Retiring Marginally Profitable Sections of Agricultural Fields in Ontario Economically Justified

Case Studies of Typical Fields in Ontario: *Final Report*

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1.0 INTRODUCTION

In Ontario, the needs of production agriculture and the natural environment can conflict. Producers need to use every available acre to produce food and generate revenue. Wildlife needs stable, connected habitats to thrive and ensure a healthy, local ecosystem. Thriving wildlife populations or habitat lands that continuously encroach on adjacent agricultural fields can create extra costs for farmers. Conversely, however, marginally productive lands (including wet spots, and those with chronically low yields) that generate little or no revenue can also create extra costs for production agriculture. The challenges in this situation are to determine the costs and benefits associated with setting aside from production agriculture those areas in a field that are always wet, difficult to work with equipment, or suffer from low yields year-after-year. The costs of setting aside are the forgone farm profits on marginally productive land; the benefits derive from the environmental buffer/filters that are created, and from the encouragement of wildlife habitat.

1.1 BACKGROUND

Agricultural land does not always produce consistent and stable yields. Yield variability within an individual field can occur for a variety of reasons. Some of these factors include (but are not limited to), differences in fertility, slope and water retention, sunlight distribution and soil texture. Many of the characteristics of unstable yields are found along the perimeter of a field, which is often adjacent to water/wet spots, marsh, or forest, all of which hold potential as environmental buffer/filters or wildlife habitat.

Numerous studies have demonstrated that wetlands[1], riparian zones[2], buffer/filter strips[3] and wildlife corridors adjacent to agricultural fields offer many benefits to both the

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[1]A wetland is an area of land frequently or permanently inundated by surface water or groundwater and generally able to support vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth or reproduction (Agriculture and Agri-Food Canada, 2000).

environment and agricultural production. Wetlands improve water quality, buffer against erosion, chemical loss or drought and reduce risk and damage of flooding (Agriculture and Agri-Food Canada, 2000). Riparian zones help to reduce flooding, serve as an area for groundwater recharge and discharge, retain nutrients, and curb their movement into waterways and reduce sedimentation to help conserve topsoil. Riparian zones with trees and shrubs also provide shade for the streams that helps to reduce stream temperature (Agriculture and Agri-Food Canada, 2000). Buffer/filter strips improve water quality by filtering incoming runoff and seepage waters and reduce the content of sediments and dissolved particulate pollutants (Agriculture and Agri-Food Canada, 2000). Finally, wildlife corridors reduce the isolation of habitat fragments by allowing wildlife movement and dispersal between 'natural' pieces of connecting land (Richard and Craighead, 1997).

Despite the benefits to agriculture from these types of areas, the loss of wetlands has accelerated from the conversion to agriculture. In Southern Canada, more than half of the original wetlands have been drained, 85% of which was drained for agriculture (Agriculture and Agri-Food Canada, 2000).

Ducks Unlimited Canada (DU) is working aggressively to regain lost wetland areas, and to establish and enhance riparian and buffer/filter zones and wildlife corridors, through their education and research projects. The organization has begun to target agricultural landowners to protect and enhance these areas through the use of wildlife-friendly farming techniques and management practices. These practices are aimed at conserving land and water while benefiting both the landowner/producer and the wildlife inhabiting these areas. DU believes that there is an abundance of agricultural land that borders wetland and forested areas that do not produce as efficiently because of its location and/or topography.

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[2]Riparian zones are vegetated zones beside rivers, creeks, drainage ditches, lakes, sloughs, wetlands, canals and springs, and in coulees (steep ravine bordering a stream river) Agriculture and Agri-Food Canada, 2000).

[3]Buffer strips are areas or bands of natural or planted vegetation located between agricultural land and water bodies. These zones of permanent vegetation are generally covered with grasses (e.g. buffer strips or grass waterways) or with natural vegetation of grasses, shrubs, and trees (Livestock Manure Pollution Prevention Project, 2000).

Marginally productive agricultural land can be defined as land that is highly erodible, adjacent to forested areas, public waters, drainage systems, wetlands, or localy designated priority waters (Minnesota Statutes, 2000); and consistently produces less than average yields. In the context of this project, we have defined marginal productivity as areas of land with low gross margins over the long term.

2.0 PURPOSE AND OBJECTIVES

The purpose of this study is to assess the potential to retire marginally productive lands from agriculture in Ontario. The specific objectives are:

* To *identify* marginally productive agricultural land within a set of case studies for typical Ontario fields.
* Given the marginally productive land identified, to *assess the opportunity cost* to landowners and producers of setting aside the marginally productive agricultural land. The land set aside could be used as a wetland, filter strip, riparian zone or wildlife corridor, depending on the already established physical characteristics of the site.

3.0 APPROACH

To respond to the purpose and meet the objectives of the project, we developed a simple approach. We identified OMAFRA as a source of yield data for respective producers. The producer requirements were a minimum of three consecutive years of data representing multiple crops for the same field with spatial fragmentation[4]. We used the average Ontario price for the appropriate crops for each year to determine the revenue (price * yield) per acre (at the level of each spatial data point). OMAFRA production cost estimates[5] from 2000 (see Appendix 1.0) were used to determine cost per acre (per data point). Variable costs were used (rather than total production costs) because the fixed cost component does not change with the incremental acreage covered. Also, there is far more uniformity across farms in variable cost than there is in fixed cost.

[4] Fragmentation is the process of transforming large continuous forest patches into one or more smaller patches surrounded by disturbed areas (Environment Dictionary); for example, agricultural land fragments or 'disturbs' the natural forest or wetland surrounding it.
[5] 2000 Production Costs were obtained from the OMAFRA Enterprise Budgets. We were unable to obtain Enterprise Budgets for all of the respective years of data, thus used 2000 as a representative of all years.

Multi-year gross margin (revenue-variable cost) for each spatial data point was calculated. In each year, we subtracted the variable cost from the revenue of the crop that was grown per data point. Then, the gross margin across the three crops was averaged to give multi-year (and multi-crop) gross margin/acre at the level of the data point. Maps of the average margin per acre (at the spatial data point level) for each of the fields were generated. The resulting level and distribution of gross margins were interpreted in the context of fixed costs (Appendix 1.0) and unobserved factors within the field.

4.0 METHODS

4.1 Selection of Ontario Fields for Case Studies

For the selection of field case studies, we required field data that was representative of Ontario cropping conditions. Data requirements included a minimum of three consecutive years of Geographic Information System (GIS) generated yield data representing multiple crops for the same field, and that fields be located near or adjacent to water and/or forested areas. We also required producers that had a typical Ontario crop rotation of either a) corn, soybeans, wheat, b) corn, soybeans, or c) continuous corn. From previous research in this area, OMAFRA was able to provide names of 13 possible producers in Ontario that could meet our data requirements.

Each of the producers was contacted to obtain written permission to use the yield data collected by OMAFRA in our analysis. Producers were asked basic questions about their fields to determine the five most appropriate sites for our study.

The final selection of producers consisted of those that fit the above criteria and had an interest and willingness to participate in the study. Five producers were selected and are identified as Cases 1-5 in the analysis.

4.2 Procedures for Identifying Areas of Low Yield and Marginal Productivity

4.2.1 Data Manipulation

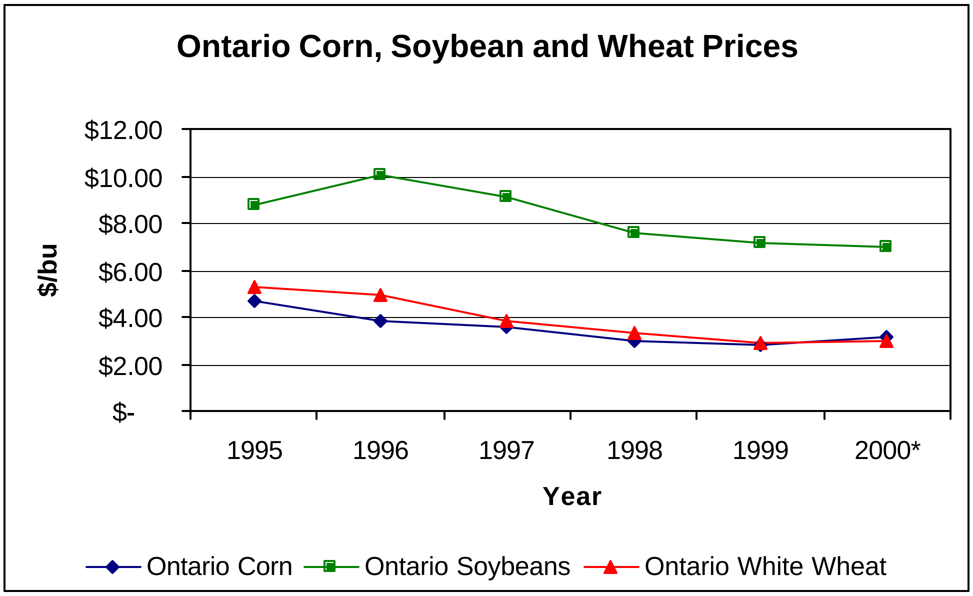
In order to identify areas of chronic low yields and marginal productivity in the sample fields, the following procedure was employed. For each data point in each field (in each year), the raw yield data was multiplied by the average price of the crop grown in that year to determine the revenue (yield * price), per acre at the level of the data point. Table 4 and Figure 4 identify the prices for each of the 3 crops by year. Using the variable costs from the 2000 Enterprise Budgets (Appendix 1.0) from OMAFRA for grain corn, soybeans and wheat, the gross margins were calculated for each data point by subtracting the cost (yield (bu/acre) * production cost ($/bu)) from the revenue. The calculated margins ($/acre) were then averaged for each data point across each of the years of data to give average gross margin per acre for multiple years and crops.

Table 4.0 Average Price of Ontario Grain Corn, Soybeans and Winter Wheat, 1995-2000

Year	Grain Corn ($/bushel)	Soybeans ($/bushel)	Winter Wheat ($/bushel)
1995	$4.65	$8.80	$5.31
1996	$3.84	$10.07	$4.90
1997	$3.60	$9.17	$3.85
1998	$2.99	$7.58	$3.29
1999	$2.84	$7.17	$2.91
2000	$3.16	$7.00	$2.99

Source: Corn, Brian Doidge, Ridgetown College, University of Guelph, and Statistics Canada 1994-2001, http://www.ontariocorn.org/supply.html
Soybeans, Statistics Canada, Cereal & Oilseeds Review and Ontario Soybean Growers 1994-2001, http://www.soybean.on.ca/
Wheat, Ontario Wheat Producers' Marketing Board Summary of Payments 1973-2000, http://www.ontariowheatboard.com/Payment-sum.html

Figure 4.0 Average Price of Ontario Grain Corn, Soybeans and Winter Wheat, 1995-2000



4.2.2 GIS Mapping

Using the gross margin data (as described above) obtained from our producers, James Holland, GIS specialist for Ducks Unlimited Canada, created individual management unit maps for each of the five case studies.

The maps were derived from four to six years of data (depending on the case), which allowed us to profile the long-term spatial variability of the gross margins within the field examples. They are presented in Appendices 2 to 6 A colour classification system was used to identify the range in margins based on percentiles, which provides easy identification of the differences in the average gross margin throughout the sample fields. The colour classification for the maps were as follows: the lowest 25% of the margins for the field (i.e. 0-25%) were identified as dark red, 25-50% of the margins were identified as pink, and 50-75% of the margins were light green. The top 75-100% of the margins within the field were identified as dark green.

To present the results in a different form, the maps were also sorted according to absolute gross margin. For these maps, the results were site specific to the field. For example, the dark red margins representing the lowest margins in one of the case fields was $19-37/acre, whereas in another field the lowest margins were in the range of $45-84/acre. The categories of margins identified in the legends for these maps were calculated by taking the range of observed gross margins and dividing through by four, to obtain uniform distributions for four categories. Each point on the maps represents approximately ten meters squared. The blue dashed boxes on the maps isolate significant concentrations of lower marginal productivity land.

4.3 Assessing the Opportunity Cost of Marginally Productive Land

Given the variability throughout the fields presented in the maps of the average margin per acre of the fields, decision criteria are required to interpret the results in the context of land retirement. An obvious candidate criterion is to compare the gross margins to the level of fixed costs at each data point. The logic is that fixed costs are not incremental, so they are incurred regardless of whether land represented by a specific data point is cultivated or not. In other words, if the gross margin at a data point is less than the calculated fixed cost, it can be retired at essentially no cost; if the gross margin is significantly less than the fixed cost, it is a benefit to retire land from production. Thus, although the fixed costs were not relevant for the calculation of gross margins, they are the key component for identifying the opportunity cost for the marginally productive areas within the field. The patterns, concentration and location of marginally productive lands also provide a basis for interpretation. The more concentrated and isolated low productivity land is, the easier it is to retire from a practical standpoint.

Using the fixed costs per bushel from the OMAFRA 2000 Enterprise Budgets (Appendix 1.0) and the six-year average Ontario yield[6] (Table 5.0) for each commodity, we were able to determine the average fixed costs per acre, (Table 5.1) per crop (fixed cost/bu * yield). For example, Table 5.1 demonstrates that the fixed costs/acre of corn is $55/acre and is $47/acre for soybeans. By taking the simple average of the fixed costs/acre for both corn and soybeans, the fixed costs for a corn/soybean rotation is approximately $51/acre.

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[6] We did not use the average yield for the cases because the fixed costs represent an Ontario average, therefore we felt using an Ontario average yield would be more representative.

Table 5.0 Average Ontario Yield for Grain Corn, Soybeans and Winter Wheat, 1995-2000

Year	Grain Corn	Soybeans	Winter Wheat
1995	117.1	41.3	69.9
1996	111.1	37	40.6
1997	112.4	38	61.1
1998	128.8	41	62.7
1999	128.3	40.5	73.2
2000	105.1	38	74.3
6 Year Average	**117.13**	**39.30**	**63.63**

Source: OMAFRA Statistics, http://www.gov.on.ca/OMAFRA/english/stats/crops/index.html
1995 data came from: http://www.gov.on.ca/OMAFRA/english/stats/crops/history_imperial.pdf

Table 5.1 Average Fixed Cost Per Acre for Corn, Soybeans, Wheat

Average Fixed Cost ($/acre)	Grain Corn	Soybeans	Wheat
Per Acre	55.05	47.16	47.73
Corn/Soybean Rotation	51.11		-
Corn/Soybean/Wheat Rotation	49.98		

5.0 THE CASE STUDIES

5.1 Introduction to the Case Studies

As identified in section 4.1, five separate fields were selected to measure marginal productivity of typical crop production in Ontario. Table 5.2 specifies the distribution of crops grown throughout the years of analysis and the County for each of the farms in the study.

Table 5.2 Crop Distribution for Case 1 to 5, 1995-2000

Year County	CASE 1 Brant	CASE 2 Elgin	CASE 3 Elgin	CASE 4 Middlesex	CASE 5 Simcoe
1995			Corn	Corn	
1996		Corn	Soybeans	Soybeans	Soybeans
1997	Corn	*N/A*	Corn	Wheat	Corn
1998	Soybeans	Corn	Soybeans	Corn	Soybeans
1999	Corn	Soybeans	Wheat	Soybeans	Corn
2000	Soybeans	Corn		Wheat	

5.2 Results

Appendixes 2-6 present the Average Margin maps for the five case studies. For each map we discuss the spatial concentration, the square area (metres) of the field that falls within the lowest margin bands, and compare the average gross margin over the years of production, to the average fixed costs for the crop rotation they are growing. In addition, we discuss the opportunity costs of removing the areas out of agricultural production to wildlife habitat. We have defined opportunity cost as the net benefit forgone when the resource can no longer be used in the next most beneficial way I (Tietenberg, 1994), i.e., the value of the resource in its best alternative use (Boardman et al., 1996). The blue dashed boxes on the maps highlight the areas of low marginal productivity with which we discuss.

Case 1

Observation of the field in Case 1 (Appendix 2, Figure 5.0 and 5.0B) suggests the spatial concentrations of low margin areas are along the outer perimeters of the field (identified as the blue dashed boxes). The majority of the margins within the bands identified fall within the two lowest margin categories, ranging between $19-38/acre and $38-56/acre, with some $56 to $75/acre area throughout. Approximately 8.6% of the total field falls within the two lowest margin categories. Actual square area (m^2) of the total field falling within these categories was 8,254 m^2, or 2.04 acres[7] (Table 5.2) (note that the 2.04 acres also includes area outside of the blue dashed boxes).

The fixed costs per acre for growing a corn/soybean rotation has been identified as $51/acre. Therefore, fixed costs of growing crops on the land in the boxed areas, is greater than the four-year average gross margins for corn and soybeans received. This implies that within the boxes, there is an opportunity to improve efficiency by retiring these areas from production. The boxed sites may have potential as wildlife habitat or a buffer/filter. More site-specific information is required to identify the exact location of water/wet spots, marsh, or forested areas around the field and the ultimate potential for habitat and buffer/filter strips.

Table 5.2 Case 1: Area and Percent Distribution by Gross Margin Category

Category ($/acre)	M^2	Acres	% (of Field)
19 – 38	994	0.25	1.0
38 – 56	7,260	1.79	7.6
56 – 75	83,235	20.57	87.4
75 – 93	3,770	0.93	4.0

Case 2

Figures 5.1 and 5.1B (Appendix 3) represent Case 2. The spatial concentration of low margin areas in this particular field is quite high. Approximately 33.7% of the field is in the low margin areas, representing $19-37/acre and $37-54/acre respectively. Actual area in these categories was 49,964m^2, or 12.35 acres (Table 5.3). Given a corn/soybean rotation with fixed costs of $51/acre, we have identified four primary areas for consideration, three of which fall on the outer perimeters of the field. Identification of what is around the field would determine the type and applicability of natural habitat or buffer/filter areas. Without this information we currently have no suggestions. However, the band in the center of the field could be used as a buffer strip for filtration.

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[7] 1 m^2 = 0.0002471044 acres

Table 5.3 Case 2: Area and Percent Distribution by Gross Margin Category

Category ($/acre)	M^2	Acres	% (of Field)
19 – 37	5,245	1.30	3.5
37 – 54	44,719	11.05	30.2
54 – 71	94,818	23.43	64.1
71 – 89	3,211	0.79	2.2

Case 3

Without reading the legend for the field in Case 3 (Appendix 4, Figure 5.2 and 5.2B), it initially appears that the field is covered in low margin area, as almost the entire field is light pink and dark red with 98.9% of the field in the lowest two categories (Table 5.4). However, the legend indicates that the producer's bottom two categories of margins are actually $45-84/acre and $84-123/acre. Given that this producer appears to be growing a combination of corn, soybeans, and wheat, where the average fixed cost per acre is between $50 and $51, it is clear that the producer is covering the fixed costs within the field. Therefore, the opportunity cost of retiring land for habitat or buffer/filter areas would generally be too high.

Table 5.4 Case 3: Area and Percent Distribution by Gross Margin Category

Category ($/acre)	M^2	Acres	% (of Field)
45 – 84	34,860	8.61	33.6
84 – 123	67,752	16.74	65.3
123 – 163	1,170	0.29	1.1
163 – 202	7	0.00	0.0

Case 4

In case 4(Appendix 5, Figure 5.3 and 5.3B), 30% of the field falls within the two lowest margin categories ($41-64/acre, and $64-86/acre). Actual area in these categories was 35,551m^2, or 8.78 acres (Table 5.4). For Case 4 we have identified two sites of low productivity (when compared to the rest of the field). Given the corn/soybean/wheat rotation with fixed costs of $50/acre, and the low level of spatial aggregation in low productivity land, it does not seem logical to suggest further analysis for the introduction of wildlife habitat in these areas. However, because there is a band on the outer perimeter of the field, a buffer/filter strip may provide some filtration and erosion benefits.

Table 5.4 Case 4: Area and Percent Distribution by Gross Margin Category

Category ($/acre)	M^2	Acres	% (of Field)
41 – 64	3,641	0.90	3.1
64 – 86	31,910	7.89	26.9
86 – 109	75,891	18.75	63.8
109 – 131	7,380	1.82	6.2

Case 5

Twenty-seven percent of the field in Case 5 (Appendix 6, Figure 5.4 and 5.4B) falls within the two lowest margin bands ($25-62/acre, and $62-100/acre). Actual area in these categories was 42,965m^2, or 10.62 acres (Table 5.5). We have identified five possible areas for further consideration. Once again these areas can be identified as areas for consideration for retirement as the fixed costs ($51/acre) are greater than the average gross margin for the fields.

Table 5.5 Case 5: Area and Percent Distribution by Gross Margin Category

Category ($/acre)	M^2	Acres	% (of Field)
25 – 62	4,080	1.01	2.6
62 – 100	38,885	9.61	24.6
100 – 137	112,503	27.80	71.0
137 – 175	2,826	0.70	1.8

Of the five cases we analyzed, three of the five had significant areas in which the average gross margins were lower than the fixed costs.

6.0 DISCUSSION AND RECOMMENDATIONS

This study presents a simple analysis of the variation in gross margins that occurs within a typical agricultural field in Ontario. The approach and criterion for land retirement are relatively simple; we calculate the steady-state (multi-crop, multi-year) gross margins that occur throughout the field, and compare it with the fixed costs that are incurred regardless of whether a specific area of the field is cultivated. Thus, the benefit of land retirement is purely from the farmer's individual perspective; the criterion says we retire land from production if its gross margin is less than the fixed cost. The analysis shows that in 3 of the 5 fields analyzed, there were significant areas in which gross margins were at or below fixed costs.

The logic of the fixed cost criterion deserves further analysis. Fixed costs (depreciation, interest, taxes, etc.) are fundamentally lump-sum in nature. For example, a farm has $10,000 depreciation expenses in a year (regardless of acreage covered). In the short run, fixed costs are sunk costs, so as long as low margin areas still return a positive gross margin, they are cultivated. However, in the long run fixed costs are not sunk - the farmer scales equipment investments to acreage. In the long run, areas with gross margins lower than fixed costs are retired precisely because low productivity land cannot cover the fixed costs, and offers no contribution to pay down investment costs.

One final point to note with regard to fixed costs is the OMAFRA Enterprise Budgets do not include any land rent/cost in their calculation of fixed costs. Without including land costs in our analysis, we are actually understating the fixed costs. Therefore, when comparing the fixed costs to the gross margins, there may be additional areas within the case studies that could be classified as marginally productive, i.e. gross margins less than fixed costs.

The key caveat with our analysis is the inability to assign an economic value to benefits other than the farmer's (private) opportunity cost; the environmental value of land retirement to the public is not considered. Estimates of the environmental value of land retirement to the public were beyond the scope of the study. The purpose of this study was to assess the marginal productivity of specific fields and identify potential benefits of wildlife areas and environmental buffer/filters where costs were greater than the benefits received from agriculture.

There are a number of benefits that can be derived from removing marginally productive land from agriculture into wildlife habitat. The following is a list of potential benefits and costs of increased wildlife habitats in the form of buffer/filter strips, wetlands, wildlife corridors or riparian zones:

* foregone costs of growing on marginally productive land
* improved aesthetic value of the farm and farm stewardship
* increased number of beneficial insects, organisms and animals
* a larger water source for irrigation
* improved nitrate and phosphorus processing system
* stream bank stability (reduced erosion)
* increased plant nutrient uptake
* sediment filtering and infiltration
* improved water quality
* reduced drought or flooding
* shade for streams to reduce stream temperature

Many of the benefits of the set-aside land will not be exclusively consumed by the producer or landowner. For example, the intrinsic environmental benefits from increased aesthetics of the farmland and the enhanced general ecosystem support are positive externalities that the whole community can enjoy. Another benefit to setting aside marginally productive agricultural land is the stewardship rewarded in preserving or enhancing a miniature ecosystem.

The costs of establishing or increasing wildlife habitats in the form of buffer/filters, wetlands, wildlife corridors or riparian zones include:

* opportunity cost of not farming the land, i.e., loss in revenue (if any)
* the loss of efficiency of farming the remaining land

* crop loss due to damage from increased wildlife feeding in the area
* maintenance of the area set aside, for example whether drainage tiles will need to be removed from the field
* competition with the wetland area or riparian zone for water use, which could have an effect on productivity.

These costs are not included in the study, as we focussed on opportunity cost.

The scope of this project did not include identifying or measuring the value of environmental benefits within our five case studies. As we have indicated above there are definite benefits and costs of setting aside marginally productive land. Given the information that we were able to obtain for the case studies in this project, we recommend further analysis of Case 1, 2, and 5 to determine the environmental benefits and costs to both the land owner/producer and society.

7.0 SUMMARY

The purpose of this study was to assess the opportunity costs and identify benefits to landowners and producers, of setting aside marginally productive agricultural land in typical Ontario fields. The set aside could be wildlife habitat, a wetland, a filter/buffer strip, riparian zone or wildlife corridor, depending on the already established physical characteristics of the site.

This study presented a simple analysis of the variation in gross margins that occurs within a typical agricultural field in Ontario. The approach and criterion for land retirement was relatively simple; we calculated the steady-state (multi-crop, multi-year) gross margins that occurred throughout the field, and compared it with the fixed costs that incurred regardless of whether a specific area of the field was cultivated. Thus, the benefit of land retirement was purely from the farmer's individual perspective; the criterion said we retire land from production if its gross margin was less than the fixed cost. The analysis indicated that in 3 of the 5 fields analyzed, there were significant areas in which gross margins were at or below fixed costs.

The scope of this project did not include identifying or measuring the value of environmental benefits within our five case studies. There are definite environmental benefits and costs of setting aside marginally productive land. Given the information that we were able to obtain for the case studies in this project, we recommend further analysis of Case 1, 2, and 5 to determine the environmental benefits and costs to both the land owner/producer and society.

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APPENDIX 1 – PRODUCTION COSTS

VARIABLE COSTS	CORN ($/acre)	SOYBEANS ($/acre)	WHEAT ($/acre)
Seed	47	35	33
Seed Treatment	2	5	2
Fertilizer #1	11	13	14
Fertilizer #2	8	0	33
Fertilizer #3	59	0	0
Herbicide			
Annual Grasses	20	18	0
Broadleaf Herbicides	8	24	5
Crop Insurance	10	9	7
Custom Work #1 (Combine)	32	30	28
Custom Work #2 (Fertilizer App)	0	7	7
Drying*	40	0	0
Trucking	17	7	11
Marketing Fee	1	1	2
Fuel	21	16	16
Mach. Repair & Maint.	20	16	16
Bldg. Repair & Maint.	3	3	3
Rent and Labour	16	16	10
General Variable Costs	15	15	15
Interest on Operating Capital	12	8	13
TOTAL VARIABLE COSTS ($/ACRE)	**343**	**222**	**215**
TOTAL VARIABLE COSTS ($/BU)	**2.86**	**5.56**	**3.07**$^{+}$
FIXED COSTS			
Depreciation	29	24	27
Interest on Term Loans	18	14	16
General Fixed Costs	10	10	10
TOTAL FIXED COSTS ($/ACRE)	**57**	**48**	**53**
TOTAL FIXED COSTS ($/BU)	**0.47**	**1.2**	**0.75**
TOTAL COSTS	**3.33**	**6.76**	**3.82**

***** Corn - Drying 8 Points

Source: OMAFRA 2000 Enterprise Budgets