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**FARM HOUSEHOLD INCOME DATA IN CANADA:
APPROACHES AND GAPS**

By
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Introduction

Canada, like other industrialized countries of the world, has seen its agriculture sector evolve dramatically over the past fifty years. Prior to the Second World War, Canadian society was largely composed of a large number of self-sufficient subsistence-level farming families, who for the most part, produced enough to feed themselves with occasionally, some surplus to trade with their neighbours, sell at community farmers' markets or provide to export markets. Farm households represented about one third of the Canadian population in 1941. Since the Second World War, however, dramatic improvements in technology in agriculture resulted in significant productivity gains. A smaller and smaller number of farm households operating increasingly larger, more specialized farms, with higher-than-average income, has been able to produce enough to feed Canadians and export to world markets.

At the same time that the Canadian agriculture sector was being transformed, Canadian agriculture policy evolved. Early Canadian agriculture policy was concerned with finding immigrants to populate the vast empty Prairies and setting up experimental research farms across the country to develop and disseminate knowledge of new crops and production techniques adaptable to each individual region's climate (see Ndayisenga et al. (2002)). Subsequently Canadian agricultural policy evolved to ensure orderly marketing, price supports, production and yield insurance, farm income stabilization and support, and more recently, risk management.

The objective of this paper is to describe the various sources of farm household income data in Canada and the gaps in data that have been identified over the past few years. The paper will begin with a description of the Canadian agriculture sector, including trends in farm household income. A discussion of the various sources of farm household data that are available in Canada will then be presented, including the approaches used. Finally, we will consider the data gaps that exist based on the experience of agricultural policy-makers and researchers while conducting policy development and analysis over the past few years.

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The Canadian Agriculture Sector

There have been significant changes in the structure of primary agriculture in Canada over the past fifty years. While one third of the population lived on farms in 1931 when Canadian society was still fairly agrarian, this share fell to 5% in 1981 and just 3% by 1996 (Figure 1). This decline occurred primarily because of the decrease in the number of farms from over 700,000 in 1931 to 300,000 in 1981, 276,000 in 1996 and 246,923 in 2001 (Figure 2). At the same time, farms have become larger and more efficient as a result of new technologies and the dramatic increases in productivity that have taken place since the 1950s. Many farms became more specialized and more efficient as a result. For example, crop area per farm increased from 100 hectares in 1956 to over 300 in 1996 and 2001, while hog farms reported herds of over 900 head, on average in 2001, up from under 100 in 1976 (Figure 2). At the same time, an increasingly smaller share of farm households accounted for an increasingly larger share of agricultural production: the top 20% of farms in Canada accounted for 80% of production in 1996, up from 68% in 1981 (Figure 3).

Farm Households and Farm Household Income

The Canadian farm household has evolved as well, to become a complex entity, as varied as the number of commodities it produces. Some farm households are large business enterprises with multiple family members contributing to the success of the farm business. Other farm households are composed of a farm operator managing a small farming operation and holding a full-time off-farm job on the side (Figure 4). The characteristics of the farm household has changed significantly over the period that the number of (census) farm households has declined in Canada from an estimated 330,000 in 1971 to 217,000 in 1996²(Figure 5).

One of the major factors affecting farm households over time has been the increased reliance on off-farm income. With the introduction of new technology (machinery, computers, new plant and animal breeds) that led to higher yields, reduced labour requirements and increased productivity, farm operators and their family members have had more time to allocate to off-farm jobs. Off-farm income now serves as an important method of income diversification and risk management for farmers. The fact that urban sprawl has brought off-farm jobs closer to farm communities, has translated into employment opportunities for farm family members. Off-farm income is therefore one of the major reasons why

² These estimates of farm households are from Statistics Canada, Survey of Consumer Finances where the definition of farm households, used interchangeably with farm families, is those economic families (including unattached individuals) in which one individual reports some net farm income.

average farm household income is now more on a par with average non-farm family income in Canada.

Returns to farming, as measured by net cash farm income, rose in the post-war period, in response to the dramatic increases in productivity and specialization of those agricultural producers remaining in farming (Figure 6). For the average farm household, this translated into an improvement in economic well-being. While Canadian farm household income data are not available prior to 1965, we know that economic growth in the post-war period led to dramatic increases in real personal disposable income for the average Canadian household. The Canadian government was, however, concerned about the relative poverty in agriculture compared to the general population, and in the 1967 Task Force on Agriculture, promoted agricultural policies that would help address “low incomes” in agriculture (1967, Task Force). At the time, there was general consensus that more farm households earned low income than did all Canadian families. This is confirmed by income data we have for the period. In 1973, for example, approximately one fifth (21.8%) of farm households in Canada earned income below an unofficial poverty line³. This compares with 13.4% for the general population (Table 1). Since that time, the “low income rate” has declined substantially, so that by 1998, only 12.8% of farm households had income below this low income level, while this was the case for 13% of the general population.

Farm household income data from the Survey of Consumer Finances, available since 1965, show significant improvements in absolute terms and relative to the average Canadian household. Figure 7 shows how farm household income has risen since 1967. Figure 8 shows farm household income relative to average household income for all Canadian households. Income for farm households attained a par with all Canadian households in 1973 and has more or less hovered around parity ever since. Recent literature describing income inequality, also suggests that farm family income has approached non-farm family income in terms of the distribution of income across families (Waithe et al. 2000).

As mentioned above, one of the major reasons farm households have experienced such gains in economic well-being is due to their increasing reliance on off-farm income for farm families. Figure 9 shows the relative importance of off-farm income for farm households as measured by off-farm income as a share of total

³ In Canada, there are various indicators for measuring low income or a “poverty line”. The most prevalent indicator of “low income”, used in most analyses in Canada, is Statistics Canada’s “Low Income Cut-off” or “LICO”. This is not recognized as an official “poverty line”. It is a relative measure that makes use of information from the Family Expenditure survey on the average spending on basic necessities (food, clothing and shelter). A low income cut-off is the level of income which is needed to cover the cost of basic necessities, adjusted for family size and size of area of residence (ie. Urban, rural small-town). Other measures for low income used in the literature include the Organization for Economic Cooperation and Development’s “Low Income Measure” (LIM) which is half the median national family income.

family income. Off-farm income can include income from employment (wages and salaries and net non-farm self-employment income), pension income, investment income and government social transfers, such as family allowances (child tax benefits), Canada Pension Plan/Quebec Pension Plan income (CPP/QPP), social transfers, Unemployment Insurance/Employment Insurance payments, and provincial/Goods and Services (GST) tax credits.

However, not all farm households rely to the same extent on off-farm income. This reliance varies across farm households of different farm sizes, types and regions (provinces) of the country. For example, for farm households operating small farms (gross farm revenues of Cdn \$10,000 to \$49,999), off-farm income is generally more important (Figure 10). This may be a result of the fact that operators' and family members' labour resources are not being fully utilized on a small farm, either for lifestyle reasons, or out of necessity, if they are being forced to supplement their low income from farming by working off the farm. It is this off-farm income that has contributed to farm families on small farms reporting total family income that is comparable to that of non-farm families (see Figure 10).

Farm households operating medium-sized farms (gross farm revenues of Cdn \$ 50,000 to \$99,999) also rely on off-farm income to supplement their family income. However, on average, these households report total family income that is below the average for non-farm families (Figure 11). Generally, medium-sized farms, being larger than small farms, allocate more of their time and labour resources to the farm, yet aren't of a sufficiently large size to be economically efficient.

Farm households operating large farms, on the other hand, generally rely less on off-farm income: off-farm income is a smaller share of their total family income. Nevertheless, increasing productivity improvements in farming have resulted in lower labour requirements and off-farm income has become more important for families on large farms, as well. In fact, off-farm employment is recognized as a method of diversifying income sources to combat periods of lower farm income. The combination of high net farm income and off-farm income has meant that the average total family income for households on large farms is at or above income levels of the non-farming population (Figure 12).

The reliance on off-farm income varies by farm type as well. Farmers operating a cow-calf operation or a grain enterprise generally require less labour resources than those operating a dairy operation. This is especially true for large grain operations on the Prairies since, for example, the introduction of large air-seeders and direct till machinery has led to lower labour requirements. Dairy farming, for example, is still fairly labour intensive. Off-farm income is consequently a larger

share of total family income for families operating cattle and grain and oilseed farms than for dairy farms. Families on cattle farms report the largest share of off-farm income (Figure 13).

By province, off-farm income is a larger share of total family income in Ontario and Alberta where a combination of farm types (grain and oilseed, cattle) and farming areas in close proximity to urban centres result in time for and availability of off-farm employment. Quebec is one province where off-farm income is a smaller share of total family income (Figure 14). This can be explained by the prevalence of dairy farms in that province combined with a larger rural population, where access to urban job opportunities is more difficult.

In summary, the Canadian agriculture sector has undergone significant structural change in the post-war period. There has been a large decline in the number of farms and in the number of farm families in Canada. Farms have become larger and more specialized and agriculture has become more concentrated in the hands of a smaller number of producers. Farm family income has improved so that it has reached parity with that of the average Canadian family. However, farm family income varies by farm size, type and province.

SOURCES OF FARM HOUSEHOLD DATA IN CANADA

As is evident from the description of the agriculture sector, above, there are several sources of farm household income data in Canada. Some of them have only been developed over the last twenty years to help in the analysis of farm programs and farm financial conditions. Other sources have been available for a longer period.

Census of Agriculture and Census of Population Linkage

Statistics Canada's Census of Agriculture linked to the Census of Population is one of the more important sources of farm household income in Canada. This source has been available for several years. The Census of Agriculture itself has been collected since the early years of confederation (1871). However, the only information related to income on the Census of agriculture is gross farm revenues and sales of farm operators. The Census of Population, on the other hand, collects information on individual and family income, and provides information on family formation and membership. This information is then linked to the Census of Agriculture (only a 20% sample of the Census of Agriculture is linked) to provide information on farm household income.

One of the main limitations to this source of farm household income data is that these data only come out every five years, after the Censuses have been

conducted. Also, there is a time lag of two years before they are published since the data must be compiled and linked. Therefore it is an infrequent and untimely source of farm household income data.

However, even with only 20% of farms being included, it is still a very significant sample size, and therefore very representative, from which to draw broad conclusions. Another advantage is that these data are available by farm size, type and region in addition to being linked to socio-economic variables such as education level and age of the farm household head. This has made these data very relevant and useful for economic and policy analysis.

Farm Financial Survey (FFS)

This data source has only been available since the early 1980's and the survey collecting these data, is conducted only every two years. The FFS was initiated by the Farm Credit Corporation, in 1981, with the goal of collecting aggregate data on farm balance sheet information to reflect farms' financial conditions. The Farm Financial Survey is now produced jointly by Statistics Canada and Agriculture and Agri-food Canada and is a national survey, collecting financial and balance sheet information from a relatively large representative sample (18,000) of farms stratified by farm size, type and province. The sample only covers those farms with gross farm revenues over Cdn \$10,000. In addition to data on assets, liabilities, capital purchases and sales, data are collected on sources of farm income (ie. Direct program payments and farm revenues) and expenses as well as non-farm sources of income of the (main) operator and his/her family members.

Again, these data are useful because they provide balance sheet information for farm enterprises and their operators by size, type and region and relate this information to farm household income (including non-farm sources) of the (main) farm operator. Another advantage of these data is the relatively low cost and flexibility of conducting analysis, particularly since Agriculture and Agri-food Canada has access to individual records with which to conduct our own analysis. These data have been used extensively to monitor the financial situation of farms and farm families and to develop the farm typology⁴, used in policy and program analysis.

A disadvantage with this data source is that the survey is only conducted every two years, and therefore a time series of balance sheet information is not available. The survey lacks many physical variables and reports non-farm income for the family of the main operator, only (excluding that of a partner or other operators). Also, while the data are occasionally linked across time to provide

⁴ The farm typology developed for Canada is described in the appendix.

longitudinal information for specific farms, generally, the sample is rotated and panel information is not available to compare over time.

Farm Taxfiler or Whole Farm Database

The Farm Taxfiler Database is a recent addition to our sources of farm household income data. These data were first compiled in 1989 and have been available every year since that time. These data are based on administrative data from Canada Customs and Revenues Agency (CCRA), which collects income taxes from individuals and corporations. Statistics Canada takes the information from individual T1 income tax return forms and compiles data for farms, farm operators and farm families on detailed gross farm revenues and expenses, including direct program payments as well as sources of off-farm income and income taxes paid. These data are available by farm size (revenues), farm type, and province.

These data are used extensively to describe the revenue and expense situation of farms, farm operators and farm families in Canada. They provide an estimate of net operating income from farming and detailed off-farm income. They also provide an estimate of government support payments to farmers and farm families which has been used extensively to monitor and develop agriculture policy and programs in Canada. An advantage of these data is that they are based on a fairly large representative sample of Canadian farm and farm operators. Also, given the detail that is available, significant analysis can be conducted by revenues, expenses, farm type, size and province. In addition, off-farm income is broken down and provides information on sources of off-farm income, such as government transfers, investment income, pension income and off-farm employment income. These data are used extensively to monitor the financial situation of farm operators and farm families, to develop cost of production scenarios, and to analyse farm support programs and fiscal policies affecting producers.

One disadvantage of this data source is that the data are not as timely as desired. Between the time the data are collected, at the end of the taxation year, and when the data are sent to Statistics Canada to be manipulated, analysed and disseminated, there is a two-year time lag. Also, the data are not designed on a longitudinal basis, so as to be able to follow a farm operator or farm family over time. Given that this data source has only been available since 1989, this is not a long time series of information. Finally, because of the large sample and detailed data, the cost of conducting analysis is relatively high.

Survey of Consumer Finances and Survey of Labour Income Dynamics

The Survey of Consumer Finances (SCF) and the Survey of Labour Income Dynamics (SLID) that now replaces it, are surveys conducted by Statistics Canada that collect income information from all Canadian families and individuals. Farm family income is available after depreciation (net farm income after Capital Cost Allowance (CCA)) and before and after taxes. Sources of off-farm income are also available from this data source, including government transfers, employment income, investment income and pension income. While the sample for the overall Canadian population is fairly large, and therefore representative, the sample for farm operators and their families ends up being quite small and hence relatively unreliable, given the relatively small share of the population that farm families make up (3%). Nevertheless, these data are one of the only sources that allow us to compare income of farm families to non-farm families over a fairly consistent time period. The SCF data were initially collected in 1965 and have been available every year since that time (excluding 1966, 1968 and 1970) until 1997.

The SLID data which replaces the SCF has been available since 1996, and it is argued, is comparable to the SCF data source historically. However, this is only the case for the general population and not for the farm family data series. Therefore, we do not have a complete historical time series of farm versus non-farm family income data that runs from the 1960's to the year 2000. For earlier comparisons, we have an income series from 1965 to 1997, and for the most recent period, we have income from 1996 to 1999. Nevertheless, this data source has been used extensively in policy analysis and program design.

FARM FAMILY INCOME DATA GAPS

As discussed above in the description of data sources in Canada, it is clear that as a result of developing many of these data sources describing farm family income in Canada, we have been able to monitor the financial situation of farm families, describe their economic well-being relative to the general population, explain the structural changes that have been occurring in agriculture and draw implications for the impact of agriculture support programs on farmers and their families. Compared to many other countries we have a wealth of data information, of a generally high quality, that is consistent over time, and detailed enough to allow us to draw implications for policy, programs, financial health of the sector and economic well-being of farm families.

Perhaps, one of the main gaps in data arises from the fact that our sample of farm families is fairly small, and therefore we are not able to draw completely reliable results on a consistent basis. In addition, we have a paucity of panel data that

could allow us to follow a particular family or operator over time. However, the Survey of Labour and Income Dynamics, which was first conducted in 1996, does just that: it follows the same individuals and families over time. Whether the farm family sample in the survey will be consistent enough, large enough and reliable enough, we do not know. But obviously this may be an important source of farm family income data in the future, that will be used extensively to conduct policy and program analysis in Canada.

APPENDIX

Farm Typology

An alternative method of considering the distribution of farms that accounts for the diverse needs and behaviours of farmers and their families is the “farm typology” (Niekamp and Zafiriou, 2000). This “farm typology,” like that developed by the Economic Research Service (ERS) of the United States Department of Agriculture (ERS, 2000), takes account of such factors as the size, age, business intentions and life cycle that influence the behavior, potential and performance of farms and their operators. For example, some farm operators are close to retirement and in the process of downsizing or preparing for succession. Others are considering expanding and in the process of investing in new capital, and training and skills to become more profitable and efficient. Still others are operating a small farm where they live while working full-time in another profession, simply for lifestyle reasons.

Farms have been divided into four typologies or categories based on size or capacity, life cycle and/or business intentions. Retirement farms are those farms operated by farmers over age 60 and receiving pension income, or anyone over age 65 years of age with no second operator that is at least 20 years younger (to account for children in the process of taking over the farm). Farmers in this typology are expected to be downsizing, have significant assets and little debt, and are likely not investing in new technology and equipment. Retirement farms represented 16% of farms in Canada.

Lifestyle farms are relatively small farms (gross farm revenues under \$50,000) where the main operator and/or family members also earn substantial off-farm income (over \$50,000). Farm operators and families living on these farms generally earn little from farming and are not in the process of expanding and/or investing in training and new skills. Lifestyle farms represented only 8% of farms in 1999 and accounted for only 1% of agricultural output

Low income farms are farms with low family income (under \$20,000 per family) which are also not retirement or lifestyle farms. Generally operators on this group of small farms (under \$50,000 in revenues) earn little from farming or from off-farm sources. This may be because they are not close to employment centres where they might find off-farm jobs, they may operate only marginal land or may not have the appropriate skills to do well in farming or in off-farm employment. Generally, operators on these farms receive little from agricultural safety net programs (4%) (Table 1) and do not have access to more general social safety nets (eg. Employment Insurance, Welfare) because they are too asset-rich. They are

considered the rural poor. In 1999, 11% of farms were considered low income farms.

Business-focused farms include farms not in the other three typologies (i.e. retirement, low income or lifestyle). Operators on these farms may be more serious about farming but may have small, medium, large or very large farms. Generally they have higher operating margins than the other typologies, based on larger assets and higher debt. They invest in their farms and are generally interested in upgrading their skills and knowledge. They receive the bulk of program payments (86%) and account for the largest share of agricultural production. They represented 65% of farms in Canada in 1999 and accounted for 90% of agricultural sales. The typology has proven useful in analyzing the diverse needs of the agricultural sector, and hence in identifying the policy mix that is necessary to address these diverse needs.

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FIGURES

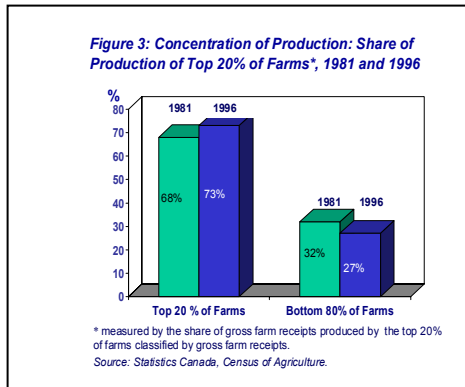
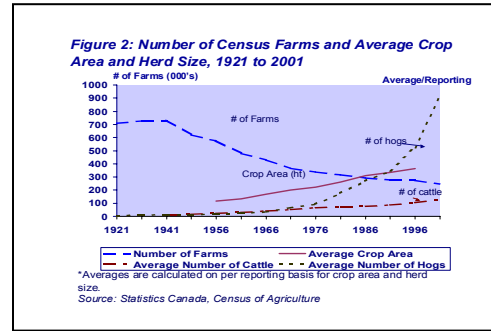
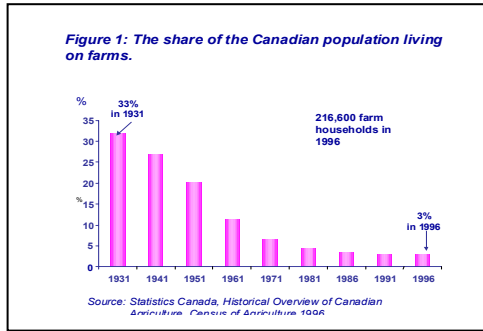


Figure 4: Canadian farms and farm households are a diverse group*

Farm Typology	Number of Farms		Market Revenue		Program Payments	
	Actual No.	% of Total	Market Revenue	%	Program Payments	%
Retirement	27,928	16	6	6	8	8
Lifestyle	13,601	8	1	1	2	2
Low Income	18,885	11	3	3	4	4
Business Focused:						
Small Farms	14,686	9	1	1	2	2
Medium Farms	21,632	13	5	5	7	7
Large Farms	62,952	37	42	42	52	52
Very Large Farms	10,521	6	39	39	23	23
Hutterite Colonies, etc.	514	0	2	2	2	2
Total	170,719	100	100	100	100	100

* Farm typologies are defined in the appendix
 Source: AAFC, Farm Financial Survey, 2000.

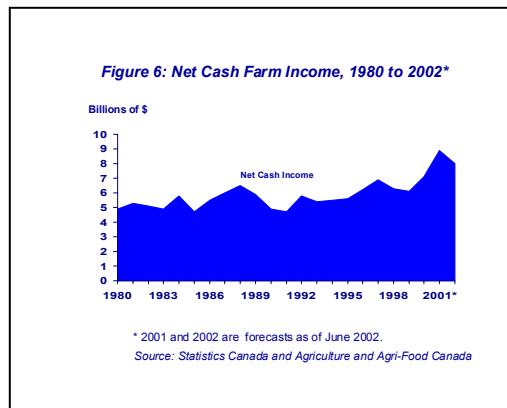
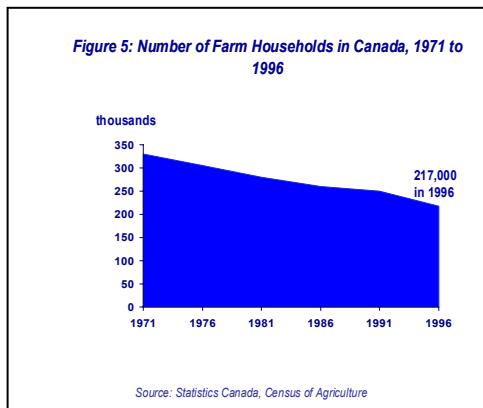


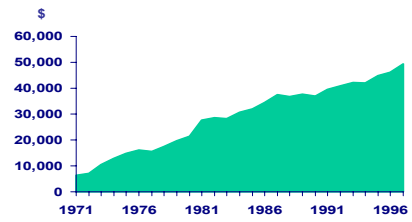
Table 1: Share of Families with Low Income, Farm and All Families, Canada, 1973 to 1998

	Farm Families	All Families
1973	21.8	13.4
1978	12.8	10.3
1985	16	14.4
1991	12.1	12.9
1993	11.4	14.5
1995	9	14.2
1998	12.8	13

* as measured by the share of households with income below Statistics Canada's Low Income Cut-off (LICO) for various years.

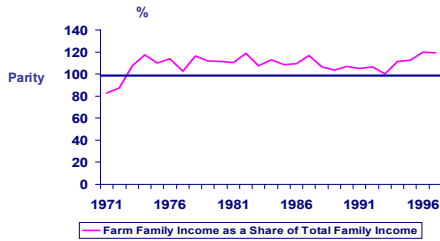
Sources: Statistics Canada, Survey of Consumer Finances and Survey of Labour Income Dynamics

Figure 7: Farm Family Income, 1971 to 1997



* Farm families are those husband/wife families (including unattached individuals) where one individual reports some net farm income.
Source: Statistics Canada, Survey of Consumer Finances.

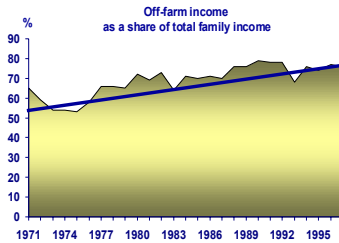
Figure 8: Farm Family Income Relative to All Families, 1971 to 1997



* Farm families are those husband/wife families (including unattached individuals) where one individual reports some net farm income.

Source: Statistics Canada, Survey of Consumer Finances.

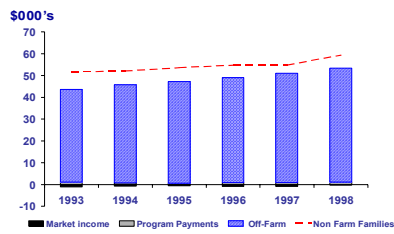
Figure 9: Off-farm Income as a Share of Total Farm Family Income, 1971 to 1997



* Farm families are those husband/wife families (including unattached individuals) where one individual reports major source of income from farming.

Source: Statistics Canada, Survey of Consumer Finances.

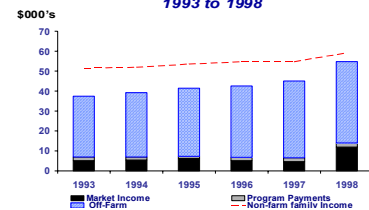
Figure 10: Share of Off-farm Income for Farm Households Operating Small Farms*, 1993 to 1998



* small farms are those farms where gross farm revenues are Cdn \$10,000 to \$49,999

Source: Statistics Canada, Whole Farm Database and Small Area Administration Data

Figure 11: Share of Off-farm Income for Farm Households Operating Medium-sized Farms*, 1993 to 1998



* Medium-sized farms are those farms with gross farm revenues of Cdn \$50,000 to \$99,999

Source: Statistics Canada, Whole Farm Database and Small Area Administration Data

