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## Partial Portrait of Farm Investments in Environmental Protection

By Julie Grimard, Agriculture and Agri-Food Canada

In 2001, the total value of certain farm investments for environmental protection was \$170.9 million, an average of \$1,091 per farm. These investments accounted for a very small proportion of total investments by Canadian farmers.

In some cases, there are substantial differences between provinces and between farm types. Farms in Quebec, Prince Edward Island and Nova Scotia spend more on environmental protection, as do hog, dairy and poultry farms.

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Special thanks to: John Flanders and Josée Bourdeau.

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- . not available for any reference period
- not available for a specific reference period
- ... not applicable
- P preliminary
- r revised
- x confidential
- A excellent
- B very good
- C good
- D acceptable
- E use with caution
- F too unreliable to be published

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Environmental protection is becoming more important in farming. Farmers are changing their practices and investing in improvements to protect natural resources both on and off the farm.

Using data from the Farm Financial Survey, this article explores some of the financial commitments made by Canadian farmers to protect the environment. The 2002 survey collected data on three types of environmental protection investments:

- manure storage construction or major renovation
- pesticide, chemical or fuel storage construction or major renovation
- shelterbelts, windbreaks, buffer strips<sup>1</sup> and fences for waterway protection

These investments can improve the environmental performance of farms, mainly by protecting surface and ground water. Farmers can invest into other forms of environmental protection, such as no-till seeders, spray booms and electrostatic sprayers, but the survey was not designed to take a comprehensive inventory of such investments.

**Note to readers**

*The data in this article are from the Farm Financial Survey (FFS). The data were collected by telephone interview from a sample of 18,000 farms with a gross farm income of \$10,000 or more. The purpose of the survey is to collect financial data, chiefly on assets, debt, revenues, expenses and investments.*

*In 2002, for the first time, the survey collected data on the amount of money invested in certain environmental protection improvements: manure storage systems; pesticide, chemical or fuel storage systems; and shelterbelts, windbreaks, buffer strips or fences for waterway protection. The 2002 FFS collected data on investments made in 2001.*

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<sup>1</sup> Strip of land covered by vegetation between a waterway and an area of agricultural activity, for the purpose of protecting the waterway from degradation.

### **Quebec, Prince Edward Island and Nova Scotia invest the most into environmental protection**

In 2001, Canada's agricultural producers invested \$170.9 million in environmental protection, an average of \$1,091 per farm (Table 1). Producers in Quebec reported the highest average spending, at \$4,146, followed by Prince Edward Island at \$3,731 and Nova Scotia at \$1,726. Farmers in western Canada and Ontario had the lowest expenditures, at less than \$1,000 per farm.

These figures are relatively low because very few farms made such investments. At the national level, 5.7% of farms reported investing in one or more of the three types of environmental protection improvements. The percentage of farms is highest in Quebec, Prince Edward Island and Nova Scotia. Among farms that made such improvements, the average expenditure on a national basis was quite substantial, at \$19,228.

Environmental protection improvements accounted for 2.1% of total investments by Canadian farms. Overall, producers in Quebec (7.2%), Prince Edward Island (6.1%) and Nova Scotia (3.9%) put the largest proportion toward such improvements. Producers in the three Prairie provinces reported the lowest percentages, at less than 1% in each case.

The larger financial outlays in Quebec, Prince Edward Island and Nova Scotia may be at least partially due to government programs that provide financial incentives to help producers make certain environmental protection improvements. Quebec and Prince Edward Island also have stricter environmental regulations for the agricultural sector, forcing farms to make certain improvements. The predominance of certain types of farming in those provinces may also have an impact; this will be examined in the sections that follow.

**Table 1: Farm investments in environmental protection, by province, 2001**

	Average investment in environmental protection	Percentage of farms reporting environmental investments	Environmental protection investments as a percentage of total investments
	\$	%	%
Canada	1,091 c	5.7	2.1
Newfoundland and Labrador	615 b	2.4	1.4
Prince Edward Island	3,731 c	15.0	6.1
Nova Scotia	1,726 d	10.2	3.9
New Brunswick	1,000 d	6.5	1.7
Quebec	4,146 d	7.8	7.2
Ontario	841 d	6.6	1.5
Manitoba	465 d	3.1	0.9
Saskatchewan	295 e	4.0	0.6
Alberta	391 d	5.6	0.7
British Columbia	883 d	5.7	2.1

*Source:* Statistics Canada, Farm Financial Survey, 2002

### Hog farms invest more in environmental protection

Environmental protection expenditures vary by farm type.<sup>2</sup> On average, hog farms spent the most, at \$6,224, followed by dairy farms at \$3,433 and poultry farms at \$2,445 (Table 2). Environmental investments are lowest on grain and oilseed farms (\$286) and cattle farms (\$568).

Hog, dairy and poultry farms invest more because manure storage structures are a virtual necessity for such operations and because a significant proportion of these farm types are in Quebec, which has tighter environmental protection regulations and more financial incentives.

Cattle farms might have been expected to spend more, since they too are under substantial environmental pressure to deal with manure. Their lower expenditures may be attributable to the fact that a large proportion of cattle farms are cow-calf operations, which do not require manure storage if the animals are in the fields year-round.

Among crop farming operations, potato farms have relatively high environmental spending. A large proportion of such farms are in Prince Edward Island, which has altered its agri-environmental policy in recent years to protect water quality. It is not surprising that grain and oilseed farms and vegetable farms have relatively low outlays, since environmental investments generally affect them less.

<sup>2</sup> Farm types are based on the value of sales for each product. When a farm reports more than 50% of its sales from one product, that product determines the farm's classification. For example, if piglets account more over 50% of a farm's sales, the farm will be classified as a "hog farm". This article presents data for seven of the principal farm types.

**Table 2: Farm investments in environmental protection, by farm type, 2001**

	Average investment in environmental protection	Percentage of farms reporting environmental investments	Environmental protection investments as a percentage of total investments
	\$	%	%
Hogs	6,224 d	10.5	5.0
Dairy	3,433 d	10.0	3.4
Poultry	2,445 e	11.0	2.3
Potato	1,789 d	8.0	1.8
Horticulture	1,186 d	5.2	2.1
Beef	568 d	5.9	1.5
Grain and oilseeds	286 d	3.3	0.7

*Note:* Horticultural sales include sales of fruits, nuts, vegetables, melons, and greenhouse and nursery products (including floriculture).

*Source:* Statistics Canada, Farm Financial Survey, 2002

### Manure storage systems represent the top environmental investment

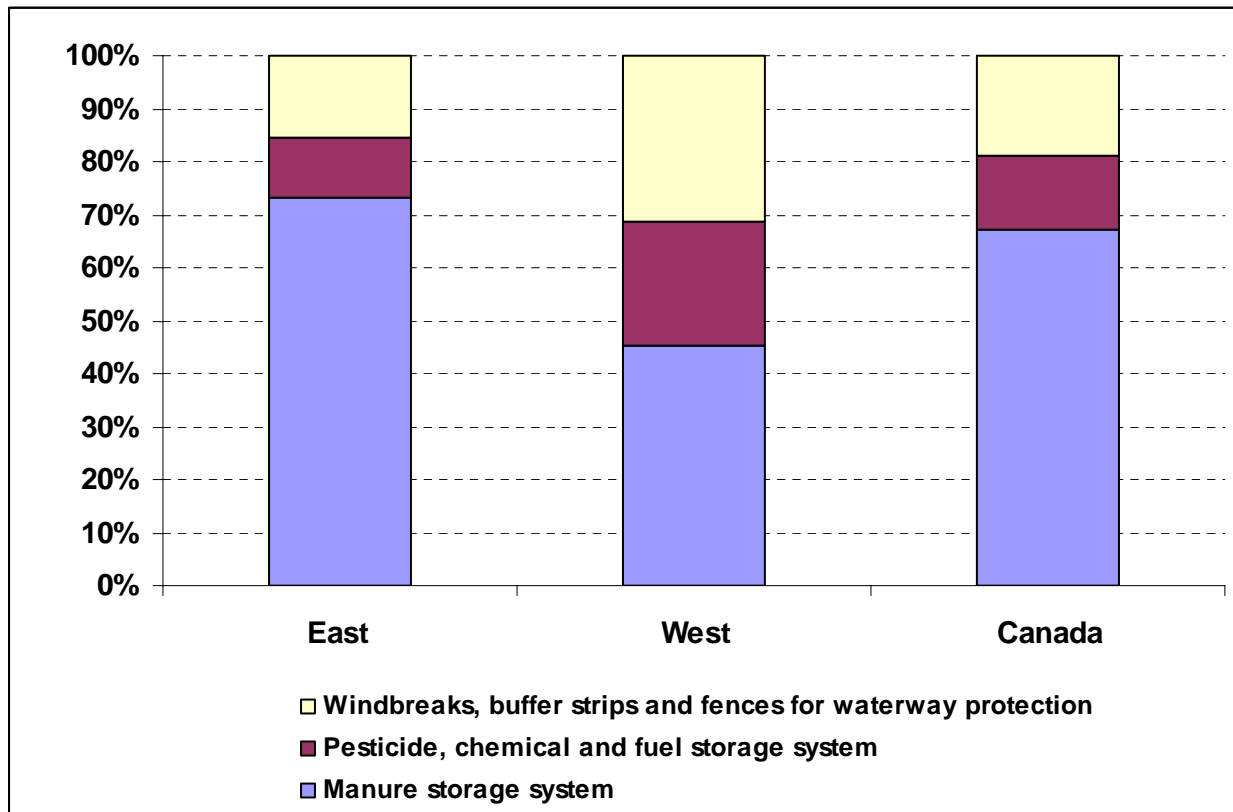
The majority (67%) of the money invested in environmental protection was spent on manure storage systems, compared with 14% for pesticide, chemical and fuel storage systems, and 19% for shelterbelts, windbreaks, buffer strips and fences for waterway protection (Figure 1).

Agricultural producers in eastern Canada allocated a larger proportion of their investments to manure storage systems (just over 70%).<sup>3</sup> Shelterbelts, windbreaks, buffer strips or fences for waterway protection accounted for 15% of their expenditures, and pesticide, chemical and fuel storage systems, for 11%. The amount spent on manure storage construction is larger in the eastern provinces because there is a heavier concentration of dairy, hog and poultry farms in that part of the country.

Producers in the western provinces put about half of their environmental investment into manure storage systems. Expenditures for shelterbelts, windbreaks, buffer strips and fences for waterway protection are particularly high – about one third of the total – in the western provinces. Pesticide, chemical and fuel storage systems accounted for about 20% of investments by western producers. The lower spending on manure storage systems than in eastern Canada is consistent with the fact that a large percentage of western farms produce grain and oilseeds.

<sup>3</sup> For confidentiality reasons, provincial data by type of investment could not be used in every case. A breakdown between eastern and western provinces was used instead.

**Figure 1: Distribution of farm investments in environmental protection, by region, 2001**



Source: Statistics Canada, Farm Financial Survey, 2002

The distribution of the three types of investment also varies by farm type.<sup>4</sup> Table 3 shows that dairy, hog and poultry operations invested mainly in manure storage systems. Cattle and potato farms spent more on shelterbelts, windbreaks, buffer strips and fences for waterway protection.

Horticultural farms invested both in pesticide, chemical and fuel storage systems and in shelterbelts, windbreaks, buffer strips and fences for waterway protection. These patterns clearly reflect the kinds of environmental pressures affecting each farm type.

<sup>4</sup> For confidentiality reasons, the distribution of the amounts invested by type of investment for each of the principal farm types could not be used. The percentage of farms reporting each type of investment was analyzed instead to determine if there were any patterns.

**Table 3: Percentage of farms reporting investments in environmental protection, by farm type, 2001**

	Manure storage system	Pesticide, chemical and fuel storage system	Windbreaks, buffer strips and fences for waterway protection	Total
	%	%	%	%
<b>Hogs</b>	6.9	1.4	3.9	10.5
<b>Dairy</b>	7.1	1.2	3.1	10.0
<b>Poultry</b>	4.4	F	F	11.0
<b>Potatoes</b>	F	1.8	5.4	8.0
<b>Horticulture</b>	F	2.2	2.6	5.2
<b>Cattle</b>	1.0	0.5	4.6	5.9
<b>Grain and oilseeds</b>	F	1.3	1.8	3.3

*Note:* Horticultural sales include sales of fruits, nuts, vegetables, melons, and greenhouse and nursery products (including floriculture).

*Source:* Statistics Canada, Farm Financial Survey, 2002

### Dairy, hog and poultry farms

The low average investment in some provinces (Table 1) may be associated with a preponderance of farm types that spend less on the kind of investments being studied here. In Manitoba, for example, the low level of expenditure could be due to the relatively large numbers of grain and oilseed farms and the relatively small numbers of livestock farms requiring manure storage facilities.

To minimize regional differences that are due to the various farm types, this section focuses on investments made by hog, dairy and poultry farms.

Table 4 shows that the provinces' ranking in terms of average environmental investment and ratio of environmental investments to total

investments remains much the same when only these three farm types are considered. Quebec, Prince Edward Island and Nova Scotia are still the clear leaders, while Manitoba, Alberta, Ontario and Newfoundland and Labrador are at the bottom of the list. Provincial differences are not solely due to farm types, since there are significant differences between provinces when the same three farm types are looked at within each province.

A better understanding of the provincial ranking could be obtained by determining whether investment needs are the same between provinces, especially with regard to manure storage systems, which account for the majority of environmental investments by dairy, hog and poultry farms. Such an analysis is beyond the scope of this study.



**Table 4: Farm investments in environmental protection made by dairy, hog and poultry farms, by province, 2001**

	Average investment in environmental protection	Environmental protection investments as a percentage of total investments
	\$	%
<b>Canada</b>	3,879 c	3.6
<b>Newfoundland and Labrador</b>	1,816 d	1.8
<b>Prince Edward Island</b>	5,673 d	6.6
<b>Nova Scotia</b>	4,385 d	5.2
<b>New Brunswick</b>	2,622 d	2.9
<b>Quebec</b>	6,396 d	7.1
<b>Ontario</b>	1,601 d	1.6
<b>Manitoba</b>	2,613 e	2.0
<b>Saskatchewan</b>	F	F
<b>Alberta</b>	1,128 d	0.8
<b>British Columbia</b>	2,426 d	2.4

*Source:* Statistics Canada, Farm Financial Survey, 2002

## Conclusion

Environmental protection is becoming more important in farming. In 2001, the total amount invested in certain farm improvements for environmental protection was \$170.9 million, an average of \$1,091 per farm. This figure is relatively low because very few farms made such improvements. Among farms that did so, however, the average expenditure was quite substantial, at \$19,228.

In some cases, there are substantial differences between provinces and between farm types.

Farms in Quebec, Prince Edward Island and Nova Scotia spend more on environmental protection, as do hog, dairy and poultry farms.

Although some provincial differences may be attributable to farm types, some of which spend less on the kinds of improvements studied in this article, some provinces' financial incentives and stricter environmental legislation appear to boost environmental protection investments by agricultural producers.

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