
	\$10,000 to \$50,000	967	30.5%	28	30.4%	6	37.5%
	Greater Than \$50,000	1498	47.2%	46	50.0%	7	43.8%
	Total of County	3172		92		16	
	% of All Counties		9.9%		7.7%		6.9%
Oxford	Less Than \$10,000	386	16.0%	18	19.6%	4	16.7%
	\$10,000 to \$50,000	590	24.4%	34	37.0%	9	37.5%
	Greater Than \$50,000	1440	59.6%	40	43.5%	11	45.8%
	Total of County	2416		92		24	
	% of All Counties		7.5%		7.7%		10.4%
Brant	Less Than \$10,000	234	24.4%	18	19.6%	3	17.6%
	\$10,000 to \$50,000	285	29.7%	28	30.4%	8	47.1%
	Greater Than \$50,000	439	45.8%	46	50.0%	6	35.3%
	Total of County	958		92		17	
	% of All Counties		3.0%		7.7%		7.4%
Wellington	Less Than \$10,000	712	25.3%	18	19.6%	2	14.3%
	\$10,000 to \$50,000	880	31.3%	31	33.7%	4	28.6%
	Greater Than \$50,000	1222	43.4%	43	46.7%	8	57.1%
	Total of County	2814		92		14	
	% of All Counties		8.8%		7.7%		6.1%
Hamilton- Wentworth	Less Than \$10,000	578	42.1%	18	19.6%	2	10.5%
	\$10,000 to \$50,000	355	25.8%	34	37.0%	8	42.1%
	Greater Than \$50,000	441	32.1%	40	43.5%	9	47.4%
	Total of County	1374		92		19	
	% of All Counties		4.3%		7.7%		8.2%
All 13 Counties	Less Than \$10,000	6503	20.3%	234	19.6%	29	12.6%
	\$10,000 to \$50,000	10023	31.2%	397	33.2%	89	38.5%
	Greater Than \$50,000	15577	48.5%	565	47.2%	113	48.9%
	Total	32103		1196		231	

* Please note that number of farm observations only include those that gave income level information. The total sample size is 241 observations.

but that the survey responses tend to emphasize the counties of Brant and Hamilton-Wentworth while understating Kent and Wellington counties. Overall, however, the 241 survey returns are a reasonable representation of the population economic classes and constitute an acceptable return rate of 20 percent. The reader should bear in mind that the mail out approach will tend to generate responses from those farmers with a strong opinion on conservation issues. There is no way of determining if the mix of conservation attitudes present in the survey results matches the mix of attitudes held by those farmers selected for the sample but who chose not to respond. The results, therefore, may tend to be biased in favour of those who use conservation practices and understate the segment of the population which is not as sensitive to soil and water conservation topics.

2.4 Presentation of Results

Section 3.0 provides an overview of the survey results concerning the subjects of:

- farmer awareness of soil and water quality issues;
- farming practices used;
- changes in conservation practices; and
- soil and water quality considerations in farm management decisions.

The actual results of the survey for all questions are provided in Appendix B. Due to the scope restrictions of the study and limited analysis undertaken, there has been no attempt made to draw final conclusions or make recommendations relating to the farms within the 13 counties under study as to their level of awareness and attitudes towards soil and water quality conservation issues. The findings and conclusions presented in the report relate strictly to the results of the survey and as such provide a base for future analysis and interpretation.

3.0 FINDINGS AND CONCLUSION

3.1 Awareness of Soil and Water Quality Issues

The awareness of soil and water quality issues in southwestern Ontario was addressed in questions 11 through 19 and 26 of the survey instrument. Questions 11 through 18 describe a variety of soil and water quality conditions which occur in Canada. Farmers were asked to indicate whether or not they thought the condition was a problem for southwestern Ontario. If they considered a condition to be a problem, they were asked to indicate how serious the problem was by assigning a rating of 1 (not serious) to 5 (very serious). The problems described were sheet, rill and gully erosion, wind erosion, surface water erosion, acidification, compaction, loss of organic matter, ditch bank erosion and poor water quality. Question 19 asked farmers about experience with each of these problem on their own farm. Question 26 asked for farmers' general concerns regarding the impacts of soil erosion and runoff on land productivity, neighboring farms, and the environment in general.

3.1.1 Southwestern Ontario In General

In general, a high percentage of farmers (75 percent of respondents) felt that each of the problems described in questions 11 through 18 occurred in southwestern Ontario. The exception was the condition of acidification in soils. Only 45 percent of all farm respondents considered this to be a problem which occurs in southwestern Ontario and only half of these suggested the problem was serious enough to be given a ranking of 3 or higher. In contrast, over three-quarters of the farmers who indicated sheet, rill or gully erosion to be a problems for southwestern Ontario felt it was a serious condition (a rating of 3 or more). All conditions described were considered to be problems to some degree in southwestern Ontario

by over 70 percent of responding farm managers. Exhibit 3.1 displays a summary of these findings. For display purposes, each condition description has been shortened to a general erosion related problem.

A brief examination of the general soil and water quality issues on a county by county basis suggests that there are few differences in perceptions. The low number of responses per county (less than 20 in general) and the further splitting of responses into positive, negative and don't know categories makes meaningful comparisons difficult without a more in-depth analysis. Responses from adjoining counties could be combined and the degree of seriousness could be collapsed for a future assessment of this problem data on a county or regional basis.

3.1.2 Problems Experienced on Farms

Question 19 asked the farmer if he had observed any of the following problems on his own farm: sheet, rill or gully erosion, wind erosion, compaction, loss of organic matter, ditch bank erosion, poor water quality, and acidification.

Acidification was the least experienced problem on southwestern Ontario farms with only 30 percent of respondents having observed it during the last 2 years and only 5.8 percent of farmers considered it to be a serious problem. Poor water quality was noted in only 34 percent of farms but 41 percent rated the problem to be a "3" or higher. This was the highest rating of any problem. Compaction and wind erosion were cited by 60 percent and 53 percent of respondents respectively as being a problem. These are the problems which apparently occur most frequently. Overall, the problems in question occurred on average in 43 percent of the responding farms and were rated as a "3" or higher by 33 percent of the respondents.

EXHIBIT 3.1: OPINIONS ON EROSION IN SOUTHWESTERN ONTARIO

CONDITION	Consider to be a Problem	Total Responses		Rated Problem as a "3" or more	
Sheet, Rill, Gully Erosion	190	241	78.8%	146	76.8%
Wind Erosion	199	241	82.6%	132	66.3%
Cultivating up and down slopes causing soil loss due to runoff	191	241	79.3%	132	69.1%
Acidification	109	241	45.2%	56	51.4%
Compaction	176	241	73.0%	129	73.3%
Loss of Organic Matter	184	241	76.3%	130	70.7%
Ditch Bank Erosion	193	241	80.1%	130	67.4%
Water Quality	197	241	81.7%	139	70.6%
Average			74.6%		69.1%

Exhibit 3.2 displays a summary of these results.

3.1.3 Importance of Soil and Water Quality Issues

Farmers were asked to rate the importance of reducing the amount of soil erosion and runoff with respect to its impact on land productivity, neighboring farms, and the general environment. Farmers were most concerned about the impact of soil erosion and run-off on land productivity with 80 percent of responses rating this impact as a "3" or higher. The reduction of soil erosion and runoff because of its impact on land productivity was considered to be "very important" by 50 percent of all farm respondents.

There was slightly less concern over reducing soil erosion and runoff because of its impact on the general environment and neighboring farms. 74 percent of the respondents provided a "3" or higher rating to impacts on the environment and 69 percent felt that impacts on neighboring farms were an important reason for farmers to reduce the amount of soil erosion and runoff. Overall, survey results indicate that farmers are aware and appear concerned over the impacts of soil erosion and runoff.

3.2 Farming Practices Used

Section C of the Agricultural Survey assessed the conservation management practices used by farmers in southwestern Ontario to reduce soil erosion, increase production and improve water quality.

3.2.1 Cropping Practices

Crop rotation is by far the most common cropping practice used by farmers in southwestern Ontario. Over 85 percent of landowners use some form of crop rotation with the

EXHIBIT 3.2: PROBLEMS OBSERVED ON RESPONDENT'S FARM

CONDITION	Consider to be a Problem	Total Responses		Rated Problem as a "3" or more	
Sheet Erosion	88	241	36.5%	25	28.4%
Rill Erosion	99	241	41.1%	22	22.2%
Gully Erosion	115	241	47.7%	43	37.4%
Wind Erosion	128	241	53.1%	44	34.4%
Compaction	145	241	60.2%	54	37.2%
Loss of Organic Matter	110	241	45.6%	36	32.7%
Ditch Bank Erosion	97	241	40.2%	38	39.2%
Poor Water Quality	81	241	33.6%	33	40.7%
Acidification	74	241	30.7%	14	18.9%
Average			43.2%		33.0%

combination of row crops, cereals, and forage being the most prevalent rotation. It is used by 44 percent of southwestern Ontario farmers. A rotation of row crops and cereals is the second most common practice among farmers representing 34 percent of the respondents (see Appendix B).

A winter crop cover is used by 54 percent of southwestern Ontario farmers and involves, on average, 47 acres of land. Clover plowdown is another popular cropping practice with over 41 percent of farmers practicing this technique on an average of 34 acres of land. Strip cropping and cross slope cropping practices are less common with only 10 percent and 14 percent respectively of farmers using them.

3.2.2 Tillage practices

Almost all farmers (99 percent) carried out both primary and secondary tillage in preparing their lands for cropping. The moldboard plow is the most commonly used machine for primary tillage with 82 percent of farmers indicating they use it during the spring or fall season. 58 percent of all farmers indicate they use this tilling machine in the fall. The chisel plow, offset or tandem discs and the no till planter are used to a much lesser extent. Only 26 percent of farmers employ the chisel plow for primary tillage with the majority (18 percent) using it in the fall. Offset discs are employed by 39 percent of farmers and spring is the most common season for primary tillage with this equipment. The no till planter is used by only 5 percent of the respondents. (See Appendix B.)

With respect to secondary tillage, the field cultivator is the most commonly used machine for the responding farmers in southwestern Ontario. 60 percent of all respondents indicated using this equipment. Discs, offset or tandem, are used by 57 percent of respondents and almost 50 percent use the spring tooth cultivator. Less commonly used machinery for

secondary tillage includes drag harrows (34 percent) and cultimulchers (24 percent). All secondary tillage machinery is usually employed in the spring.

3.2.3 Water Related Conservation Management Practices

Water related conservation management practices are of importance to the southwestern Ontario farmer with 70 percent of all respondents having an open water course on their farm. 39 percent of farmers have planted grassed buffers next to their waterway and 36 percent of all farmers have grassed the waterways.

The most commonly used practice by farmers is tile drainage. 73 percent of all landowners use tiles on their farms to prevent soil erosion and runoff. Tile outlet protection is also employed by 47 percent of farmers. Maintenance of woodlots is a water related management practice employed by 30 percent of the respondents. Less commonly used water related practices include gully control (23 percent), controlled access of livestock to waterways (15 percent), drop structures (9 percent) and ponding in the centre of fields (1 percent).

3.3 **Changes in Conservation Practices**

3.3.1 Yields and Fertilizer Use

A majority of survey respondents have noticed some change in the soil productivity of their land (51 percent). 34 percent of all farmers noted an increase in their yields while 17 percent stated that their yields had been decreasing. However, only 7 percent of farmers

thought that this decrease was major. 46 percent of farmers stated that they were not aware of any change in their soil productivity.

Half of the farmers in southwestern Ontario have not changed the amount of fertilizer or pesticide they use per acre of land in the last few years. While 28 percent of farms have experienced a increase in the use of chemicals, only 8.3 percent of the farmers consider this to be a major increase. 17 percent of all farmers have indicated that they are decreasing their use of pesticides or chemical fertilizers and some have switched to natural manure-based fertilizer.

3.3.2 Changes in Approach

Survey respondents are responsive to soil and water quality concerns. Over 43 percent of all farms have indicated that they have changed their cropping, tillage or water related conservation practices in the last 5 years. The most often stated reasons for making this change were to reduce soil erosion (28 percent of all farmers), improve crop yields (25 percent), improve soil structure (25 percent) and improve drainage (20 percent). Other reasons for the changes include: to provide more surface residue (15 percent), reduce production costs (13 percent) increase the amount of clover plowdown (12 percent) and reduce tillage (12 percent). However, only 12 percent of farmers indicated that they changed their farming practices in the interest of general economics.

3.3.3 Interest in Changes

There is a strong interest among farmers in adopting new conservation practices. Over 50 percent of the southwestern Ontario farmers indicated that they would like to make some change in their farm operations and many of these farmers had already made conservation practice improvements.

Of those farmers who responded when asked what these changes would be, 19 percent stated they would like to use no till planting, 17 percent would like to improve tile drainage and 14 percent of farmers would like to plant trees as a windbreak. Other conservation practices that farmers expressed an interest in are:

- changing plowing techniques (8 percent);
- using more crop rotation (7 percent);
- improving waterways (5 percent);
- increasing surface residue (6 percent); and
- using soil saver tillage (6 percent).

3.3.4 Barriers to Changing Conservation Practices

The most commonly stated reasons why farmers are not implementing a desired conservation change is based on economics. 68 percent of farmers who responded stated that lack of required money was the major impediment to making the change. Other farmers (34 percent of those who commented) stated that they had not implemented any changes because they were not sure how it would eventually make them more profitable. 29 percent of southwestern Ontario farmers who responded said they lacked the needed knowledge, assistance and/or equipment. Finally, a lack of a market for alternative crops was impeding desired changes for 22 percent of responding farmers.

3.4 Issues Affecting Management Planning

The survey results indicate that decisions regarding a change in farm management planning are based on economics. Section 3.3.4. indicates that the farmer is concerned about how a change in conservation practices will make his operation more efficient and profitable. Question 33 asked whether or not farm managers considered soil and water quality conservation issues when planning their budget for a new year. Only 31 percent of

respondents indicated that they did, while 54 percent stated that they made no budget allowances for conservation practices. However, these figures could be misleading because many of the respondents already were using some conservation practices and did not feel that they could afford to make further financial sacrifices. Some of the farmers who answered no indicated that such considerations were beyond their current financial means. These respondents did consider soil and water quality conservation issues when planning, but clearly felt that economics was the current priority. Therefore, we believe more farmers consider management practices in their budget than the responses to question 33 would indicate.

Another management planning issue concerns conservation practices used by the farmer on leased land. 33 percent of the farmers surveyed indicate that part or all of their farm is rented. However, of these farmers who use rented land, only 51 percent indicate that their landlord is interested in soil and water conservation issues and 32 percent of these landlords have actually invested money in conservation practices. While 72 percent of the farmers surveyed take the same approach in considering conservation practices for rented land as they do for their own property, only 10 percent stated that they are obligated to use soil and water conservation practices in their lease agreement. For 54 percent of the renting farmers, the length of their lease is one year. Many farmers have indicated in their comments (see Appendix C) that it is not worth their while to make a conservation related capital investment in their rented land because of the short length of their lease. Therefore, this would indicate that management planning for land that is continually leased on a short term basis may be less oriented to the use of conservation practices.

In summary, the analysis indicates that there is a wide prevalence of the conservation ethic in southwestern Ontario. Farmers are aware and concerned over the impacts of soil and water quality problems both on their own farms and the general environment. Soil erosion,

runoff, and compaction are of particular concern among southwestern Ontario farmers. Furthermore, survey respondents are responsive to these soil and water quality concerns; the survey indicates not only that most farmers currently use conservation practices on their farms but also a willingness to adopt new conservation techniques. Barriers to implementing conservation practices on farms are based on economics, and reflect not only a lack of money and time to improve their land practices but also an uncertainty of how the change will affect the profitability of the farm.

APPENDIX A:
Questionnaire and Covering Letter

THE SOIL AND WATER
ENVIRONMENTAL ENHANCEMENT PROGRAM

April 4, 1988

In May 1986, a \$30 million federal-provincial agreement was announced to improve soil and water quality in southwestern Ontario. The five year Soil and Water Environmental Enhancement Program (SWEEP) entails working with farmers to improve soil conservation practices. As a preliminary step, Agriculture Canada has hired The DPA Group Inc. to conduct a mail survey of farmers in southwestern Ontario to establish the attitudes towards conservation issues and the level of adoption of conservation practices. Your farm has been selected: at random and it is hoped that you take this opportunity to contribute to this important study.

Provision of the information requested on this document is voluntary and you may, without prejudice, decline to respond.

Personal information will be stored in Personal Information Bank DOA/P-PU-275, and will be protected under the provision of the Privacy Act. Other information may be accessible under the provisions of the Access to Information Act. The Government Collection Registration Number is DOA/ADB-495-02902.

Once you have completed the survey, return it by mail using the enclosed pre-paid, self-addressed envelope. Please try to return the questionnaire by May 13. If you have any questions you may wish to contact:

- Mr. Brian McGowan, The DPA Group Inc. at 416-368-1711; or
- Mr. Richard Seguin, Agriculture Canada at 519-763-5433.

AGRICULTURE CANADA

SURVEY OF SOUTHWESTERN ONTARIO FARMERS

SPRING 1988

Section B

The following statements describe a variety of soil and water quality conditions which occur in Canada. Each of these conditions may occur to some extent on farms in Southwestern Ontario. Read each condition and circle the response which best describes your opinion of whether or not this condition is a problem for Southwestern Ontario. If you consider it to be a problem, indicate how serious you think it is. The choices are:

Does this condition occur frequently enough to be a problem for Southwestern Ontario?			If it is a problem, how serious do you think it is?							
Don't Know	No	Yes	Not Serious				Very Serious			
X	N	Y	1	2	3	4	5			
11. When the supply of rain and melted snow exceeds the soil's ability to absorb, the excess water flows down slopes and causes sheet, rill or gully erosion. Soils which don't have a suitable trash cover, crop residue or winter crop are particularly vulnerable to this type of erosion.			X	N	Y	1	2	3	4	5
12. Dry soil conditions and bare unprotected fields are susceptible to erosion from high winds.			X	N	Y	1	2	3	4	5
13. Cultivating up and down slopes increases the risk of soil loss during periods of heavy rainfall.			X	N	Y	1	2	3	4	5
14. Acidification of agricultural soils increases with the use of nitrogen and sulfur based fertilizers. Serious acidification can cause a decrease in crop yields.			X	N	Y	1	2	3	4	5
15. When the soil is very wet and cultivated for field crops which require extensive tillage, the soil may become compacted. As the soil is compressed, drainage and aeration conditions worsen and the risk of erosion increases.			X	N	Y	1	2	3	4	5
16. Organic matter in the soil provides nutrients for crops and helps keep a stable soil structure. Under intensive cultivation, the amount of organic matter in the soil may decrease and this increases the risk of compaction.			X	N	Y	1	2	3	4	5
17. Open ditches or streams without soil conserving protection increases the risk of soil erosion, sediment accumulation and reduced water quality.			X	N	Y	1	2	3	4	5
18. Runoff from cultivated land contains soil and both natural and chemical nutrients. Uncontrolled runoff reduces the soil's nutrient base and increases the risk of surface and ground water contamination. This reduces water quality for drinking, fish habitat and recreational use.			X	N	Y	1	2	3	4	5

19. Which (if any) of the following problems have you observed on your farm during the past two years? If a problem exists, indicate how serious the problem is. **(Circle the appropriate response)**

	Not a Problem	Not Serious				Very Serious
sheet erosion	0	1	2	3	4	5
rill erosion	0	1	2	3	4	5
gully erosion	0	1	2	3	4	5
wind erosion	0	1	2	3	4	5
compaction	0	1	2	3	4	5
loss of organic matter	0	1	2	3	4	5
ditch bank erosion	0	1	2	3	4	5
poor water quality	0	1	2	3	4	5
acidification	0	1	2	3	4	5
Other: _____						

Section C

There is a variety of agricultural practices which can be used to reduce soil erosion, increase productivity and improve water quality. This section concerns the conservation management practices which you may be using.

20. Do you use crop rotation? **(circle answer)** **yes** **no**

If you do, check which of the following you use:

- _____ row crops only
- _____ row crops and cereals
- _____ row crops, cereals and forage
- _____ row crops and forage
- _____ cereals and forage
- _____ forage and pasture

21. Indicate which of the following practices you have used in the past 2 years by circling a YES, NO or Don't Know. If you use a particular practice, indicate the approximate number of acres involved.

				Acres
winter crop cover	don't know	yes	no	_____
strip cropping	don't know	yes	no	_____
cross slope cropping	don't know	yes	no	_____
clover plowdown	don't know	yes	no	_____
other:				
_____				_____
_____				_____

22. Indicate which of the following machinery you use for primary tillage by checking the season of use.

	Fall	Spring
mold board plow	_____	_____
chisel plow	_____	_____
offset discs or tandem discs	_____	_____
no till planter	_____	_____
other:		
_____	_____	_____
_____	_____	_____
none	_____	_____

23. Indicate which of the following machinery you use for secondary tillage by checking the season of use.

	Fall	Spring
field cultivator	_____	_____
spring tooth cultivator	_____	_____
drag harrows	_____	_____
discs	_____	_____
cultimulcher or cultipacker	_____	_____
other:		
_____	_____	_____
_____	_____	_____
none	_____	_____

24. Do you have an open water course on or next to your land? **(circle answer) yes no**

25. Check which of the following (if any) water related conservation practices you are using.

_____ tile drainage	_____ maintenance of woodlots
_____ tile outlet protection	_____ grassed waterway
_____ gully control	_____ drop structures
_____ controlled access of livestock to streams	
_____ grassed or vegetation covered buffers next to waterways	
_____ other: _____	

26. In your opinion, how important is it for SW Ontario's farmers to reduce the amount of soil erosion and runoff because of its impact on:

	I Don't Know	Not Important				Very Important
	X	1	2	3	4	5
a) land productivity	X	1	2	3	4	5
b) neighbouring farms	X	1	2	3	4	5
c) general environment	X	1	2	3	4	5

27. Have you noticed any change in the yield or soil productivity of your farm over the past years!

Increase	No Change	Minor Decrease					Large Decrease
X	N	Y	1	2	3	4	5

28. Have you noticed any change in the amount of fertilizer or pesticide per acre which you have used in the past 5 years?

Decrease	No Change	Minor Increase					Large Increase
X	N	Y	1	2	3	4	5

29. In the last 5 years, have you changed or added any cropping, tillage or water related conservation practices like those described in questions 20, 21, 22, 23 and 25? (circle **one**) **yes no**
If you have not changed; skip to question 31.

If you have changed; what did you change?	Acres Involved
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

30. Check which of the following best describes the reasons why you made the change. (You may check **more than one.**)

- | | |
|---|--|
| <input type="checkbox"/> reduce soil erosion | <input type="checkbox"/> improve soil structure |
| <input type="checkbox"/> improve crop yields | <input type="checkbox"/> reduce tillage |
| <input type="checkbox"/> more plowdown | <input type="checkbox"/> reduce production costs |
| <input type="checkbox"/> changed crops or enterprise | <input type="checkbox"/> changed fertilizer or pesticide usage |
| <input type="checkbox"/> changed equipment | <input type="checkbox"/> more crop rotation |
| <input type="checkbox"/> improve drainage | <input type="checkbox"/> general economics |
| <input type="checkbox"/> provide more surface residue | |
| <input type="checkbox"/> other: _____ | |
| _____ | |

31. Are there any soil conservation practices which you would like to adopt? **yes no**
If not; skip to question 33.

If there are; Please describe these.

32. Check the statement which best describes why you have not yet made the change. **(You may check more than one.)**

- lack of money required for the change
- not sure how it will eventually make me more profitable
- lack of time
- lack of the needed knowledge, assistance or equipment
- lack of market for the alternative crops
- there are physical restrictions (i.e. rocks, drainage)
- other:

33. Do you consider soil and water quality conservation issues when you plan your farm budget for a new year? **(circle answer)** **yes** **no**
If you do; how do these conservation factors affect the way you manage your farm?

34. If you own all of your farm land, skip to question 40. **If not:** When considering soil and water quality conservation issues, do you take the same approach to operating your rented land as you take with your own land? **(Circle answer)** **Yes** **No**

If Yes skip to question 36.

35. If no: Check which (if any) of the following practices you use on your rented property:

- | | |
|---|---|
| <input type="checkbox"/> row crops only | <input type="checkbox"/> winter crop cover |
| <input type="checkbox"/> row crops and cereals | <input type="checkbox"/> strip cropping |
| <input type="checkbox"/> row crops, cereals, and forage | <input type="checkbox"/> cross slope cropping |
| <input type="checkbox"/> conservation tillage | <input type="checkbox"/> clover plowdown |

36. How would you describe your landlord's level of interest in soil and water conservation issues?

No interest **Very Interested**
1 **2** **3** **4** **5**

37. Has your landlord invested any money in soil or water conservation structures? **(Circle answer)** **Yes** **No**

38. Is there any obligation in your rental agreement to use soil or water conservation practices? **(Circle answer)** **Yes** **No**

39. What is the typical length of your rental agreement (in years)? _____

Section D

This last section covers general personal information which will help us to analyse the survey results.

40. Check the level of gross sales which your farm generated last year.

- | | |
|---|--|
| <input type="checkbox"/> less than \$10,000 | <input type="checkbox"/> \$51,000 to \$75,000 |
| <input type="checkbox"/> \$10,000 to \$25,000 | <input type="checkbox"/> \$76,000 to \$150,000 |
| <input type="checkbox"/> \$26,000 to \$35,000 | <input type="checkbox"/> over \$150,000 |
| <input type="checkbox"/> \$36,000 to \$50,000 | |

41. How many years have you been farming at this location? _____

42. Check the age category of the farm manager.

- | | | |
|-----------------------------------|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> 15 to 19 | <input type="checkbox"/> 35 to 44 | <input type="checkbox"/> 65 to 69 |
| <input type="checkbox"/> 20 to 24 | <input type="checkbox"/> 45 to 54 | <input type="checkbox"/> over 69 |
| <input type="checkbox"/> 25 to 34 | <input type="checkbox"/> 55 to 64 | |

43. Check the highest level of education which the farm manager has attained.

- | | |
|--|--|
| <input type="checkbox"/> elementary (1 - 8) | <input type="checkbox"/> some community college or university |
| <input type="checkbox"/> some high school | <input type="checkbox"/> completed community college or university |
| <input type="checkbox"/> completed high school | <input type="checkbox"/> agricultural diploma |

44. If you have any comments to add about problems or conservation practices, please record them in this area.

During our analysis of the results we may want some clarification about some of the problems raised. Please put your name and phone number in the space provided if you would be available for further comment.

NAME _____

PHONE NUMBER _____

Personal information will be protected under the provision under the Privacy Act.

Once you have completed the survey, return it by mail using the enclosed pre-paid, self-addressed envelope. If you have any questions or concerns, please contact Mr. Brian McGowan, The DPA Group Inc. at 416-368-1711 or Mr. Richard Seguin, Agriculture Canada at 519-763-5433.

Thank you for your time and assistance.

APPENDIX B:
Analysis of Survey

Section A

The following questions cover general information about your operation.

1. The farm is located in the county of:

	Observations	
Essex	22	9.1%
Lambton	20	8.3%
Elgin	18	7.5%
Haldimand-Norfolk	16	6.6%
Waterloo	15	6.2%
Perth	22	9.1%
Huron	19	7.9%
Kent	14	5.8%
Middlesex	17	7.1%
Oxford	26	10.8%
Brant	17	7.1%
Wellington	14	5.8%
Hamilton-Wentworth	<u>21</u>	<u>8.7%</u>
Total	241	100.0%

2. Do you manage the farm operation?

	Observations	
Yes	226	93.8%
No	14	5.8%
No Response	<u>1</u>	<u>0.4%</u>
Total	241	100.0%

3. How much of the farm land do you own?

	Observations	
All	163	67.6%
Part	71	29.5%
None	7	2.9%
No Response	<u>0</u>	<u>0.0%</u>
Total	241	100.0%

4. The farm operation covers a total acreage of:

	Observations	
1 to 10 acres	15	6.2%
11 to 50 acres	31	12.9%
51 to 100 acres	50	20.7%
101 to 150 acres	49	20.3%
151 to 200 acres	38	15.8%
200 acres or more	58	24.1%
No Response	0	0.0%
Total	241	100.0%

The average acreage of a farm in Southwestern Ontario is 175 acres.

5. Was any of the acreage used for crop production?

	Observations	
Yes	232	96.3%
No	8	3.3%
No Response	1	0.4%
Total	241	100.0%

6. The total acreage of owned land is:

	Observations	
1 to 10 acres	11	4.6%
11 to 50 acres	44	18.3%
51 to 100 acres	68	28.2%
101 to 150 acres	41	17.0%
151 to 200 acres	20	8.3%
200 acres or more	34	14.1%
No Response	15	6.2%
Not Applicable	8	3.3%
Total	241	100.0%

The average acreage of owned land for crop production is 106 acres (based on 163 observations).

The total acreage of rented land is:

	Observations	
1 to 10 acres	9	3.7%
11 to 50 acres	16	6.6%
51 to 100 acres	25	10.4%
101 to 150 acres	14	5.8%
151 to 200 acres	6	2.5%
200 acres or more	7	2.9%
No Response	15	6.2%
Not Applicable	149	61.8%
Total	241	100.0

The average acreage of rented land used for crop production is 100 acres (based on 78 observations).

7. The crops cultivated were:

	Observation	Average acreage
Grain Corn	143	80
Spring Cereal or Oil Seed	99	39
Forage	86	51
Fall Cereal or Oil Seed	65	36
Soybeans, 20-30" rows	52	74
Silage Corn	46	31
Soybeans, aver. 12" rows	33	64
Hay	30	1
Tobacco	23	25
Vegetables	22	27
White Beans	20	55
Garden Crops	15	13
Oats and Barley	9	2
Nursery Crops	8	3
Wheat	4	0
Maple Syrup	2	7
Ginseng	1	8
No Response	12	

8. Did you keep any livestock on the farm in 1987?

	Observations	
Yes	134	55.6%
No	102	42.3%
No Response	5	2.1%
Total	241	100

9. The stocks typically were:

	Observations	Average # of Head
Beef	63	49
Swine	55	352
Dairy	40	57
Feedlot Cattle	25	116
Laying Hens	23	764
Broilers	8	108,588
Sheep	6	34
Horses	3	7
Turkeys	3	80
Goats	2	81
Rabbits	1	20
Honey Bee Hives	1	15
No Response	105	

10. Indicate how you would describe your farm enterprise by placing a "1" next to the most important category. (Where appropriate, place a "2" next to the second most important category.)

	"1"	"2"	"3"
Cash Crop	77	54	6
Beef	37	24	5
Dairy	29	4	4
Swine	28	11	5
Fruit or Veg.	17	9	0
Tobacco	12	2	1
Hobby Farm	9	7	1
Poultry	9	2	3
Nursery Crops	3	2	1
Maple Syrup	2	2	1
Standing Crop	1	1	0
Horses	1	0	0
Sheep	0	3	0
Veal	0	1	1
No Response	13		

Section B

The following statements describe a variety of soil and water quality conditions which occur in Canada. Each of these conditions may occur to some extent on farms in Southwestern Ontario. Read each condition and circle the response which best describes your opinion of whether or not this condition is a problem for Southwestern Ontario. If you consider it to be a problem, indicate how serious you think it is.

The choices are:

Does this condition occur frequently enough to be a problem for SW Ontario?			If it is a problem, how serious do you think it is?				
Don't Know	No	Yes	Not	Serious			Very
X	N	Y		1	2	3	4
							5

11. When the supply of rain and melted snow exceeds the soil's ability to absorb, the excess water flows down slopes and causes sheet, rill and gully erosion. Soils which don't have a suitable trash cover, crop residue or winter crop are particularly vulnerable to this type of erosion.

		Observations	
Yes	190		78.8%
No	36		14.9%
Don't Know	15		6.2%
Total	241		100.0%

Of the 190 farm managers who believe this to be a problem:

Not Serious	1	14	7.4%
	2	28	14.7%
	3	58	30.5%
	4	53	27.9%
Very Serious	5	35	18.4%
No Response		2	1.1%
Total		190	100.0%

12. Dry soil conditions and bare unprotected fields are susceptible to erosion from high winds.

	Observations	
Yes	199	82.6%
No	31	12.9%
Don't Know	11	4.6%
Total	241	100.0%

Of the 199 farm managers who believe this to be a problem:

Not Serious	1	27	13.6%
	2	36	18.1%
	3	47	23.6%
	4	41	20.6%
Very Serious	5	44	22.1%
No Response		4	2.0%
Total		199	100.0%

13. Cultivating up and down bare slopes increases the risk of soil loss during periods of heavy rainfall.

	Observations	
Yes	191	79.3%
No	29	12.0%
Don't Know	21	8.7%
Total	241	100

Of the 191 farm managers who believe this to be a problem:

November 16, 2004

Not Serious	1	24	12.6%
	2	29	15.2%
	3	43	22.5%
	4	45	23.6%
Very Serious	5	44	23.0%
No Response		6	3.1%
Total		191	100.0%

14. Acidification of agricultural soils increases with the use of nitrogen and sulfur based fertilizers. Serious acidification can cause a decrease in crop yields.

	Observations	
Yes	109	45.2%
No	44	18.3%
Don't Know	88	36.5%
Total	241	100.0%

Of the 109 farm managers who believe this to be a problem:

Not Serious	1	21	19.3%
	2	31	28.4%
	3	25	22.9%
	4	13	11.9%
Very Serious	5	18	16.5%
No Response		1	0.9%
Total		109	100.0%

15. When the soil is very wet and cultivated for field crops which require extensive tillage, the soil may become compacted. As the soil is compressed, drainage and aeration conditions worsen and the risk of erosion increases.

	Observations	
Yes	176	73.0%
No	32	13.3%
Don't Know	33	13.7%
Total	241	100.0%

Of the 176 farm managers who believe this to be a problem:

Not Serious	1	17	9.7%
	2	26	14.8%
	3	49	27.8%
	4	36	20.5%
Very Serious	5	44	25.0%
No Response		4	2.3%
Total		176	100.0%

16. Organic matter in the soil provides nutrients for crops and helps keep a stable soil structure. Under intensive cultivation, the amount of organic matter in the soil may decrease and this increases the amount of compaction.

	Observations	
Yes	184	76.3%
No	20	8.3%
Don't Know	37	15.4%
Total	<u>241</u>	<u>100.0%</u>

Of the 184 farm managers who believe this to be a problem:

Not Serious	1	17	9.2%
	2	32	17.4%
	3	56	30.4%
	4	49	26.6%
Very Serious	5	25	13.6%
No Response		5	2.7%
Total		<u>184</u>	<u>100.0%</u>

17. Open ditches or streams without soil conserving protection increases the risk of soil erosion, sediment accumulation and reduced water quality.

	Observations	
Yes	193	80.1%
No	19	7.9%
Don't Know	29	12.0%
Total	<u>241</u>	<u>100.0%</u>

Of the 193 farm managers who believe this to be a problem:

Not Serious	1	19	9.8%
	2	34	17.6%
	3	52	26.9%
	4	46	23.8%
Very Serious	5	32	16.6%
No Response		10	5.2%
Total		<u>193</u>	<u>100.0%</u>

18. Runoff from cultivated land contains soil and both natural and chemical nutrients. Uncontrolled runoff reduces the soil's nutrient base and increases the risk of surface and groundwater contamination. This reduces water quality for drinking, fish habitat and recreational use.

	Observations	
Yes	197	81.7%
No	20	8.3%
Don't Know	24	10.0%
Total	241	100.0%

Of the 197 farm managers who believe this to be a problem:

Not Serious	1	17	8.6%
	2	34	17.3%
	3	51	25.9%
	4	40	20.3%
Very Serious	5	48	24.4%
No Response		7	3.6%
Total		197	100.0%

19. Which (if any) of the following problems have you observed on your farm during the past two years? If a problem exists, indicate how serious the problem is.

			Observations	
Sheet Erosion	Not A Problem	0	153	63.5%
	Not Serious	1	48	19.9%
		2	15	6.2%
		3	17	7.1%
		4	5	2.1%
	Very Serious	5	3	1.2%
	No Response		0	0.0%
	Total		241	100.0%

Rill Erosion	Not A Problem	0	142	58.9%
	Not Serious	1	45	18.7%
		2	32	13.3%
		3	10	4.1%
		4	9	3.7%
		5	3	1.2%
	Very Serious	5	3	1.2%
	No Response		0	0.0%
Total		241	100.0%	
Gully Erosion	Not A Problem	0	126	52.3%
	Not Serious	1	47	19.5%
		2	25	10.4%
		3	19	7.9%
		4	16	6.6%
		5	8	3.3%
	Very Serious	5	8	3.3%
	No Response		0	0.0%
Total		241	100.0%	
Wind Erosion	Not A Problem	0	113	46.9%
	Not Serious	1	49	20.3%
		2	35	14.5%
		3	24	10.0%
		4	17	7.1%
		5	3	1.2%
	Very Serious	5	3	1.2%
	No Response		0	0.0%
Total		241	100.0%	
Compaction	Not A Problem	0	96	39.8%
	Not Serious	1	53	22.0%
		2	38	15.8%
		3	34	14.1%
		4	12	5.0%
		5	8	3.3%
	Very Serious	5	8	3.3%
	No Response		0	0.0%
Total		241	100.0%	

Loss of Organic Matter	Not A Problem	0	131	54.4%
	Not Serious	1	46	19.1%
		2	28	11.6%
		3	25	10.4%
		4	5	2.1%
		5	6	2.5%
	Very Serious	5	6	2.5%
	No Response		0	0.0%
Total			241	100.0%
Ditch Bank Erosion	Not A Problem	0	144	59.8%
	Not Serious	1	39	16.2%
		2	20	8.3%
		3	16	6.6%
		4	17	7.1%
		5	5	2.1%
	Very Serious	5	5	2.1%
	No Response		0	0.0%
Total			241	100.0%
Poor Water Quality	Not A Problem	0	160	66.4%
	Not Serious	1	34	14.1%
		2	14	5.8%
		3	15	6.2%
		4	8	3.3%
		5	10	4.1%
	Very Serious	5	10	4.1%
	No Response		0	0.0%
Total			241	100.0%
Acidification	Not A Problem	0	167	69.3%
	Not Serious	1	42	17.4%
		2	18	7.5%
		3	8	3.3%
		4	4	1.7%
		5	2	0.8%
	Very Serious	5	2	0.8%
	No Response		0	0.0%
Total			241	100.0%

Section C

There is a variety of agricultural practices which can be used to reduce soil erosion, increase production and improve water quality. This section concerns the conservation management practices which you maybe using.

20. Do you use crop rotation?

	Observations	
Yes	205	85.1%
No	26	10.8%
No Response	10	4.1%
Total	241	100.0%

If you do, check which of the following you use:

Row crops, cereals and forage	91	44.4%
Row crops and cereals	69	33.7%
Forage and pasture	36	17.6%
Cereals and forage	32	15.6%
Row crops only	26	12.7%
Row crops and forage	11	5.4%

(Percentages based on 205 observations)

21. Indicate which of the following practices you have used in the past two years by circling a Yes, No or Don't Know. If you use a particular practice, indicate the approximate number of acres involved.

		Observations	
Winter crop cover	Yes	131	54.4%
	No	105	43.6%
	Don't Know	5	2.1%
Total		241	100.0%

The average acreage used for winter crop cover is 47 acres (based on 131 observations)

Strip cropping	Yes	23	9.5%
	No	213	88.4%
	Don't Know	5	2.1%
	Total	241	100.0%

The average acreage used for strip cropping is 54 acres(based on 23 observations)

Cross slope cropping	Yes	33	13.7%
	No	204	84.6%
	Don't Know	4	1.7%
	Total	241	100.0%

The average acreage used for cross slope cropping is 48 acres
(based on 33 observations)

Clover plowdown	Yes	99	41.1%
	No	138	57.3%
	Don't Know	4	1.7%
	Total	241	100.0%

The average acreage used for clover plowdown is 34 acres
(based on 99 observations)

Other practices	Yes	16	6.6%
	No	221	91.7%
	Don't Know	4	1.7%
	Total	241	100.0%

The average acreage used for other practices is 64 acres
(based on 16 observations)

Other practices include: trash cover, increasing residue, no fall plowing, forage crops, grassed waterways, hay crops, woodlots, straw manure, and seeding between crop rows.

22. Indicate which of the following machinery you use for primary tillage by checking the season of use.

		Observations	
Mold board plow	Fall	140	58.1%
	Spring	27	11.2%
	Both Seasons	30	12.4%
	No Response	44	18.3%
	Total	241	100.0%
Chisel plow	Fall	43	17.8%
	Spring	11	4.6%
	Both Seasons	8	3.3%
	No Response	179	74.3%
	Total	241	100.0%
Offset discs or tandem discs	Fall	14	5.8%
	Spring	61	25.3%
	Both Seasons	19	7.9%
	No Response	147	61.0%
	Total	241	100.0%
No till planter	Fall	2	0.8%
	Spring	7	2.9%
	Both Seasons	1	0.4%
	No Response	231	95.9%
	Total	241	100.0%
Other machinery	Fall	6	2.5%
	Spring	2	0.8%
	Both Seasons	4	1.7%
	No Response	229	95.0%
	Total	241	100.0%

Other machinery used for primary tillage are: field cultivator, danish cultivator, land packers and harrows, triplek cultivator, and soil saver machinery.

Three respondents (1.2%) indicated that they used no machinery for primary tillage.

23. Indicate which of the following machinery you use for secondary tillage by checking the season of use.

		Observations	
Field cultivator	Fall	12	5.0%
	Spring	114	47.3%
	Both Seasons	19	7.9%
	No Response	96	39.8%
	Total	241	100.0%
Spring tooth cultivator	Fall	8	3.3%
	Spring	98	40.7%
	Both Seasons	13	5.4%
	No Response	122	50.6%
	Total	241	100.0%
Drag harrows	Fall	4	1.7%
	Spring	84	34.9%
	Both Seasons	7	2.9%
	No Response	146	60.6%
	Total	241	100.0%
Discs	Fall	15	6.2%
	Spring	105	43.6%
	Both Seasons	17	7.1%
	No Response	104	43.2%
	Total	241	100.0%
Cultimulcher or cultipacker	Fall	4	1.7%
	Spring	52	21.6%
	Both Seasons	2	0.8%
	No Response	183	75.9%
	Total	241	100.0%

Other machinery	Fall	2	0.8%
	Spring	6	2.5%
	Both Seasons	3	1.2%
	No Response	230	95.4%
	Total	241	100.0%

Other machinery used for secondary tillage are: soil finisher, rotara, triplek cultivator, and soil saver machinery.

Three respondents (1.2%) indicated that they used no machinery for secondary tillage.

24. Do you have an open water course on or next to your land? Observations

Yes	167	69.3%
No	65	27.0%
No Response	9	3.7%
Total	241	100.0%

25. Check which of the following (if any) water related practices you are using.

	Observations	
Tile drainage	177	73.4%
Tile outlet protection	112	46.5%
Grassed buffers next to waterways	94	39.0%
Grassed waterway	87	36.1%
Maintenance of woodlots	72	29.9%
Gully control	55	22.8%
Controlled access of livestock to streams	35	14.5%
Drop structures	21	8.7%
Ponding in center of field	3	1.2%
No Response	22	9.1%

Percentages are based on the total sample size of 241 observations.

26. In your opinion, how important is it for SW Ontario's farmers to reduce the amount of soil erosion and runoff because of its impact on:

			Observations	
Land productivity	I Don't Know	0	29	12.0%
	Not important	1	6	2.5%
		2	14	5.8%
		3	30	12.4%
		4	42	17.4%
	Very important	5	120	49.8%
	Total		241	100.0%
Neighbouring farms	I Don't Know	0	14	5.8%
	Not important	1	21	8.7%
		2	39	16.2%
		3	36	14.9%
		4	85	35.3%
	Very important	5	46	19.1%
	Total		241	100.0%
General environment	I Don't Know	0	4	1.7%
	Not important	1	20	8.3%
		2	39	16.2%
		3	43	17.8%
		4	103	42.7%
	Very important	5	32	13.3%
	Total		241	100.0%

27. Have you noticed any change in the yield or soil productivity of your farm over the past 5 years?

			Observations	
Increase			81	33.6%
No Change			110	45.6%
Minor Decrease	1		18	7.5%
	2		8	3.3%
	3		7	2.9%
	4		7	2.9%
Major Decrease	5		2	0.8%
No Response			8	3.3%
Total			241	100.0%

28. Have you noticed any change in the amount of fertilizer or pesticide per acre which you have used in the past five years? Observations

Decrease		41	17.0%
No Change		121	50.2%
Minor Increase	1	31	12.9%
	2	18	7.5%
	3	8	3.3%
	4	7	2.9%
Major Increase	5	5	2.1%
No Response		10	4.1%
Total		241	100.0%

29. In the last 5 years, have you changed or added any cropping, tillage or water related conservation practices like those described in questions 20, 21, 22, 23, and 25?

	Observations	
Yes	105	43.6%
No	101	41.9%
No Response	35	14.5%
Total	241	100.0%

If you have changed; what did you change?

	Observations	
More Tile Drainage	25	23.8%
Clover Plowdown	31	29.5%
Reduced Tillage	10	9.5%
Changed Plowing Techniques	20	19.0%
Winter Crop Cover	10	9.5%
Crop Rotation	9	8.6%
Increased Forages	9	8.6%
Berm Construction	7	6.7%
Plow Leaving More Residue	4	3.8%
Use of Soil Saver Machinery	4	3.8%
Catch Basin To Prevent Ponding	3	2.9%
Other	21	20.0%
No Response	9	8.6%

Percentages are based on the 105 farmers who made changes.

30. Check which of the following best describes the reasons why you made the change. (You may check more than one).

		Observations
Reduce soil erosion	68	28.2%
Improve soil structure	61	25.3%
Improve crop yields	61	25.3%
Improve drainage	47	19.5%
Provide more surface residue	37	15.4%
More crop rotation	33	13.7%
Reduce production costs	32	13.3%
Reduce tillage	30	12.4%
More plowdown	30	12.4%
General economics	29	12.0%
Changed fertilizer or pesticide usage	13	5.4%
Changed crops or enterprise	10	4.1%
Changed equipment	9	0.0%
Other	0	0.0%
No Response	0	0.0%

Percentages are based on total sample size of 241 observations.

31. Are there any conservation practices which you would like to adopt? Observations

Yes	122	50.6%
No	78	32.4%
No Response	41	17.0%
Total	241	100.0%

If there are; Please describe these.

	Observations	
No Till Planting	17	13.9%
Improve Tile drainage	15	12.3%
Plant Trees As A Wind Break	13	10.7%
Use Crop Rotation	6	4.9%
Change Plowing Techniques	7	5.7%
Improve Waterways	5	4.1%
Clover Plowdown	4	3.3%
Increase Surface Residue	4	3.3%
Soil Saver Tillage	3	2.5%
Increase General Ground Cover	3	2.5%
Reduce Compaction	3	2.5%
Other	11	9.0%
No Response	31	25.4%

Percentages are based on the 122 farmers who would like to make changes

32. Check the statement which best describes why you have not yet made the change. (You may check more than one.)

	Observations	
Lack of money required for the change	90	37.3%
Not sure how it will eventually make me more profitable	45	18.7%
Lack of time	29	12.0%
Lack of needed knowledge, assistance or equipment	38	15.8%
Lack of market for the alternative crops	24	10.0%
There are physical restrictions (i.e.rocks, drainage)	7	2.9%
Other	4	1.7%
No Response	109	45.2%

Percentages are based on the total sample size of 241 observations.

33. Do you consider soil and water quality conservation issues when you plan your farm budget for a new year?

	Observations	
Yes	74	30.7%
No	131	54.4%
No Response	36	14.9%
Total	241	100

34. If you own all of your farm land, skip to question 40. If not: When considering soil and water quality conservation issues, do you take the same approach to operating your rented land as you take with your own land?

	Observations	
Yes	56	23.2%
No	9	3.7%
No Response	13	5.4%
Not Applicable	163	67.6%
Total	241	32.4%

Percentages are based on the total sample size of 241 observations.

35. If no: Check which (if any) of the following practices you use on your rented property:

	Observations	
Row crops only	2	3.6%
Row crops and cereals	6	10.7%
Row crops, cereals, and forage	3	5.4%
Conservation tillage	5	8.9%
Winter crop cover	4	7.1%
Strip cropping	2	3.6%
Cross slope cropping	3	5.4%
Clover plowdown	5	8.9%
No Response	26	46.4%
Total	56	100.0%

36. How would you describe your landlord's level of interest in soil and water conservation issues?

		Observations	
No Interest	1	18	23.1%
	2	17	21.8%
	3	19	24.4%
Very	4	13	16.7%
Interested	5	8	10.3%
No Response		3	3.8%
Total		78	100.0%

Percentages are based on the 78 farmers who rent land.

37. Has your landlord invested any money in soil or water conservation structures?

	Observations	
Yes	25	32.1%
No	50	64.1%
No Response	3	3.8%
Total	78	100.0%

Percentages are based on the 78 farmers who rent land.

38. Is there any obligation in your rental agreement to use soil or water conservation practices?

	Observations	
Yes	8	10.3%
No	65	83.3%
No Response	5	6.4%
Total	78	100.0%

Percentages are based on the 78 farmers who rent land.

39. What is the typical length of your rental agreement (in years)?

	Observations	
One year	42	53.8%
Two years	0	0.0%
Three years	7	9.0%
Four years	2	2.6%
Five years	6	7.7%
Six to ten years	4	5.1%
Indefinite	6	7.7%
No Response	11	14.1%
Total	78	100.0%

Percentages are based on the 78 farmers who rent land.

Section D

This last section covers general personnel information which will help us to analyse the survey results.

40. Check the level of gross sales which your farm generated last year

	Observations	
less than \$10,000	29	12.0%
\$10,000 to \$25,000	47	19.5%
\$26,000 to \$35,000	20	8.3%
\$36,000 to \$50,000	22	9.1%
\$51,000 to \$75,000	18	7.5%
\$76,000 to \$150,000	51	21.2%
over \$150,000	44	18.3%
No Response	10	4.1%
Total	241	100.0%

41. How many years have you been farming at this location?

	Observations	
1 to 5 years	26	10.8%
6 to 10 years	46	19.1%
11 to 15 years	35	14.5%
16 to 20 years	29	12.0%
21 to 25 years	18	7.5%
26 to 30 years	22	9.1%
31 to 35 years	12	5.0%
36 to 40 years	13	5.4%
40 years or more	30	12.4%
No Response	10	4.1%
Total	241	100

42. Check the age category of the farm manager.

	Observations	
15 to 19	1	0.4%
20 to 24	3	1.2%
25 to 34	40	16.6%
35 to 44	51	21.2%
45 to 54	58	24.1%
55 to 64	57	23.7%
65 to 69	18	7.5%
Over 69	12	5.0%
No Response	1	0.4%
Total	241	100.0%

43. Check the highest level of education which the farm manager has attained.

	Observations	
Elementary	53	22.0%
Some high school	51	21.2%
Completed high school	43	17.8%
Some community college	21	8.7%
or university	40	16.6%
Agricultural diploma	29	12.0%
No Response	4	1.7%
Total	241	100.0%

APPENDIX C:

Conservation Comments from Farmers

Conservation Comments from Farmers

The Spring 1988 Agriculture Canada Survey of Southwestern Ontario Farmers generated conservation related comments which were intended for representatives of SWEEP and which may provide further insight into farmer's concerns. The questions involved were Number 33 - "Conservation consideration and farm budgets" and Number 44 - "General problems or conservation practices." All relevant comments have been documented by question number in this appendix.

Question 33: "Do you consider soil and water quality conservation issues when you plan your farm budget for a new year? If you do: how do these conservation factors affect the way you manage your farm?"

- I hesitate to make changes in tilling practices because of the risk of not producing as many bushels per acre as minimum tillage crops.
- I maintain most of my land in hay and pasture and try to make some money available for conservation improvements each year.
- At present time I do not have enough money to be trying new things that I am not sure will pay off. I need all of the money I make to stay alive! I am trying desperately to improve my efficiency so I can improve yields with as little expense as possible. My gross income used to be \$125,000 to \$160,000 in 79 to 83, now it is \$50,000 to \$75,000! I have no room to experiment now! If I make money and have a normal living once again, I would like to try some small experiments on small fields.
- With the financial pressures on farmers today if you do not make it financially advantageous to use better conservation practices, you will fail in your attempt to curb harmful farming practices. I am seeking to implement better techniques because of my christian convictions that I need to be a good steward of the land and because I have off farm income to offset financial losses that I am incurring because I am using improved conservation methods. There is a limit to what I can absorb financially.
- I now leave corn stalks on top to prevent wind erosion over winter. I have reduced spraying and increased winter crop cultivation.

Question 44: "If you have any comments to add about problems or conservation practices, please record them in this area."

- The great productive soils of SouthWestern Ontario must be protected for generations to come - but we cannot expect this to be done at the expense of farmers alone. I love the soil but I also have to make a living for my family.
- I would like to see more information on organic farming practices become available to find out if weed and insects could be controlled in ways other than with chemicals. Also, I would like to use less chemicals in order to preserve our air and water supplies and health.
- Water testing (well water on farms) should be readily available and free to all who require it. The government should provide help and information about developing erosion control measures and the surveying and design of plans. OMAF personnel should help with drainage problems instead of the farmer being told to go and hire a drainage contractor.
- We see the main problem in this area as lack of tile drainage . Landlords do not make enough money in rent to tile drain and the farmers renting can not get a long term lease to make it viable.
- Too high concentrations of pesticides and chemicals are being used in S.W. Ont. This changes the natural resistance of soils and mammals, etc. Not enough crop rotation is used.
- Acid rain is a problem. Farmers should have assistance to put lime on the land. In the last five years acidification has become a serious problem.
- I would like to see legislation that would make people liable for run-off and soil deposits etc on others' land.
- Non-farming landowners tend to be interested in maximizing rentals. Farmers often do not farm their own land and rented land in the same way. Rented land usually must be farmed intensively in new crops to achieve profits. There is little or no interest in forage rotation. As more land is rented out, this will become the most serious problem in soil conservation (if it is not already) in Ontario. Most landlords are reluctant to enter into long term lease (more than one year).
- Ditch banks should be grown with clover or something of that nature to reduce production.

- There is much emphasis on soil conservation but the consumer and processor are not willing to pay for some of the immediate expenses in the short term e.g., lower yields and returns, cost of sophisticated equipment and machinery.
- Many of the erosion and conservation problems of the last 10 years have been caused by agricultural economics. A majority of farmers cannot plan long term conservation practices while the government practices short term "band-aid" policies.
- In 1987 the erosion control grant was introduced. Since then tile has increased by 1/3 in price. We do not agree with the raised cost of tile. How can farmers be expected to take advantage of this program if the costs are increased?
- With the decrease in tobacco acreage in this area there is more and more land being worked up and used for other crops like beans and corn. This leaves the land bare. Wind erosion is our biggest problem in this area.
- I am in favour of field coverage as much as possible - cross slope cultivation and planting trees on marginal lands. I use evergreen trees to cut down on wind erosion and to increase oxygen in the air.
- Soil conservation - not enough financial incentives from government. Should be #1 priority.
- I think these modern 100 H.P. tractors with their four wheel drive wheels and other large machinery not only compact the soil but they also have a detrimental effect on the efficiency of the field tile.
- We are in process of changing to soil conservation practices during the last 2-3 years. We are still experimenting with equipment and methods of using it.
- I feel that farmers must take soil and water conservation seriously and combine it with their farming operations. Land is in trust when you are farming it and should be preserved for future generations.
- I am hesitant about pointing fingers but as the son of a tobacco farmer, my father has, as all other tobacco farmers, over the past 30 years actually turned a dust bowl into Ontario's BEST AGRICULTURE LAND.
- The land stewardship program was very good but without sufficient funding the programs are limited. The funds were all used up before I applied.
- Tile drainage run off from neighboring farms onto non-tiled farms creates many problems.

- We hate to see the compacted soil from continuous corn planting and the polluted water in our open ditches from liquid manure systems. Also runoff crosses our fields following heavy rains. We would like to see well water tested.
- Some new farmers from the old country bulldozed all the wood lots down and plow all pastures and fence rows down which left no wind break. These farmers should be forced to plant trees to the amount they bulldozed out in acres.
- I feel there is too much land in production using too big machinery. Too many gravel pits are being opened while the old ones are being left vacant without further management. There is too much drainage of marshlands and poor liquid manure management. Would it not be a good idea to start educating school children toward conservation management and appreciation of nature?
- When you plan to provide grants for water quality, consideration should be given to potable water treatment systems. I believe many farm wells have varying degrees of contamination (our's included). The only practical solution seems to be chlorination. Any grant for the above units should only be issued after a water sample has been taken and analyzed by a county health unit, and a treatment recommended. A replacement for the manure storage grants must be included since this is the biggest water quality problem.
- Government environmental enhancement programs should receive priority with respect to funds. It is all of society (not just farmers) who ultimately benefit.
- Farmers cannot afford to implement proper practices without involvement from all levels of government, even though they would be the major beneficiaries.
- No future in farming for people - no one cares what happens except the farmers themselves - farmers have no money to improve their land or keep it in good condition. Farmland is almost worthless at this time, so why throw good money after bad.
- Not enough practical application information is available on ideas that will improve land quality at a price private persons can afford and justify. Crops that will leave usable residue and stop erosion while still making some sort of income should be introduced and developed, and marketing strategies taught (e.g., Lupine, Beans, Crown vetch, Arid Poplars). In short, talk is cheap and government action is very slow.
- My property joins with Lake Erie and I have considerable bank erosion as others do along the lake. I lose more land to bank erosion than to top soil erosion on my farm. I would like to see more help to control lake bank erosion.

- Ontario is decades behind the West in terms of soil conservation practices, crop yields, and chemical usage!!
- Many areas of my farm seem to be lacking in nutrients especially in fruit tree areas, resulting in damage to trees, lower production and yield.
- I believe that treed windbreaks in many areas would be of great benefit. If I owned the land that I rent I would be planting wind rows.
- More Cash input into programs like Ontario Land Stewardship.
- It's hard to use highland practices on muck soils for vegetable growing. These crops must be kept weed free so the soil must be worked well in the spring to turn down anytrash.
- I feel crop rotation and feeding the crop (at least most of it) on the same farm as it is grown is a good way to conserve soil.
- Stop cutting out complete woodlots and trees that are undersized. Leave old fence bottoms in place. Some farms in this area become desolate over winter.
- Farmers need more education regarding soils and their properties.
- I feel if you don't look after these soil conservation factors and instead let them get out of whack, you will not be able to afford to look after them when they get to a serious level.
- Weed control on land using minimum tillage conservation practices a major problem. Which is the greater evil - herbicides or minimum erosion?
- I would lute to see certain lands which are sandy in texture or have a certain degree of slope put back into trees or permanent forage. Also the cost of tile drainage kept at an affordable price per acre.
- Corn is the worst offender in damage to soil. Corn should only be planted one year after soil plowdown, two years at the most. A good sound rotation is a cure to most or all of the soil ills.
- Not well informed on this matter. I think the government wastes too much money on such things as these surveys.
- \$30 million could be used in a much more needed place. Do you think a farmer gives a damn when so many are going down the drain financially anyway.

- So hard to describe problems but it seems it all depends on the weather. Last year it was too dry because of lack of rain in this area. We have noticed effects from pollution, acid rain, and climatic change. Yields have been down in last 3 years.
- Too many hobby farmers are purchasing land and renting the land out to cash croppers who seem to care little how it is managed. They are not farmers, they are miners.