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Trends in the Demographic Profile of Canadian Farmers

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Draft Discussion Document

Paper commissioned by the Canadian Agricultural Policy Institute (CAPI) as part of the farm income project, “Understanding Factors Affecting Current and Future Farm Income Prospects”.

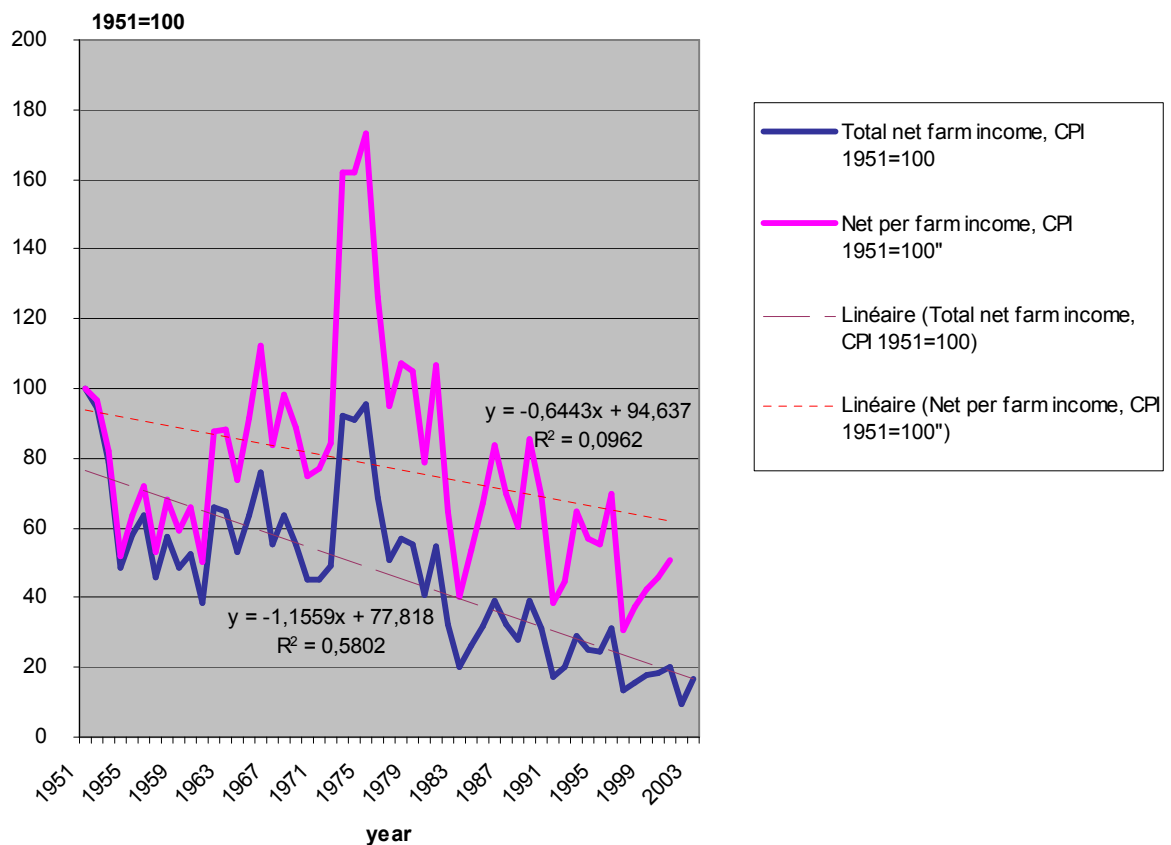
May 2005

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Introduction

The net income of farmers has been decreasing in real terms since the 1950s, whether measured as net realized income (gross income minus depreciation of assets) or net cash income (net realized income minus farm expenses; total net income). Figure 1 presents the evolution of net total and “per farm” income for Canadian farmers since 1951. The total net farm income has been steadily declining since the end of World War II, except for a temporary boost during the 1973 petroleum crisis. Linear trend analysis reveals a strong negative total net farm income trend for the period from 1951 to 2003.

Figure 1: Total and per farm net income (real terms), Canada, 1951-2003

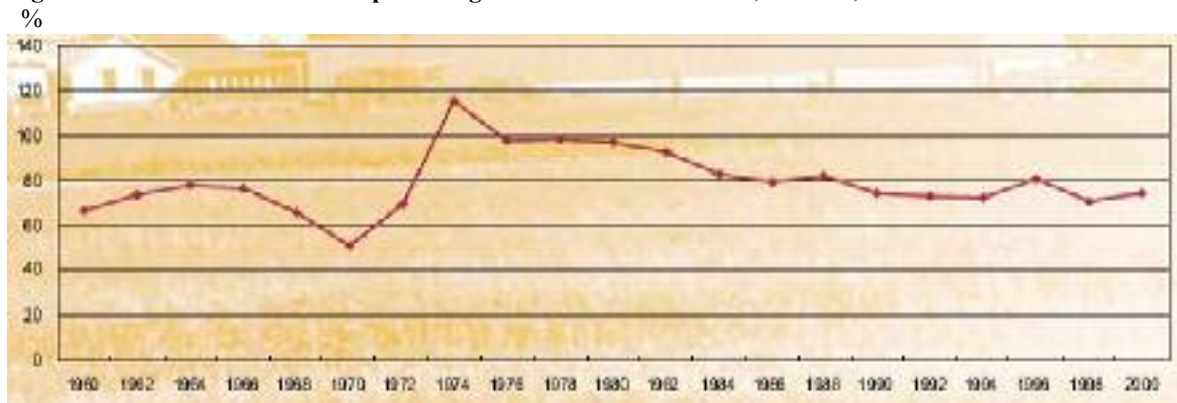


Source: Statistics Canada, Catalog, #21-010-XIF, vol 3 n° 1 (net income). Census (1951 to 1991), 1996 and 2001: <http://estat2.statcan.ca/cgiwin/CNSMCGI.EXE?LANG=F&C91THEME=1640>, “Farms number”, our calculations.

It is well documented that the number of farms in Canada and across North-America has also been declining since World War II. In *L'activité humaine et l'environnement* (2000), Simard et al. show that from 1951 to 1996, the total number of farms in Canada declined by 56%. This is probably a natural process, at least partially induced by declining net income per farm and total net farm income. The linear trend analysis plotted on Figure 1 shows that decreases in the number of farms over this time period has not triggered increases in per farm net income. Net income per farm has been declining since 1951, but the rate of decline has been somewhat slower than the decline in total net farm income.

Figure 2 shows the trend in average farmers' revenue in comparison with the average revenue of all tax-filers' between 1960 and 2000. Farm income has consistently been below the average revenue amongst all tax-filers, except during the 1973 oil crisis. Since 1984, average farm income has hovered at or slightly below 80% of revenues enjoyed by the average Canadian.

Figure 2: Farmers' income as a percentage of all tax filers' income, Canada, 1960-2000



Source: Statistics Canada, Farming facts 2002, 2003, <http://www.statcan.ca/english/freepub/21-522-XIE/21-522-XIE2002001.pdf>, p. 16.

At the end of the 1990s, many experts became interested in exploring the issue of declining farm incomes. The *Groupe d'analyse de l'enquête financière sur les fermes* (2001) found that, in 1999, net market income was only 32% of total net farm income. The remaining income came from either off-farm revenues (44%), farm wages given to family members (13%) or subsidies (11%). The *Standing Committee on Agriculture and Agrifood* (1998) reported that between 1996 and 1997 total net farm income dropped by 53%. Two years later, the same authors (2000) reported that western Canadian grain growers were experiencing financial difficulties because of highly subsidized cereals available from the European Union and the USA, as well as from natural disasters, such as flooding and droughts. They noted that the Agriculture Income Disaster Assistance (AIDA) program, created after the disastrous 1997 and 1998 cereals years, created revenue problems rather than solving them.

According to that study, the two major problems that place farmers in precarious financial situations are inadequate payments in the case of expanding farms, and failure to take into account that novice farmers often operate on fragile margins. They also identified an urgent need to inject money, independent of existing programs, as a long-term risk-management strategy. It was suggested that the federal government should double its annual contribution to the strategic net income stabilization account programs. The *Groupe de travail fédéral-provincial sur la protection du revenu* (2002) has also suggested various solutions that farmers could use to protect themselves against high income fluctuations: crop diversification, careful selection of crop varieties, increased cost management (especially fixed costs), and increasing use of technology and contract production.

In order to find long-term approaches to improving Canadian farmers' net income, it will be necessary to understand the nature of farm income and the major factors that influence it. One such factor could be the evolving socio-demographic profile of Canadian farmers. By studying the demographic profile of farmers, policy makers should be able to better understand the potential or real links between farm income and certain socio-demographic variables, such as age, education, experience, location, and farm type and tenure, as well as other agricultural human resource issues. To increase the overall explanatory power of these demographic findings, the analyses should attempt to discover trends that have developed over a long historical time period, not simply those that have appeared in the last few years.

The present paper aims to provide a better understanding of the socio-demographic profile of Canadian farm operators. Our main source of information is Statistics Canada's farm census data, which were collected only once every five years between 1951 and 2001. Farm financial data, however, (ex., revenues, total factor productivity, etc.) are available for each year between 1951 and 2003. It is extremely important to understand from the outset that Statistics Canada [Stat Can] has periodically changed the types of socio-demographic questions that appeared on its farm census questionnaires. For example, the very definition of a "farm operator" has varied over the years. Prior to the 1991 Census of Agriculture, a "farm operator" was defined as:

"one person responsible for the day-to-day decisions made in running an agricultural operation".¹

In 1991 and thereafter, a "farm operator" was defined as:

"those persons responsible for the day-to-day management decisions made in the operation of a census farm or agricultural operation. Up to three farm operators could be reported per farm."²

¹ Statistics Canada, census terms, <http://www.statcan.ca/english/freepub/95F0303XIE/notes/center.htm#6>.

² Statistics Canada, census terms, <http://www.statcan.ca/english/freepub/95F0303XIE/notes/center.htm#6>.

Beginning in 2001, Stat Can defined self-employed agricultural workers as:

“persons 15 years of age and over who worked since January 1, 2000, and for whom the job reported consisted mainly of operating a business, farm or professional practice, alone or in partnership. Some examples include: operating a farm, whether the land is rented or owned; working on a freelance or contract basis to do a job (e.g. architects, private duty nurses)”.³

For the census years 1991-1996-2001, Stat Can categorised farms into the following four legal forms: *Sole Proprietorship, Partnership (with or without a written agreement), Family or Non-family Corporation, or Others* (principally institutions and community organisations).⁴

This paper attempts to answer the following fundamental questions:

- 1) *What is the demographic profile of Canadian farmer owner/operators for various sales classes and types of operations?*
- 2) *Do these demographic profiles indicate that Canadian farmers have the skills required for success, or for pursuing off-farm opportunities?*
- 3) *How are farm consolidation trends impacting upon their socio-demographic profile and their use of human resources?*
- 4) *What is the demographic profile of farm operators who own land versus those who rent land?*

³ Statistics Canada, *ibid*.

⁴ Statistics Canada, thematic tables, http://estat2.statcan.ca/cgi-win/CNSMCGI.EXE?Lang=F&DBSelect=T_26.

Chapter 1: What is the demographic profile of Canadian farm owner/operators for various sales classes and types of operations?

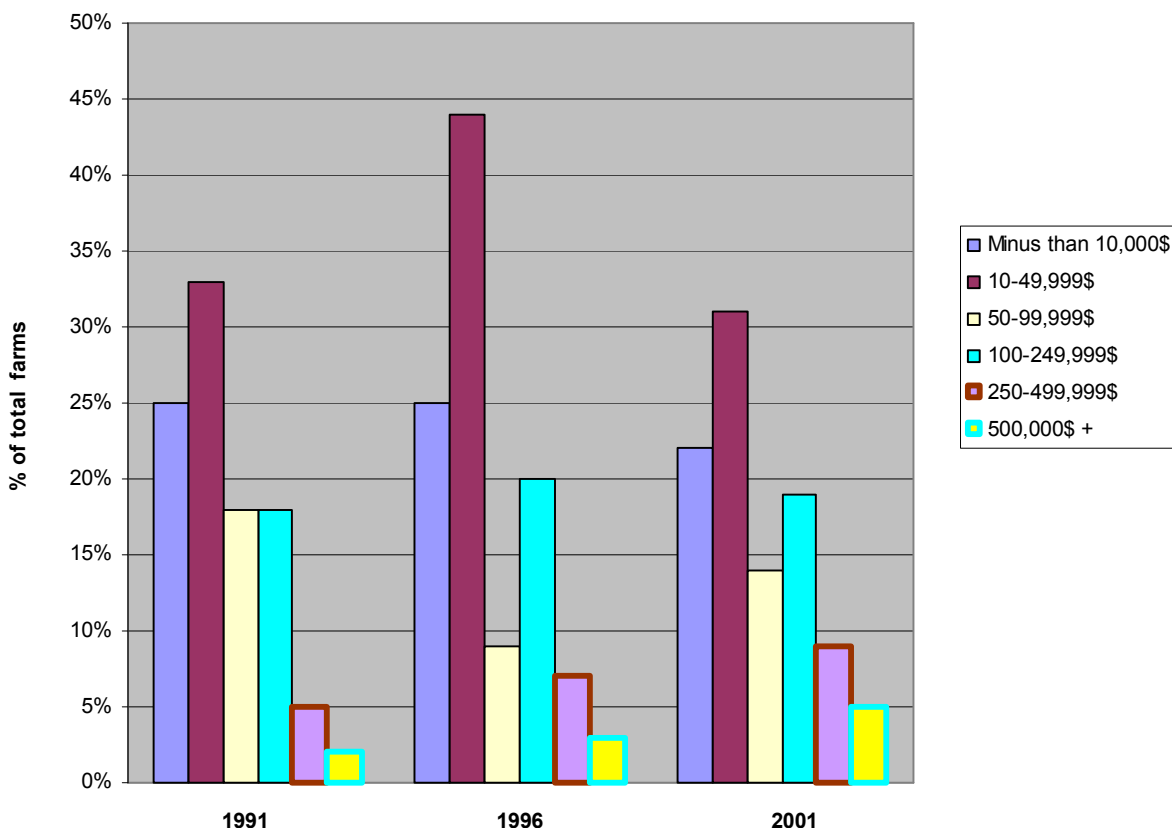
Today, farms of vastly different types and financial sizes are operating in Canada. However, at the beginning of the 20th century small family farms were in the majority. They were, in fact, so financially small in size, that they could hardly cover the operator's family needs through the sale of the products they produced. Specialization was a rare phenomenon in those times. By the 1990s, the portrait of Canadian farms had diversified, and Stat Can began categorising them into the categories of "sole proprietorship, corporate (family or non-family), partnership, or other", reflecting the trends that had mainly taken place during the 1980s. Today, the number of products produced and sold by a given farm has never been so high, though most farms today can still be categorised as selling more of one single product than all others (ex., farms specialized in hog production, or corn, soybean, or canola production, etc.). This chapter will explore the relationship between farm income and the type of farm or different kinds of products produced.

Financial profile of farms

The financial profile of Canadian farms as recorded in the 1991, 1996 and 2001 *Statistics Canada* census represents the most recent financial data available. In 1991, *Statistics Canada* (Stat Can) modified the categories used to classify certain farm characteristics, as well as the characteristics of the farmers themselves. These modifications make it extremely difficult, if not impossible, to conduct trend analyses before 1991 for many of the characteristics that are important for this study. Since 1991, Stat Can has collected some detailed socio-demographic data on farmers that allows for more detailed analyses of certain characteristics of farms and farmers. For example, up until the 1980s sole proprietorship farms were the norm in Canada. The increasing presence of multi-owned farms (corporate or partnerships) is a relatively recent phenomenon, becoming part of farm census data collected by Stat Can only since 1991.

From Figure 3, it is evident that, between 1991 and 2001, there was actually a small decline in the prevalence of low income farms (i.e. < \$100,000), and a slight gain in the prevalence of high income farms (i.e. > \$250,000). The percentage of farms in the \$250,000 to \$499,999 category was

Figure 3 : Percentage of farms by financial size (gross income), Canada, 1991-2001

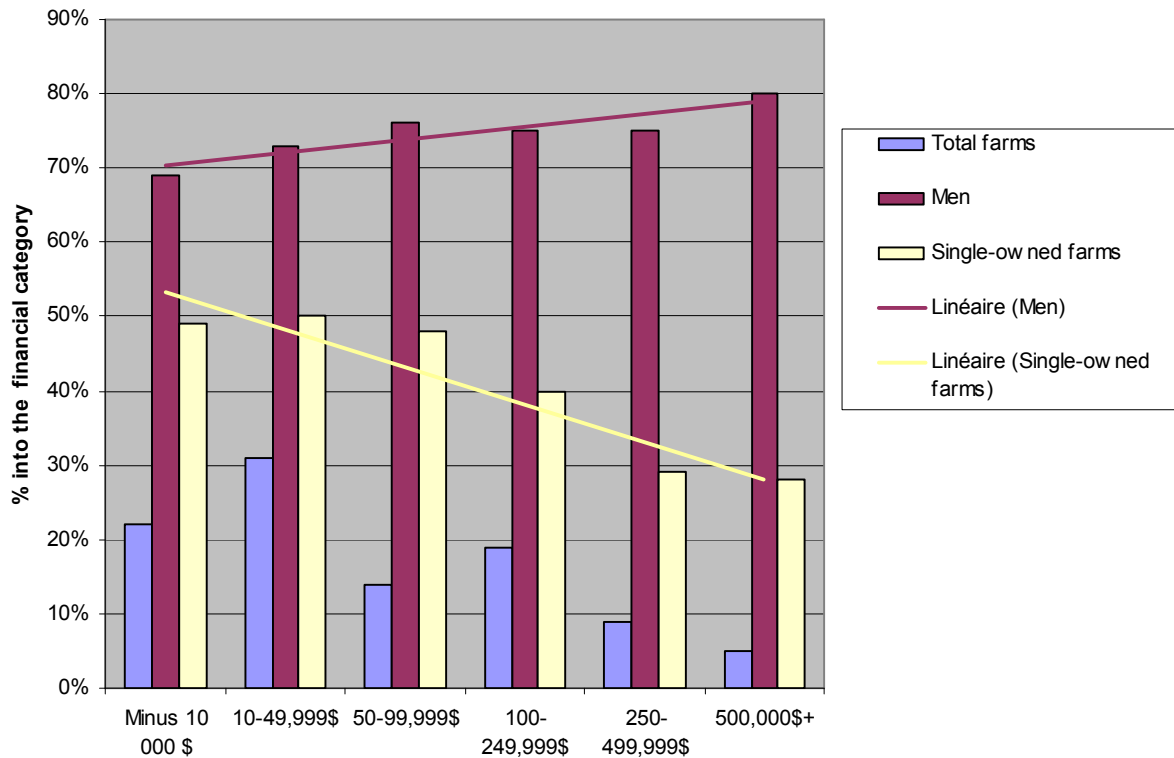


Source: Statistics Canada, Census (1991), 1996 to 2001: <http://estat2.statcan.ca/cgi-win/cnsmcgi.exe?LANG=E&C91THEME=3953>, “Total gross farm receipts”.

growing by approximately 2% per year over this 10 year period, while the percentage of farms making \$500,000 or more per year more than doubled. The most likely cause of this increase is the farm consolidation process that was causing a decrease in the number of lower income farms, as they were purchased by farms with higher incomes. This phenomenon helps account for the increasing percentage of higher income farms.

In 2001, 75% of all Canadian farm operators were men and 25% were women. Men, however, represented 69% of farmers in the lowest income group and 80% of those in the highest income groups (Figure 4). Female farm operators were more likely to be in the lowest income categories. Figure 4 also indicates the percentage of “sole proprietorship farms” within each of the six income levels in 2001. The lower income farms were much more likely to be under sole proprietorship than those in the highest income categories. Thus farms under corporate ownership or partnership agreements are more likely to generate higher income than sole proprietorship farms. The data also allowed for an analysis of the age profile of farmers across the various income groups (data not shown in Figure 4). Older

Figure 4 : Farm financial size by gender, age and number of owners, Canada, 2001



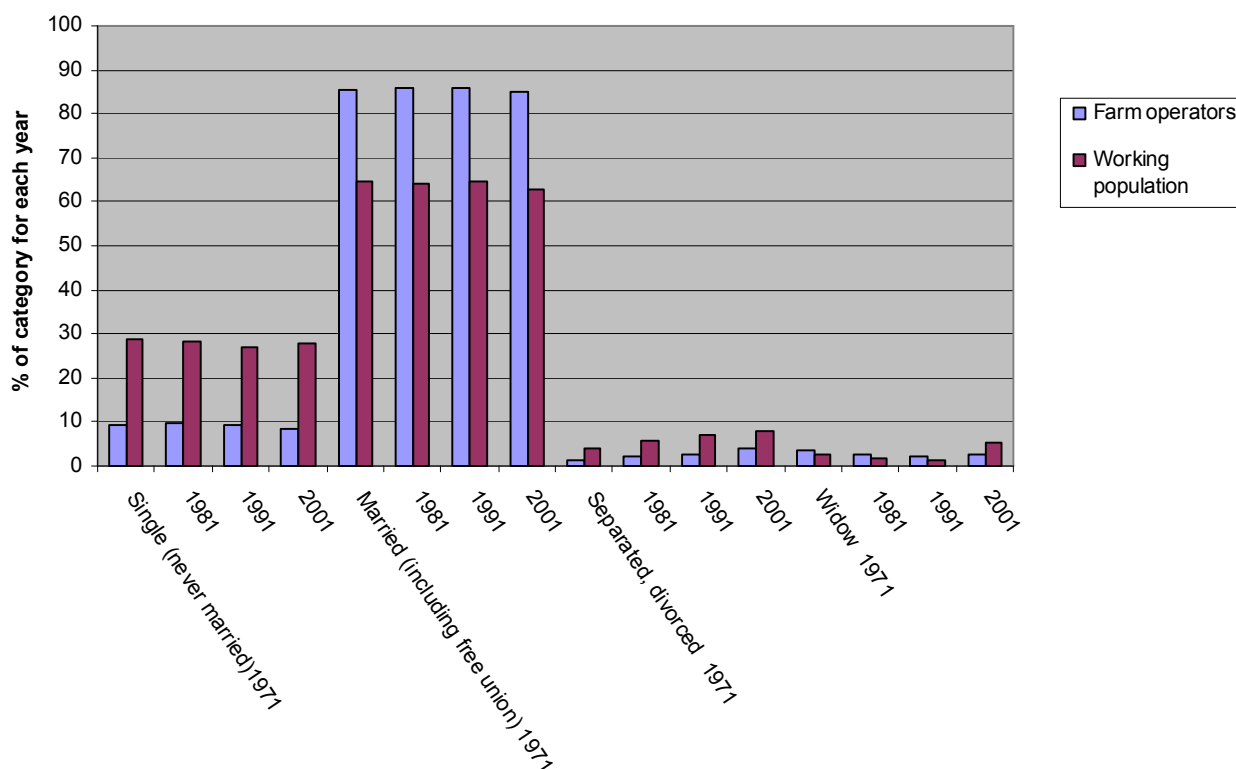
Source: Statistics Canada, http://estat2.statcan.ca/cgi-win/CNSMCGI.EXE?Lang=F&DBSelect=OP_PR05, « Total gross farm receipts », our calculations.

Farmers (aged 55 and over) were more likely to be in the lowest income categories (< \$50,000 per year), while those aged 35-54 years dominated in all other income categories.

Marital status

Figure 5 shows the evolution of the marital profile of Canadian farmers between 1971 and 2001. The percentage of single, never married households has consistently been lower among farm operators than among the general population. In very stark contrast, the percentage of married households has consistently been much higher among farm operators than among the general population. Furthermore, fewer farm operators are separated or divorced. The conjugal status of farmers thus appears to be more traditional and stable. This suggests that operating a farm household actually requires or is very conducive to maintaining a “married” or dual household status, perhaps partly due to the need for on-farm labour and off-farm revenues. Perhaps the presence of a spouse contributes significantly to the

Figure 5 : Marital status of farm operators vs total working population*, Canada, 1971-2001



*Working population includes farm operators.

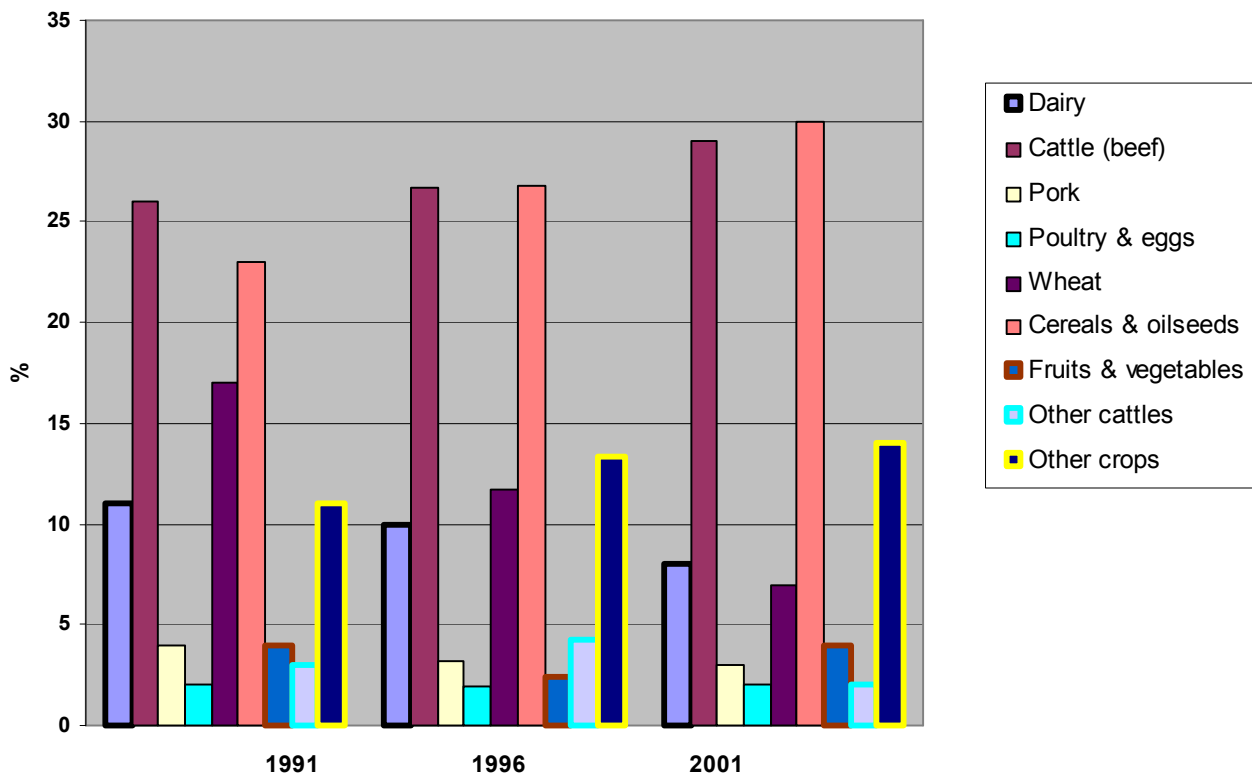
Source: Statistics Canada, Thematic tables, <http://www.statcan.ca/francais/freepub/95F0303XIF/tables/html/agpop1601f.htm>

financial success of farming enterprises.

Canadian farms by production type, 1991-2001

It is widely known that Canada is a net exporter of agricultural produce, and Canadian beef, milk and wheat are exported more than most other agricultural products. The data used in Figure 6 represent farms that make at least \$2,500 a year by selling what they produce. Since many farms produce more than one product, the product identified is the main product (i.e., representing the greatest part of the farm’s gross revenue). Figure 6 shows that, between 1991 and 2001, the percentage of Canadian farms producing either cattle or cereals and oilseeds has been increasing. The production of “other crops” has also been increasing. During the same period, there were fewer and fewer farms producing wheat and milk. These patterns probably represent the increasing consolidation of smaller

Figure 6 : Farms distribution by principal type of production, Canada, 1991-01.

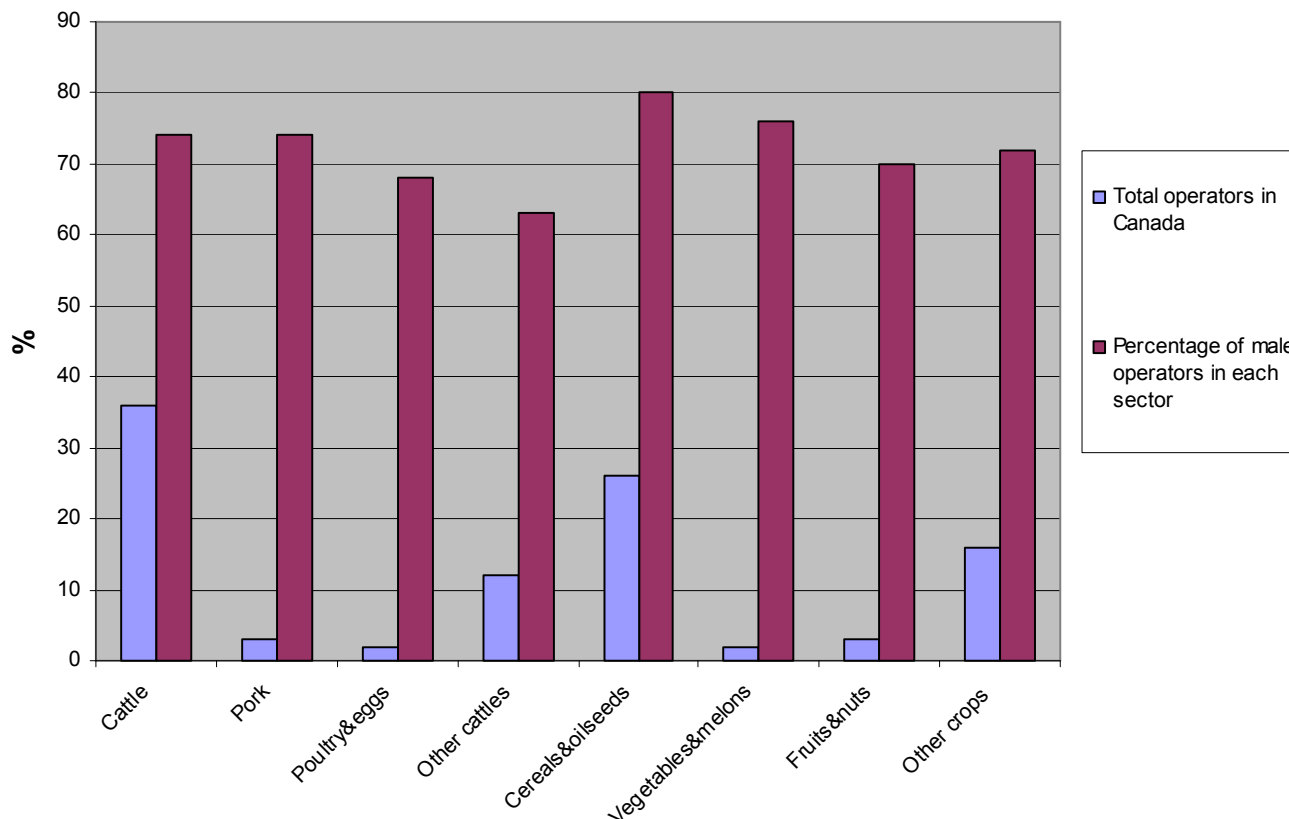


Source: Statistics Canada, Census (1991), 1996 and 2001: <http://estat2.statcan.ca/cgi-win/cnsmcqi.exe?LANG=E&C91THEME=1640>, “Farms type”.

wheat and dairy productions as they are purchased by larger farms. As the numbers of Canadian wheat and dairy farms decline, farms in the cattle and cereals and oilseeds sectors take on an increasing percentage of the total number of farms remaining in business between 1991 and 2001. However, it may also be that wheat farmers were converting their productions to other cereals and oilseeds, partially because these grains had continued high value on external markets. Wheat and milk productions in Canada are still very lucrative markets.

The statistics in Figure 7 are only available for the year 2001, and reflect the number of farm operators, not the number of farms. The classification of production type is different from Figure 6; for example, the category “milk” may have been merged with the “cattle” category, and the category “wheat” may have merged into the “cereals and oilseeds” category. From Figure 7, we can observe that men make up a higher percentage of producers in the “cereals and oilseeds” category (80% men), while women have the highest level of presence in the “other animals” category (37% women),

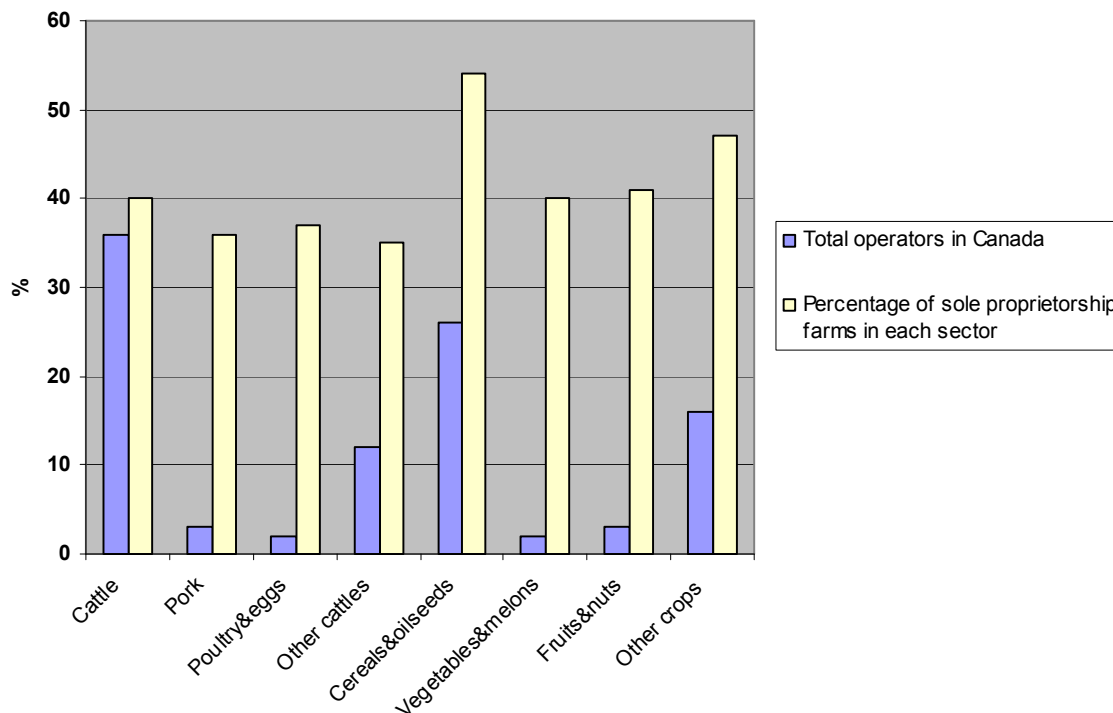
Figure 7 : Farm production type by gender, Canada, 2001



Source: Statistics Canada, http://estat2.statcan.ca/cgi-win/CNSMCGI.EXE?Lang=E&DBSelect=OP_PR06, “Farms type”.

followed by poultry and eggs (32% women). Perhaps the production of other animals, such as rabbits, elk, emus and ostriches, is an easier path for women who want to get into agricultural production. From Figure 8, we can see that the highest percentage of sole proprietorship farms (54%) is in the “cereals and oilseeds” category, followed by the “other crops” category. The “other animals” sector has the smallest percentage of sole proprietorship farms (35%). Since the “other animals” sector has the highest percentage of woman farmers, as well as the highest percentage of multi-ownership, it may be one of the most dynamic and progressive sectors in Canadian agriculture.

Figure 8 : Farm production type by number of operators, Canada, 2001



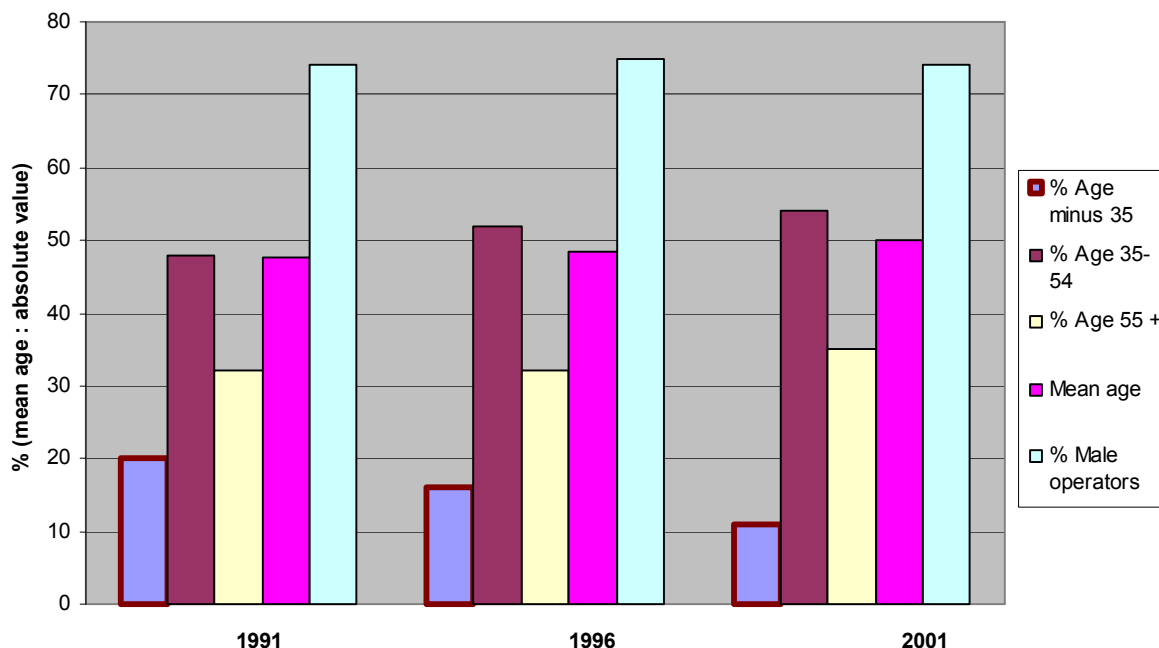
Source: Statistics Canada, http://estat2.statcan.ca/cgi-win/CNSMCGI.EXE?Lang=E&DBSelect=OP_PR06, “Farms type”.

Age, sex and legal tenure, 1991-2001

Figure 9 summarizes age and gender characteristics of Canada’s agricultural farm operators for the years 1991, 1996 and 2001, while Figure 10 shows farm legal tenure for the same period, including whether the operators actually lived on their farms during the 12 month period prior to the census. We did not include institutional and community farms in Figure 10 because their numbers are negligible. From Figure 9, we can see that the percentage of young farmers, aged 35 years and less, was steadily declining during this short 10 year period. In contrast, the percentages of farmers in the 35 to 54 age group and the over age 55 group were steadily increasing. We can also see a steady increase in the mean age of farmers (expressed in absolute value), which reached 50 years of age in 2001, perhaps for the first time in history. These age trends are not necessarily unique to the farm sector or the farm consolidation phenomenon. The aging of the Canadian population means there are fewer young business operators in most sectors of the economy and increasing numbers of older business operators.

In Figure 10, we can see a high, but very slowly decreasing percentage of “male sole proprietors” during this period. Their dominance in the agricultural sector continues to reflect the

Figure 9 : Age and gender of farm owner/operators in Canada, 1991-2001.



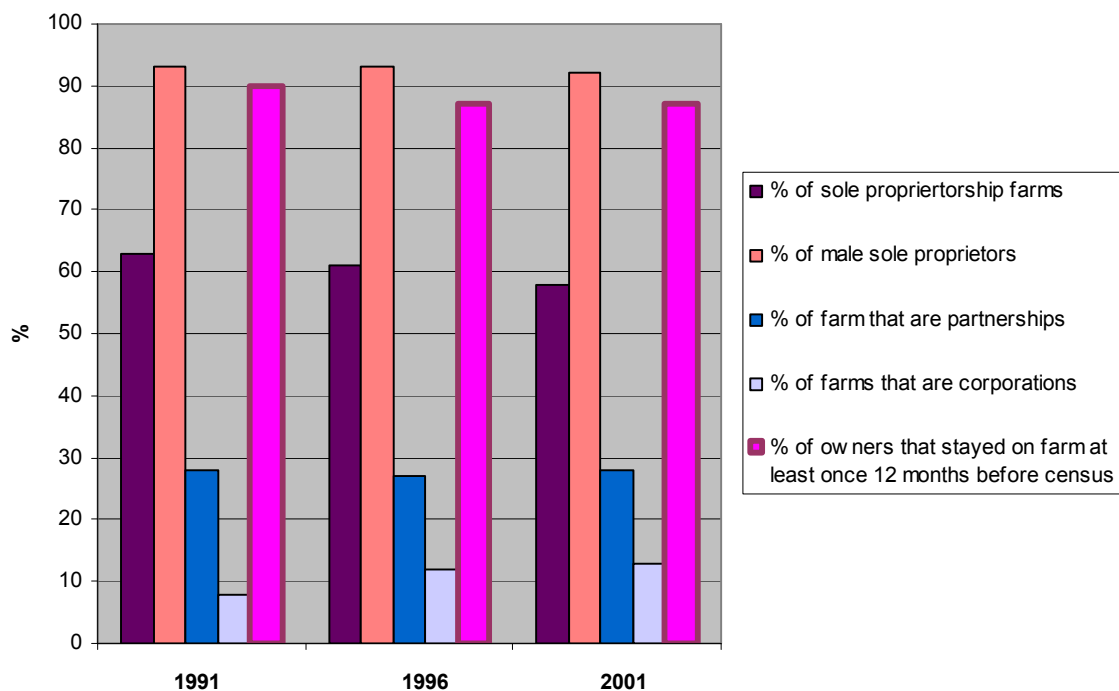
Source : Statistics Canada, Census (1991), 1996 and 2001: <http://estat2.statcan.ca/cgi-win/CNSMCGI.EXE?LANG=F&C91THEME=1637>, various searches, Canadian Federation of Agriculture (2004), <http://www.cfa-fca.ca/pages/index.php?mainid=87>, “Farm operators”

historical pattern of male-dominated, single family farms. The percentage of sole proprietorship farms was also decreasing slowly between 1991 and 2001, while the percentage of corporate farms was slowly increasing. Finally, Figure 10 also shows a very slight decline in the percent of farmers who actually live on their farms 12 months of the year.

Ethnic composition of Canadian farms

There have been changes in the ethnic origins of Canadian farm owner/operators between 1971 and 2001. In this 30 year time span, as documented in Table 1, the ethnic composition of Canada’s total working population has changed very little, while the ethnic composition of the farming population has become more ethnocentric Canadian. In 1971, 84% of Canadian farmers were born in Canada, while their percentage was 90% in 2001. This is a 6% increase in the percentage of Canadian-born farmers in a thirty year time span. In 1971, the largest ethnic minorities among Canadian farm

Figure 10 : Legal tenure of Canadian farms, 1991-2001.



Source : Statistics Canada, Census (1991), 1996 and 2001: <http://estat2.statcan.ca/cgiwin/CNSMCGI.EXE?LANG=F&C91THEME=1637>, various searches, Canadian Federation of Agriculture (2004), <http://www.cfa-fca.ca/pages/index.php?mainid=87>, "Farm operators".

Table 1 : Evolution of the ethnic origins of farm owner/operators, Canada, 1971-2001

	Total farm operators	Total working population*
1971	367 195	8 794 065
% Canada	84	80
% Others	16	20
<i>United States as a % of others</i>	16	7
<i>Netherlands as a % of others</i>	15	5
<i>United Kingdom as a % of others</i>	-	26
<i>Italy as a % of others</i>	-	13
2001	346 200	15 821 985
% Canada	90	80
% Others	10	20
<i>Netherlands as a % of others</i>	23	2
<i>United Kingdom as a % of others</i>	14	11
<i>India as a % of others</i>	-	7

Note: Country indicates country of birth. Total working population includes farm operators.

Source: Statistics Canada, Thematic tables, http://www.statcan.ca/francais/freepub/95F0303XIF/tables/html/agpop1906_f.htm

owner/operators came from the US and the Netherlands, while workers in the rest of the population were coming mostly from the UK and Italy. Thirty years later, in 2001, ethnic minorities among farm owner/operators came mostly from the Netherlands and the UK, while the rest of the population was welcoming workers mostly from the UK and India.

Conclusions

In general, farm owner/operators remain very male dominated, with men accounting for three out of four farm operators. Female farm operators are more likely to be in the lowest farm income categories, and are more likely to be producing poultry, eggs or other small animals, such as ostrich, sheep and goats. Almost all sole proprietorship farms are in the hands of male farm operators.

The percentage of farm operators who live on their farm 12 months of the year has been decreasing since 1991. By 2001, more farm operators were living off-farm than ever before. In comparison with the general Canadian population, farm operators are consistently more likely to be married or cohabiting. While this trend may partly reflect persistent traditional farm values, it may also be influenced by an increased or continued need for spouses that can fulfill on-farm labour needs and/or provide supplementary off-farm income.

There are decreasing numbers of sole proprietorship farms, a phenomenon that has its roots as far back as the 1970s, and sole proprietorship farms are among the poorest in terms of income. Sole proprietors are more present in cereal, oilseed or other crop productions, while large animal productions, such as pork, cattle and poultry, are more likely to be managed as corporate farms or partnerships. Since 1991, there has been a slight increase in the percent of farms that are managed under corporate agreements.

The percentage of young farm operators decreased between 1991 and 2001, while the percentage of middle and older aged operators increased. This trend reflects the fact that there are fewer and fewer young people in Canadian society as a whole. Older farm operators who are retiring from the business are likely selling their farms to middle aged farm operators who are already well established in agriculture and have the financial resources necessary to make additional capital investments.

The last several years has been marked by a decreasing presence of low income farms (revenues below \$50,000) and a growing presence of high income farms (\$250,000 and over). If the number of high income farms continues to increase, they will most likely continue to put pressure on lower income farms to either become extremely efficient or to leave the farming industry.

Chapter 2: Do demographic profiles indicate that Canadian farmers have the skills required for on-farm success, or for pursuing off-farm opportunities?

One important “indicator” of success in farming is financial success. To begin this chapter, we reflect upon whether one could consider that farmers have been experiencing financial success in their on-farm business ventures as measured by their returns-on-assets ratio and by their total factor productivity ratio. Next, we will examine trends in two fundamental tools that are often regarded as necessary for financial success. These tools are the rate of adoption of new technologies and educational attainment.

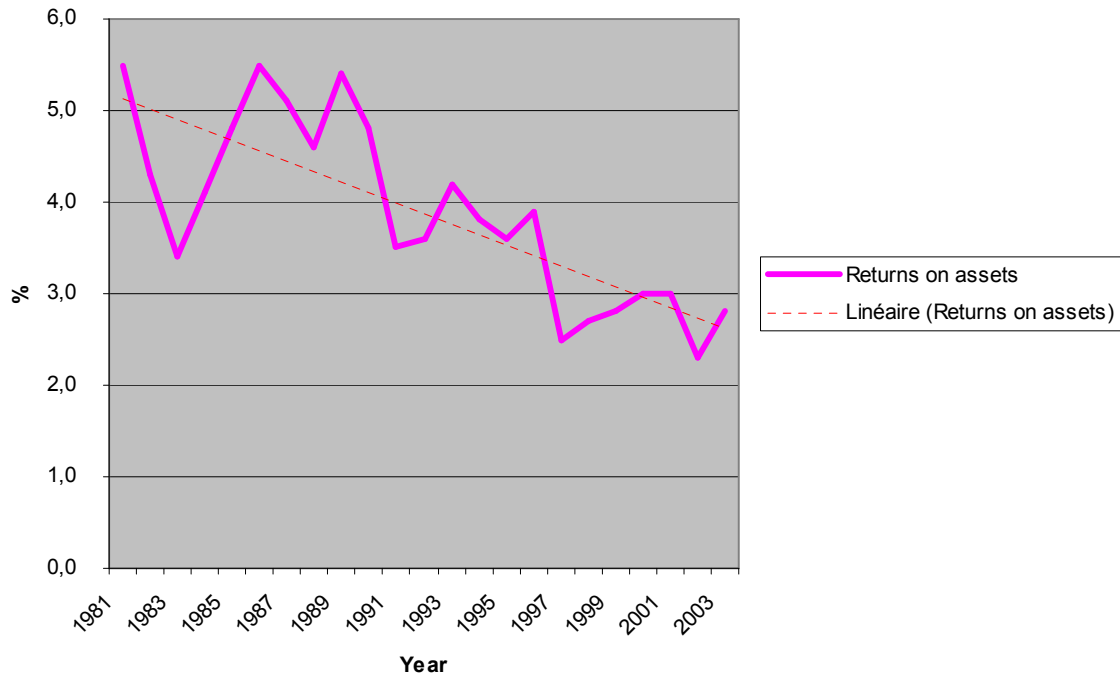
First, we will examine the evolution of an often used indicator of farm financial success, the returns-on-assets ratio.⁵ In Figure 11, we can see that this ratio has been decreasing, and varies from 5.5% in 1981 to 2.8% in 2003. In 2002, it was at its lowest value at 2.3%, representing a 58% decrease since 1981. Does this mean that Canadian agricultural producers are experiencing problems achieving farm financial efficiency and success? From Figure 11, this appears to be the case.

Another important indicator of financial success, however, is Canadian farm operators’ financial *productivity*. In other words, are they producing the same or a greater amount of output, while reducing the amount of inputs? Adoption of new technologies could be used as a proxy for efficiency behaviour, and technology use on Canadian farms could be reflected in their “total factor productivity” (TFP) ratio. We can calculate the total factor productivity ratio by dividing total outputs produced by total (measurable) inputs used in the production process. Outputs are measured as gross sales, while inputs are measured as all expenses for labour, real estate and intermediary goods (chemicals, feed, etc.). This ratio captures farm production increases not explained by increased inputs in the production process.

The performance of the TFP ratio can be plotted over time to detect any positive or negative trends in farm financial productivity. From Figure 12, it is clear that there has been a positive trend in the TFP ratio for Canadian farms between 1951 and 2003. By 2001, the TFP had increased by 38% of its 1951 value. This effectively demonstrates that Canadian farmers are efficiently converting their inputs into agricultural outputs, thus attesting to their ability to successfully manage their farms.

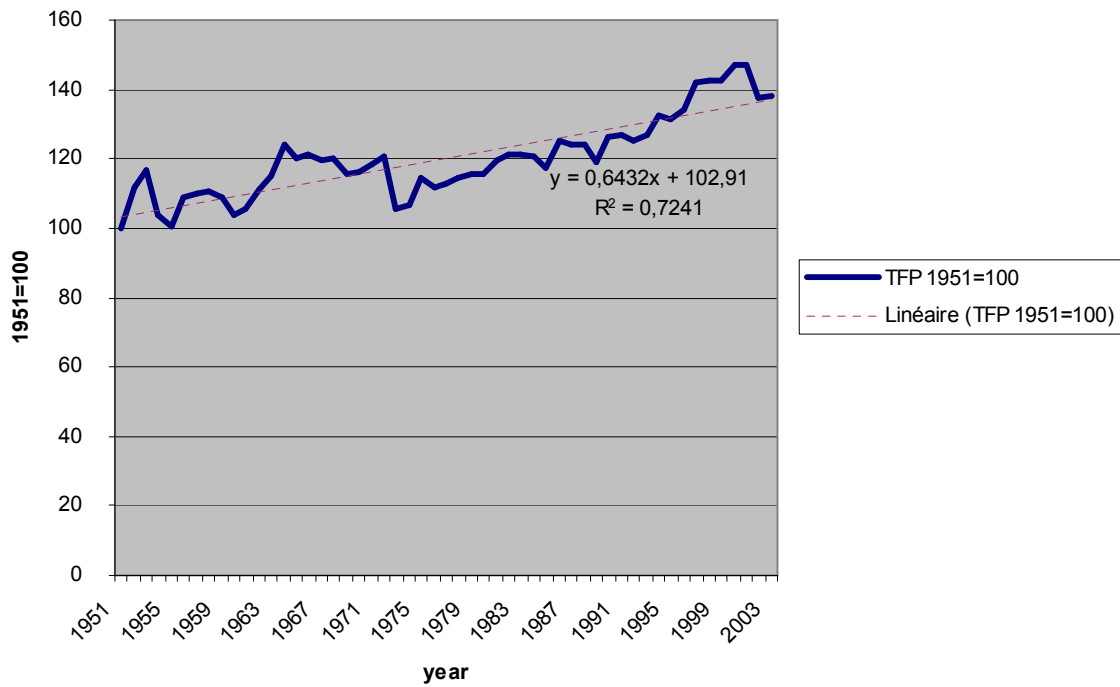
⁵ For aggregated Canada, it is measured by adding the annual net profits before taxes to interest charges, and dividing the sum by the mean total assets (between the beginning and the end of year-period).

Figure 11 : Returns on assets, Canadian farms annual ratios, 1981-2003



Source: Statistics Canada, Table 21-016-XIF, our calculations.

Figure 12 : Agricultural total factor productivity, Canada, 1951-2003.



Source: April, (2005), Table 17, “La PTF agricole au Canada 1935-02”, our calculations.

Table 2 : Evolution of technology use on Canadian farms, 1921-1981

Farms owning at least one ...	Car	Tractor	Truck	Combine harvester	Electric power
1921	-	6%	-	-	4%
1951	51%	55%	29%	14%	51%
1981	70%	89%	78%	44%	82%

Source: Statistics Canada, Census 1921, 1951 and 1981.

Another way to attest to their capacity to achieve financial success is to outline their use of available specific agricultural technologies. At the beginning of the century, electricity, machines and farm equipment were very expensive, thus few farmers could afford to use these technological inputs to improve their production capacity. However, over time, more and more farmers have seen the benefits of new technologies, and thus invested more of their precious financial resources towards the purchase of these technologies. In Table 2, we can see that, from 1921 to 1981, the uptake of today's basic agricultural technologies was spectacular. We can easily extrapolate that, by 2005, almost every Canadian farmer who can make use of these technologies for their agricultural production, now owns them.

A more recent measure of agricultural technology uptake by farmers is ownership of computer technology. From Table 3, we can see that the absolute percentage of farm households owning a computer lags well behind computer ownership in the total Canadian population. This is somewhat surprising, if not actually puzzling, since the cost of computer ownership has been steadily decreasing since 1991, while the availability of proven agricultural software for farm management purposes has been steadily increasing.

Table 3 : Agricultural households owning at least one computer, Canada, 1991-2001

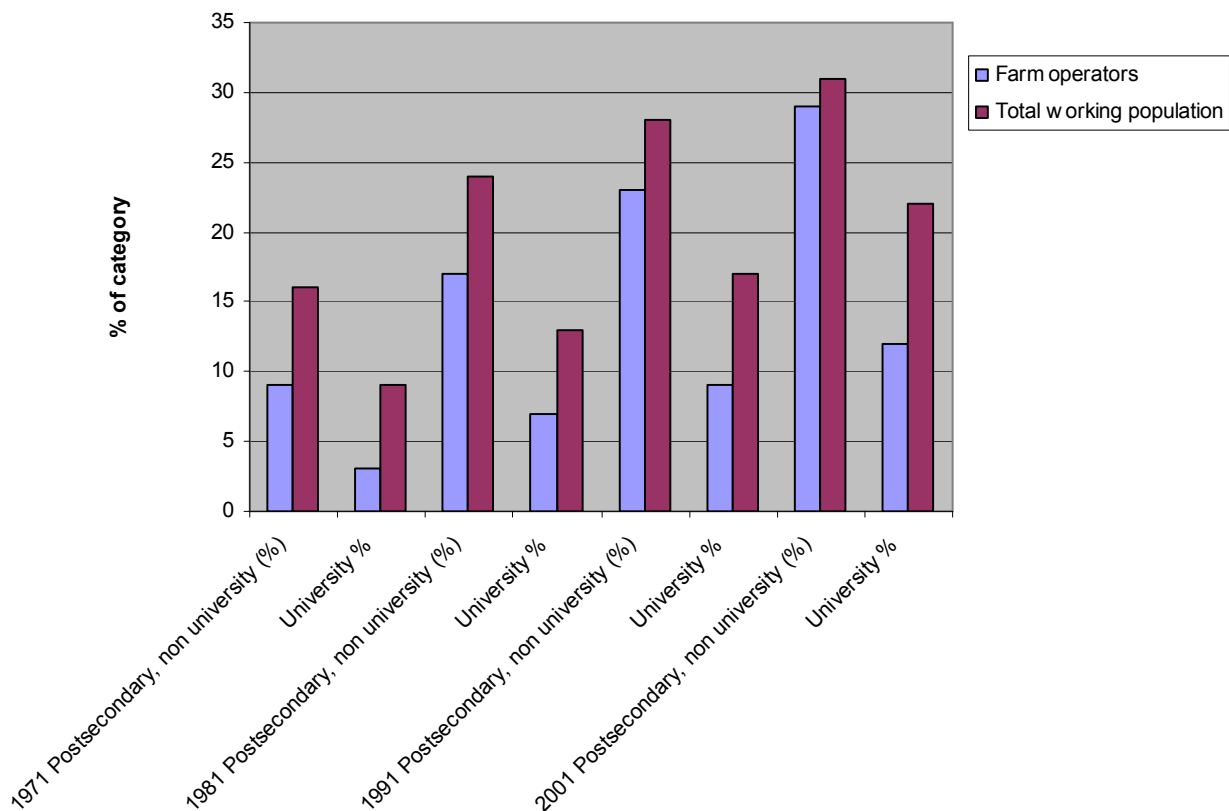
	1991	1996	2001
Percent of farmers	11	21	39
Percent in total society	20	32	55

Source: Statistics Canada, Le Quotidien, 1997, May 14th,

<http://www.statcan.ca/Daily/Francais/970514/q970514.htm#ART1>, Ms Marie-Michèle Boulet, Professor of Computer Science at Laval University.

Another important variable for financial success is certainly education. It is hard to measure the contribution of education to financial success, no matter how you define it, because education is so intangible⁶. There is general consensus that education is important, if not crucial, in every sector of society, including among farm operators. According to Figure 13, an increasing percentage of Canadian farm operators possess postsecondary degrees. Farmers are simply following a trend that is also evident in the general working population; however, farmers appear to have increasingly turned to non-university sources of postsecondary education, while the general population has increasingly turned to universities as a way of improving their knowledge and skill levels. If farmers are receiving specialised, non-university postsecondary training in agriculture, this could be seen as a good omen for improved agricultural capacity. However, it could also prove to be an unfortunate trend for farmers who may eventually need to seek off-farm employment either to supplement the farm income or as a

Figure 13 : Education among farm operators versus the working population*, Canada, 1971-2001

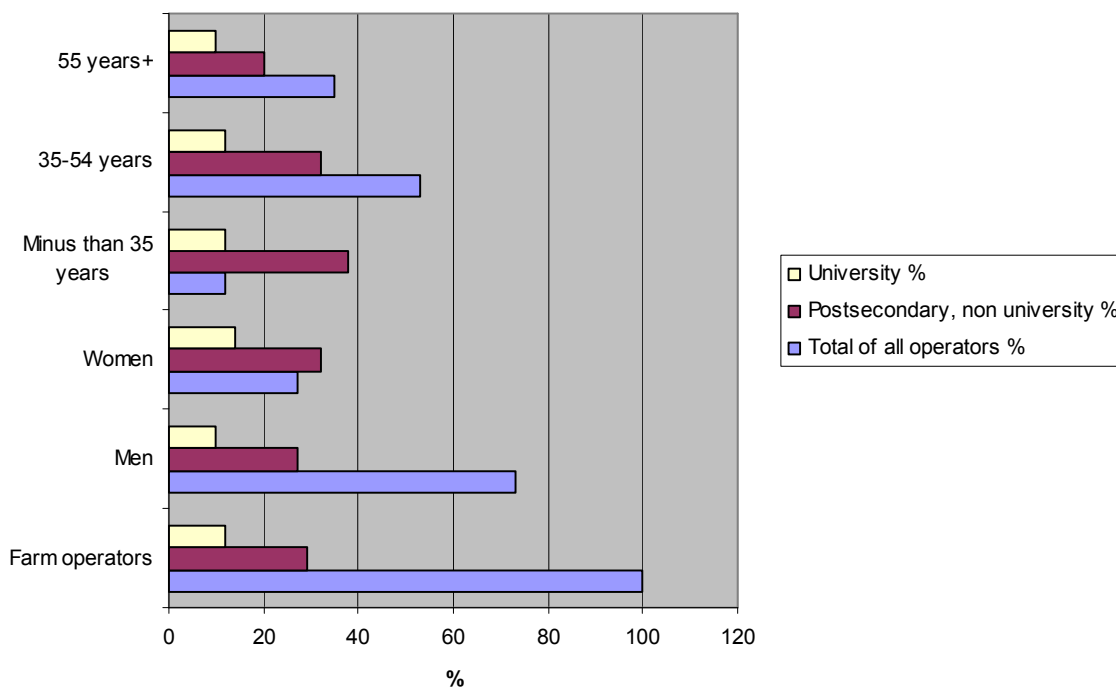


*Operators are included in the working population.

Source: Statistics Canada, Thematic tables, <http://www.statcan.ca/francais/freepub/95F0303XIF/tables/html/agpop1701f.htm>

⁶ April, Agricultural Productivity in Canada 1935-02, 2005

Figure 14 : Educational status of farm operators, Canada, 2001



Source: Statistics Canada, Thematic tables,
http://www.statcan.ca/francais/freepub/95F0303XIF/tables/html/agpop0701_f.htm

way to leave farming altogether. Off-farm job opportunities are likely greater for farmers who hold university degrees than those holding other types of non-university postsecondary degrees.

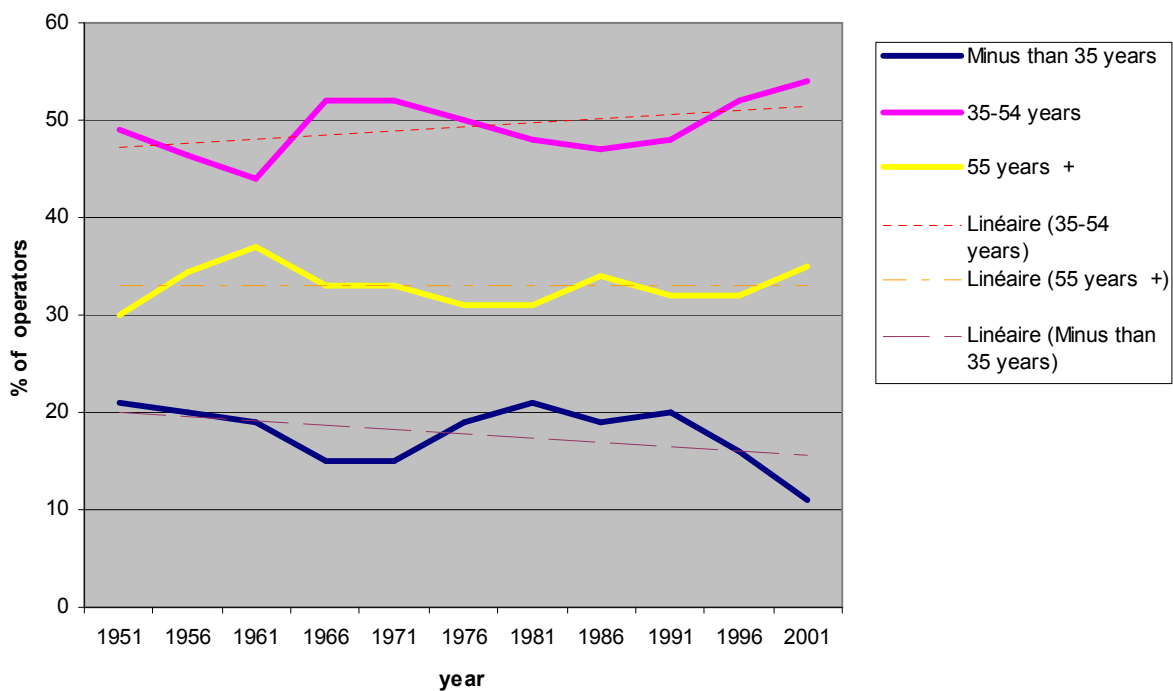
Let us now turn to a more detailed analysis of the educational status of farmers in the year 2001. Figure 14 indicates that a larger percentage of women farmers hold postsecondary degrees than do men, but they represent only a quarter of all Canadian farm operators. Younger farm operators were not more likely to possess a university degree than those who were 35 to 54 years of age; however, they were much more likely to possess postsecondary, non-university degrees. These non-university postsecondary degrees are quite possibly technical degrees related in some way to agriculture.

According to Figure 15, the percentage of Canadian farmers under the age of 36 dropped very steadily between 1951 and 1971. However, the percentage of young farm operators grew quickly during the 1970s, only to decline again quite rapidly between 1991 and 2001. The young farmers of the 1970s became the middle aged farmers of the late 1980s and the 1990s. Due to the more rapid aging of the rural population base, there are fewer and fewer young people living in rural areas and on farms. However the recent decline in the percentage of young farm operators may also reflect a declining number of young people who want to take over their parents farms or go into the farming

profession, either because of better job opportunities in the city and/or hard working and financial conditions on the farm. Canadian farm operators are getting older, but not yet at an alarming rate. It is likely that those who are retiring are selling their farm operations to middle aged farmers (age 35 to 54) who have attained the stability and financial success needed to purchase additional farm production capacity.

There is some assurance that Canadian farmers have the capability to generate more and more wealth. During the last half century, they have become more and more productive, more highly educated, and they have increasingly accessed new technological tools. Unfortunately, they have also lagged behind the general Canadian working population in terms of obtaining postsecondary degrees and purchasing computer technology. Since younger farmers have the highest level of educational attainment among all farmers, this means that there are fewer and fewer highly educated farmers present in the Canadian agricultural landscape. On the other hand, the aging of the farm population also reflects a growing number of experienced farm operators who should continue to be able to achieve financial success.

Figure 15 : Age profile of Canadian farm operators, 1951-2001



Source: Statistics Canada, Census (1951 to 1991), 1996 to 2001: http://estat2.statcan.ca/cgi-win/CNSMCGI.EXE?Lang=E&DBSelect=OP_CD, "Age", our calculations.

Chapter 3: How are farm consolidation trends impacting upon their socio-demographic profile and their use of human resources?

Consolidation has been occurring in Canadian agriculture for the last half century, and over the last 30 years, the socio-demographic characteristics of farm operators have changed significantly. Table 4 is a listing of the number of farms versus the number of farm owners during the 1991, 1996 and 2001 farm census periods. The number of farms decreased by 33,118 between 1991 and 2001, and the number of farm owner/operators also decreased by 44,685. However, the ratio of per farm owner/operators remained remarkably stable from census to census, at 1.4 owner/operators per farm.

Table 4 : Number of farms and farm operators, Canada, 1991-2001

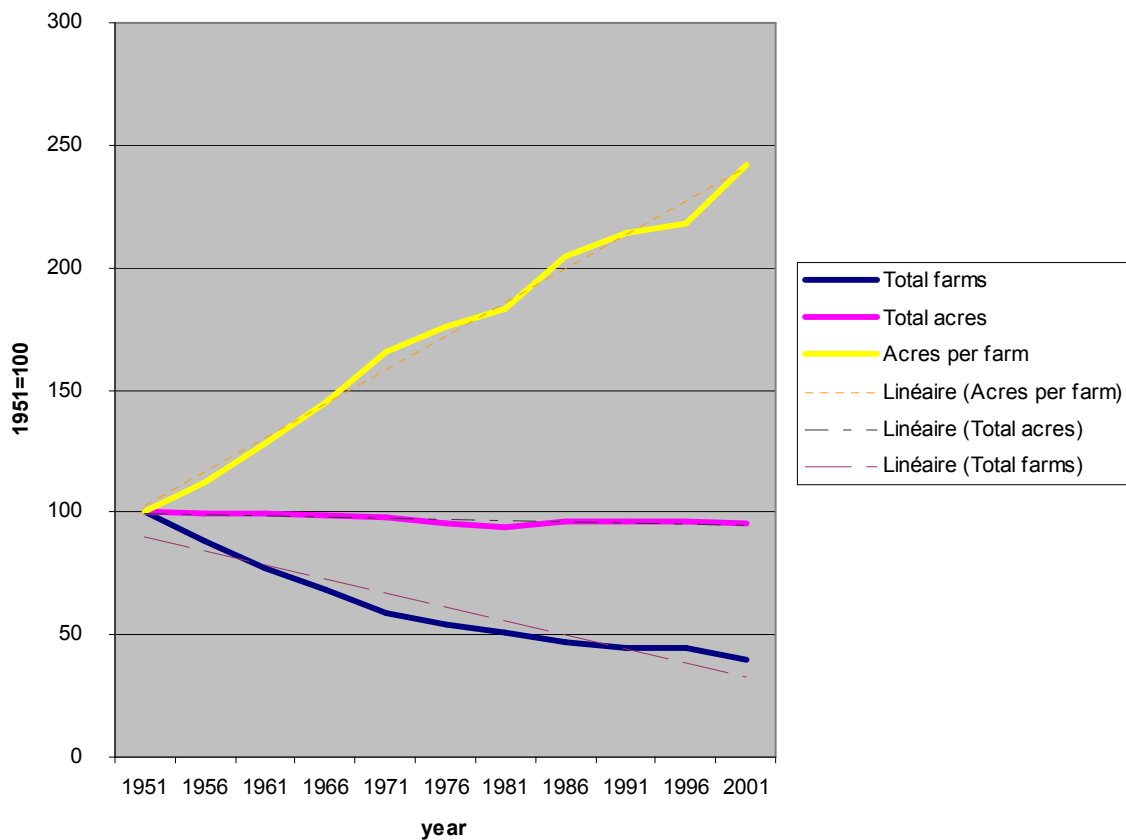
Year	Number of farms	Number of farm operators	Operator/farm ratio
1991	280043	390875	1,4
1996	276548	385605	1,4
2001	246925	346190	1,4

Source : Statistics Canada, census (1991), 1991, 1996 and 2001 : http://estat2.statcan.ca/cgi-win/CNSMCGI.EXE?Lang=F&DB Select=OP_PR11, “Total operators”, <http://estat2.statcan.ca/cgi-in/CNSMCGI.EXE?LANG=F&C91THEME=1640>, “Farm numbers”.

Figure 16 explores changes in the numbers of Canadian farms, the total number of acres under farm exploitation and the number of acres per farm for the years 1951 through 2001. As we can see, the total acres exploited by Canadian farmers have been quite stable, with only a slight negative change beginning in the mid-1960s. There has been only a small reduction (-4%) in the total number of acres under exploitation in Canada since 1951. However, farms are less and less numerous in Canada, with a 60% loss since 1951. As the number of farms has been decreasing, the number of acres per farm has been increasing quite steadily, with a 142% increase since 1951. This consolidation trend comes mainly from larger farms purchasing acres that were previously under the exploitation of smaller farms.

In the Stat Can farm census from 1951 to 2001, the following question was consistently asked: “Have you worked in the past 12 month at least one day off-farm?” Figure 17 shows a decreasing percentage of farm operators who were responding “No” to that question. Between 1996 and 2001, there was a 20% decrease in the percentage of farmers who never worked off-farm, and a 31% decrease from 1951 to 2001. This may mean that a sideline job is increasingly necessary for Canadian farmers

Figure 16 : Consolidation in Canadian agriculture, acres and farms, 1951-2001

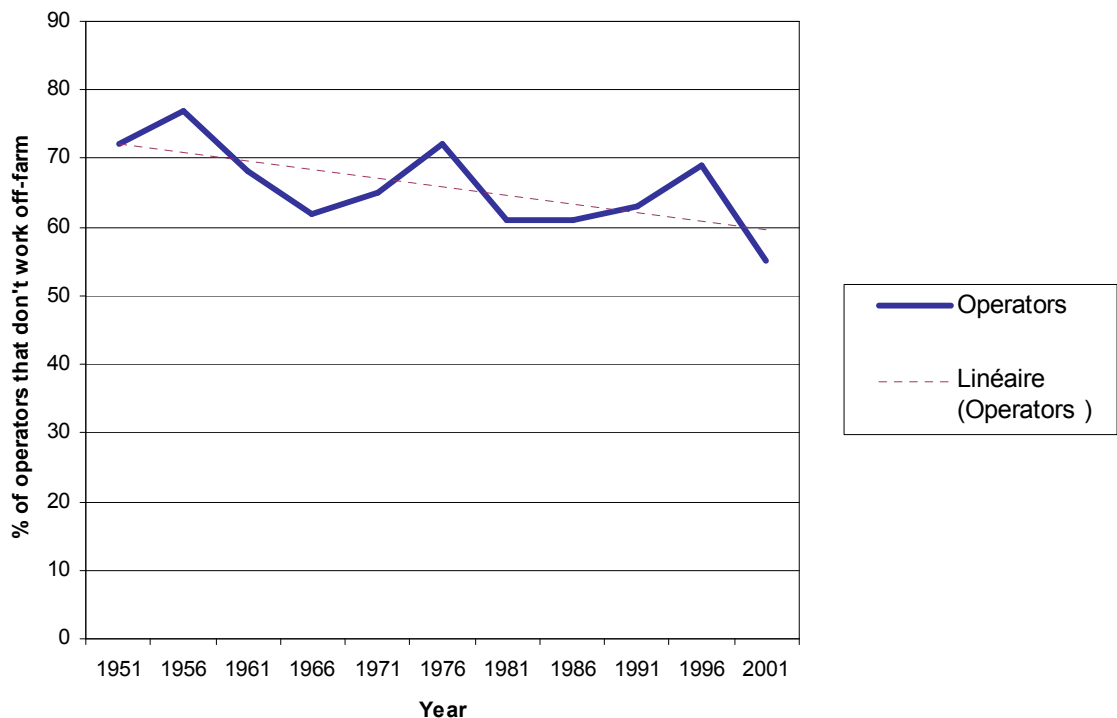


Source: Statistics Canada, Census (1951 to 1991), 1996 and 2001: <http://estat2.statcan.ca/cgi-win/CNSMCGI.EXE?LANG=F&C91THEME=1640>, “Land tenure”, “Farms number”, our calculations.

who want to make ends meet on the farm.

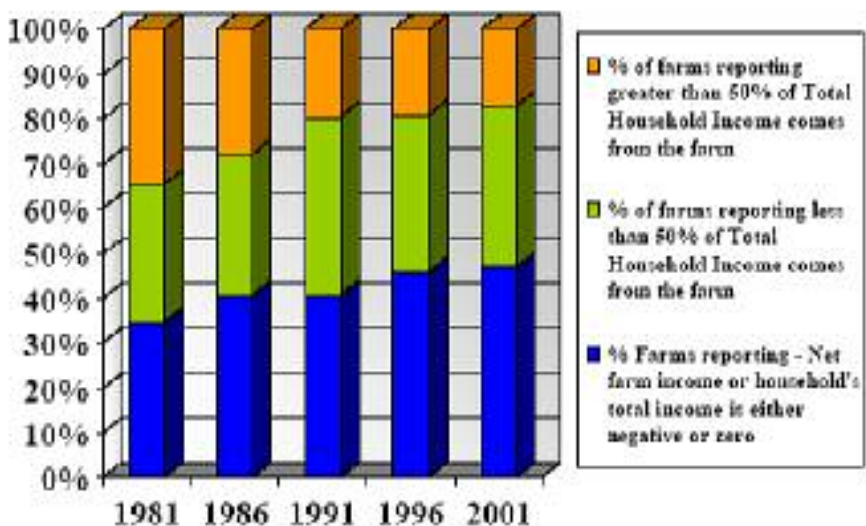
The sources of farm income have also been changing over the years. Between 1981 and 2001, fewer and fewer farmers were reporting that 50% or more of their household income actually came from on-farm activities, as shown in Figure 18 below. Fewer and fewer farmers reported that more than 50% of their income came from on-farm sources, while more and more reported that their net farm income was either zero or negative. Thus, farmers are increasingly working off-farm in order to meet their household financial obligations, or they are experiencing negative total net household income. The farm income issue is indeed very sensitive nowadays.

Figure 17 : Percentage of operators that work exclusively on-farm, Canada, 1951-2001



Source: Statistics Canada, Census (1951-1991), 1996 and 2001: http://estat2.statcan.ca/cgi-win/CNSMCGI.EXE?Lang=F&DBSelect=OP_CD, “Non farm work”, our calculations.

Figure 18 : Sources of agricultural household revenues, Canada, 1981-2001



Source: Canadian Federation of Agriculture, 2004, National symposium on farm income, http://www.cfa-fca.ca/pages/index.php?main_id=236, “Facts on farm income”, p. 3 (data from Statistics Canada census 1971-2001).

We will now explore the relationship between different farm production types and the number of hours per week in on- and off-farm labour. Like many citizens in other employment sectors of society, farmers have often taken on extra jobs to meet their financial responsibilities. We can imagine that this is particularly the case for smaller farms where one spouse could adequately manage the day-to-day, farm labour requirements, leaving time for the other to work off-farm. For larger farms, however, the required amount of time for on-farm work may be so high that it is simply impossible for either spouse to work off-farm. The “off-farm” work profile of Canadian farmers could be seen as either hindering farm success by robbing the farm of a critical labour supply, or enhancing farm success by contributing an extra income toward the purchase of household and farm necessities. Agricultural operators who have off-farm employment must be well organized and make efficient use of their time and energy.

For the year 1995, Table 5 divides farm couples into two basic types: the classic (i.e. “classique” or traditional) farm couple who has no off-farm labour, and the non-classic (i.e. “non classique” or non-traditional) farm couple whose spouses divide their labour between on- and off-farm activities (unless one member of the couple was not working at all and was excluded from the study) (Silver, 2001). According to Silver (2001), 48% of all Canadian farm couples could be labelled as “classic” in 1995. For a non-classic farm couple, their labour is divided into total hours worked both on- and off-farm (i.e. “Travail rémunéré total”) and hours worked on-farm (i.e. “Travail agricole”). Table 5 further divides farms into various production types by size of farm. “Petites” or small farms are those making less than \$100,000 per year, while “Grandes” or large farms are those making more than \$100,000 per year. Silver (2001) claimed that traditional couples seem to have the greatest difficulty maintaining adequate total net income. This might explain why non-traditional farm couples have become more and more common during the past few decades.

Looking at Table 5, one can see that, regardless of the main farm product produced (milk, beef, pork, chicken, wheat, other grains or other specialized products), classic small farm couples devoted approximately 19 more hours per week to on-farm labour activities (i.e. “travail agricole”) than their non-traditional counterparts (71 vs 52), but they also spent 19 hours less in average total working hours (71 vs 90). Classic large farm couples devoted 23 hours more hours per week to on-farm work (100 vs 77), yet their total number of working hours per week was very similar to that observed for the non-classic farm couples (100 vs 102). It is also important to note that non-classic couples on smaller farms were devoting an average of 38 hours per week to off-farm labour (i.e. 90 total hours minus 52 on-farm hours), while those on larger farms were devoting only 25 hours per week to off-farm labour (i.e. 102 total hours minus 77 on-farm hours).

We can also see by Table 5 that farm couples producing wheat and other grains (“blé” and “graines”) devoted fewer hours per week for on-farm work than those who were producing milk, cattle or pork (“laitières”, “bétail”, “porcines”), and this is true regardless of farm size. However, classic farm couples tending to animals devoted about 22 hours more per week to on-farm labour than their non-classic counterparts; while classic farm couples growing wheat or other grains devoted an average of 14 hours more per week than non-classic couples to on-farm labour. In contrast, classic farm couples producing chickens and eggs (“volaille et oeufs”) devoted 29 hours more per week to on-farm labour than did their non-classic counterparts. Non-classic, large farm couples who produce mostly milk devoted the fewest number of hours per week (20 hours) to off-farm labour, while small farm couples producing grains and oilseeds devoted the greatest (40 hours).

Table 5 : Traditional and non traditional farm couples, total paid work, Canada, 1995

	Couples d'exploitants agricoles classiques	Couples d'exploitants agricoles non classiques	
	Travail agricole	Travail rémunéré total ¹	Travail agricole
Nombre moyen d'heures par semaine, d'après l'indice de volume de travail			
Tous les types de fermes ²			
Petites	71	90	52
Grandes	100	102	77
Fermes laitières			
Petites	85	94	67
Grandes	108	111	91
Fermes d'élevage de bétail			
Petites	76	92	55
Grandes	102	108	80
Fermes porcines			
Petites	--	92	57
Grandes	99	94	69
Fermes avicoles (volaille et oeufs)			
Petites	--	--	--
Grandes	87	83	58
Exploitations de blé			
Petites	62	89	52
Grandes	93	100	77
Exploitations de petites graines et de graines oléagineuses			
Petites	58	87	47
Grandes	95	99	74
Exploitations spécialisées diverses			
Petites	78	90	52
Grandes	114	102	75

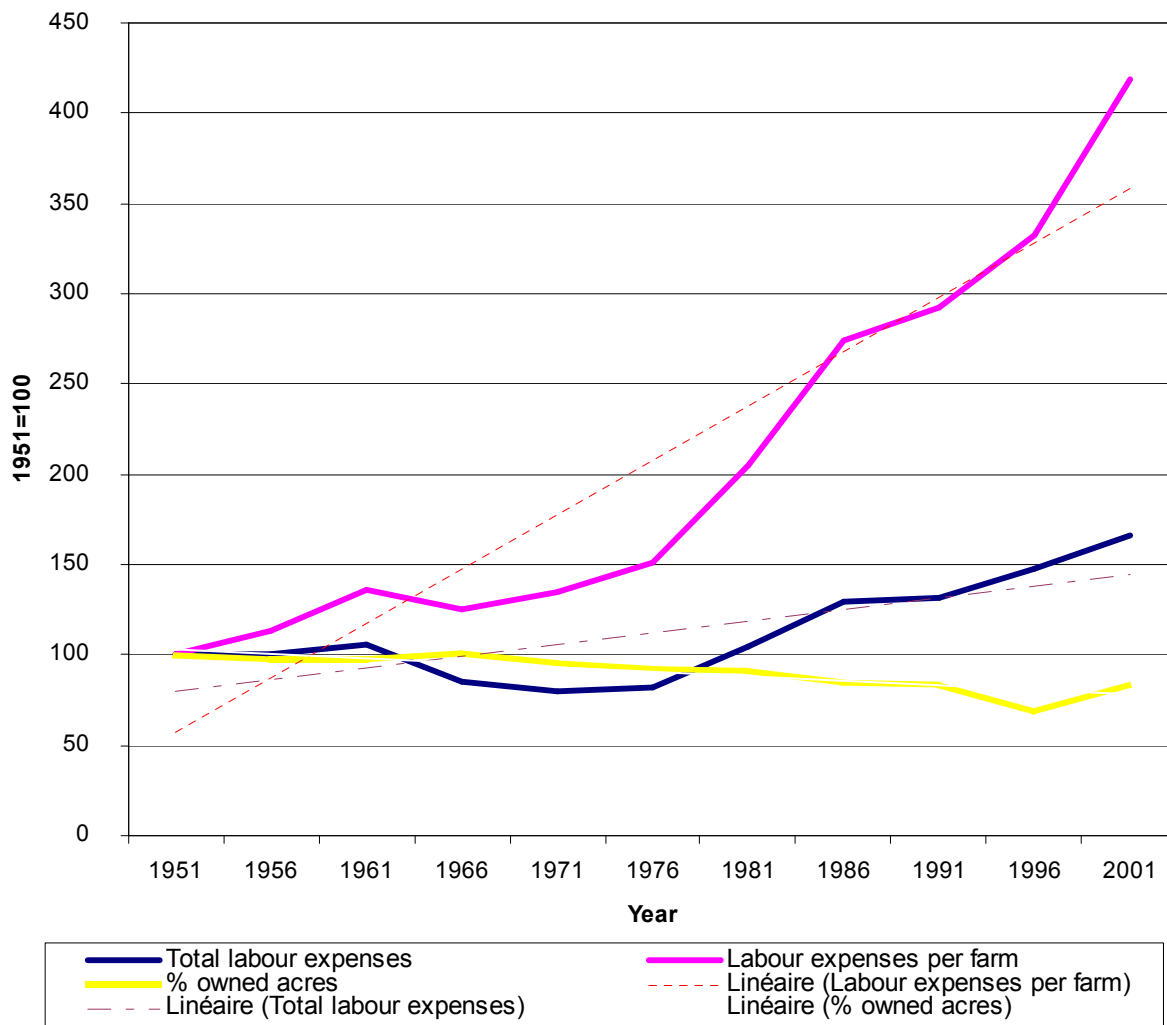
1. Comprend le travail agricole et les heures de travail effectuées à l'extérieur de la ferme.

2. Les petites fermes ont un chiffre d'affaires annuel de plus de 10 000 \$ et de moins de 100 000 \$; les grandes fermes ont un chiffre d'affaires annuel supérieur à 100 000 \$.

-- La taille de l'échantillon est trop petite pour produire des estimations fiables.

Source : Silver, Statistics Canada, 2001, http://www.statcan.ca/francais/ads/11-008-XIF/labour_f.htm, p. 3.

Figure 19: Total per farm labour expenses (real terms) and percentage of owned acres, Canada, 1951-2001



The percentage of owned acres is based on total land base.

Sources : Statistics Canada, Census (1951 to 1991), 1996 to 2001: <http://estat2.statcan.ca/cgi-win/cnsmcgi.exe?LANG=E&C91THEME=1640>, “Land tenure”, April (2005), Table 23, “Indice du travail agricole au Canada 1935-02”, our calculations.

In Figure 19, total labour expenses, per farm labour expenses and the percentage of owned acres have been plotted for the years 1951 through 2003. Total labour expenses on Canadian farms have been increasing rather steadily only since the 1970s, with a 73% increase over the 1951 figure. However, in 2003, per farm labour expenses show an incredible 319% increase over the amount reported in 1951. In contrast to increases in labour expenses, the percentage of owned acres has gone down slightly over the years, with a net loss since 1951 and an all time low in 1996. Since 1996, however, the percentage of owned acres has risen by 22%.

Between 1951 and 2001, labour expenses per farm and number of farmers working off-farm were both increasing, along with the average number of acres per farm (Figure 20). However, labour expenses were increasing at a very rapid pace since 1976, while number of farm operators working off-farm was increasing slowly. The rate of increase in farm operators working off-farm almost mirrored the rate of increase in number of acres per farm between 1951 and 1966. After that, the number of acres per farm grew faster. During the 1951-2001 time period, net revenue per farm and percentage of young farm operators (under 35 years of age) were slowly decreasing as the average number of acres per farm was increasing (Figure 21). Over the years, net revenues per farm have fluctuated quite vigorously, showing the inherent degree of risk in agriculture. It is quite important to note that the percentage of young farm operators significantly decreased throughout the 1950s and the mid-'60s, only to rise again as the Babyboomers came of age in the 1970s and early '80s. The "aging" of the farm sector is obviously not an entirely new phenomenon! Figure 21 does show that, since 1991, the rate of decrease in the percentage of young farm operators has been sharper than that which was experienced some 40 years earlier.

In conclusion, sociodemographics are affected by farming trends, while farming trends are also affected by sociodemographics. Since the 1950s farms are growing fewer in number and larger in terms of average number of acres per farm. The ratio of farm operators per farm, however, has remained very stable from 1991 to 2001. While farm operators have more and more acres to manage, they are increasingly taking on off-farm employment. For larger farms making over \$100,000 per year, off-farm employment appears to take the form of a half-time job and the total number of hours worked (both on- and off-farm) resembles the total number of hours worked by traditional farm couples who work exclusively on-farm. For smaller farms, however, off-farm employment most often takes the form of a nearly full-time job and their total number of hours worked (both on- and off-farm) are much greater than the total number of hours worked by their traditional counterparts who work exclusively on-farm. For the smaller farms, it is perhaps the pressing need for a second income not only to make ends meet, but to become even more successful, that makes them take on almost full-time employment off-farm.

The more recent sharp drop in the percent of younger operators in farming reflects many phenomena occurring at the societal level. First, the declining birth rate since the 1980s means there are simply fewer young people in most sectors of the labour market. Second, Babyboomer farmers, like all Canadians, had fewer children than their parents. This means that the probability that one of their children would want to take over the family farm is quite low. This probability is almost nil for those Babyboomer farmers who had only one son or no son at all. Since farming continues to be a

Figure 20: Total per farm labour expenses (real terms), percent of farm operators working off-farm, and number of acres per farm, Canada, 1951-2001

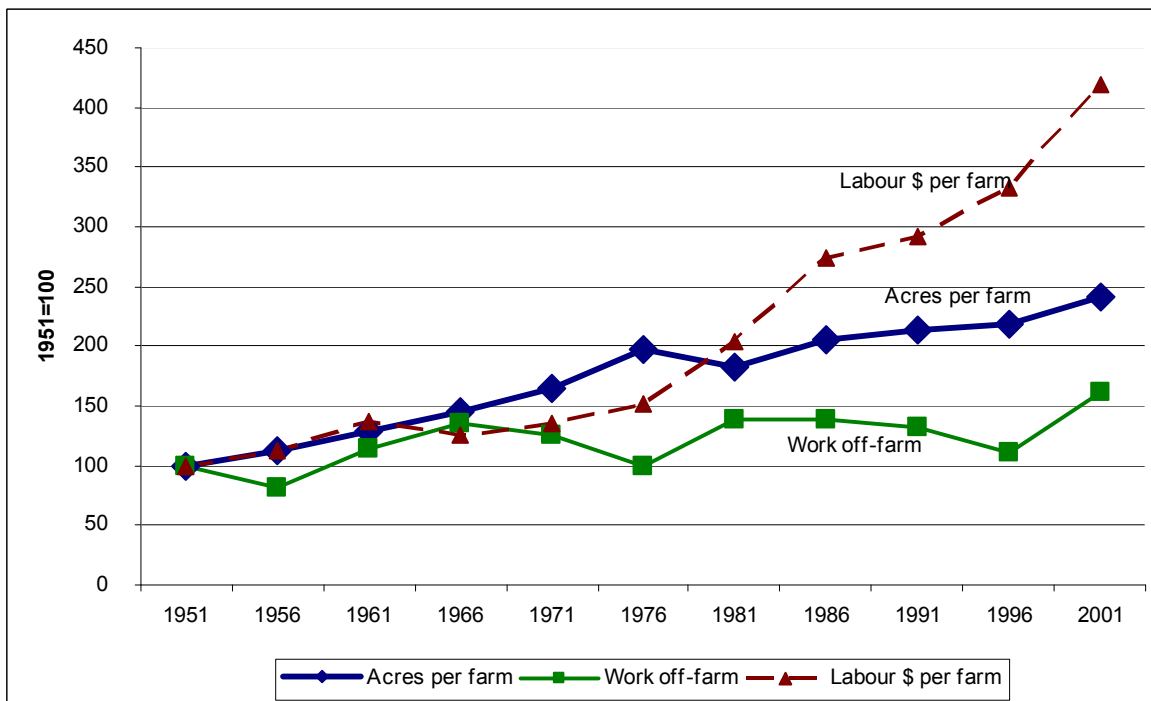
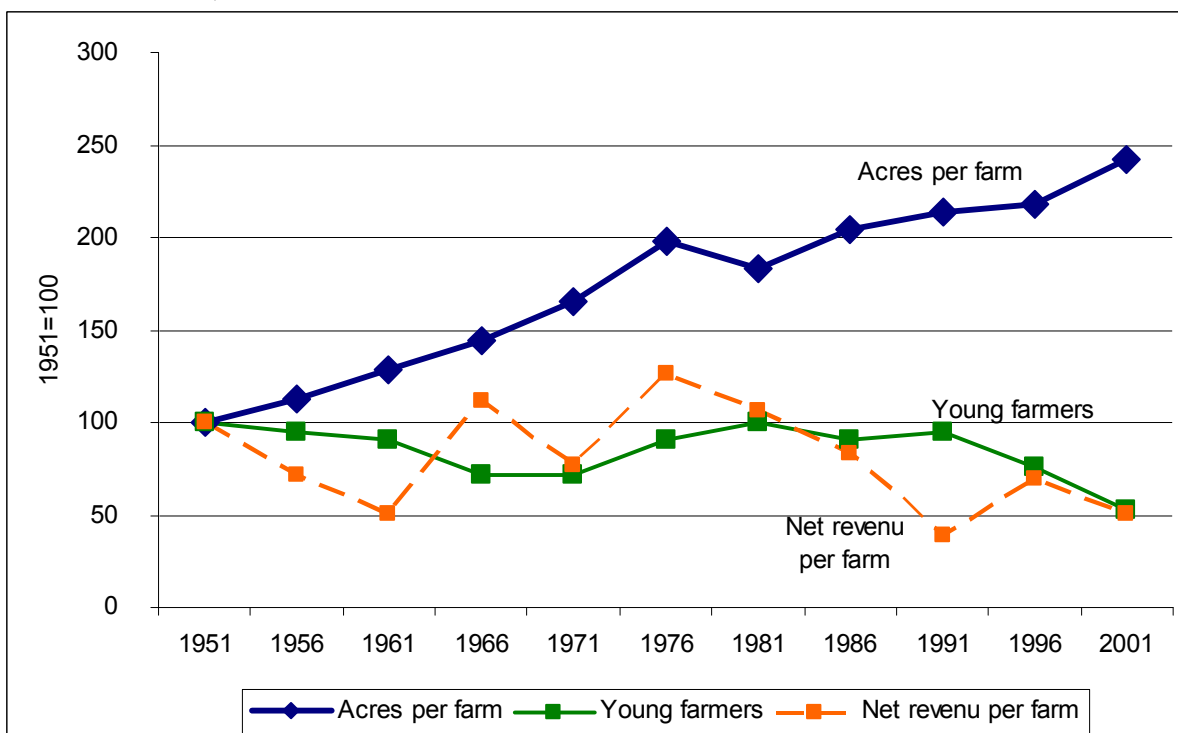


Figure 21: Farm operators aged 35 and under, net revenue per farm and number of acres per farm, Canada, 1951-2001



male dominated employment sector, farmers' daughters are still less likely to get into farming than are their sons. Third, Babyboomers who got into farming in the 1970s and 1980s are only beginning to approach retirement age. They will not be looking to sell their farms in the very near future, thus effectively keeping younger "would-be" farm operators temporarily out of the business of farming. Fourth, the most successful Babyboomer farmers are also in a better financial position than younger "would-be" farmers to purchase farmland and equipment from older farm operators who retire or who have died. Last, but not least, youth who were born and raised in rural farm areas are not very likely to remain there for a variety of reasons. The long hours of physical labour required on the farm, coupled with fact that many farm operators have off-farm employment, makes the "job" of farming less appealing to the younger, more highly educated generation. Their eyes are on the 9 to 5 city jobs, where financial opportunities seem brighter and debt loads will be lighter (i.e. the mortgage on a suburban house does not compare to the debt load of a farm loan).

It is quite likely that most of the sociodemographic trends discussed in this chapter will continue for the next 10 to 15 years.

Chapter 4: What is the demographic profile of farm operators who own land versus those who rent land?

As shown in Table 6, the percentage of farm operators declaring that they owned all of the land they were farming decreased from 77 percent in 1951 to 59 percent in 1986. In contrast, the percentage of farm operators declaring that they were managing both owned and rented land increased from 16 percent in 1951 to 34 percent in 1986. The trend of decreasing numbers of Canadian farm operators owning all the land they farm follows that of the percentage of all owned acres (cf Figure 19).

Since 1986, it is very difficult, if not virtually impossible, to find reliable, detailed data about Canadian farm operators' land ownership, in great part because Statistics Canada no longer separates farm operators who are owners from those who are renters. The only available data for analysis are the percentage of acres owned. Our search for other sources of information about farmland ownership versus leasing was unfruitful. Given the lack of available Canadian data that permits a more detailed analysis of the sociodemographic profile of land owners versus renters, the remainder of this chapter will focus on differences in farmland ownership trends in the U.S. and Canada.

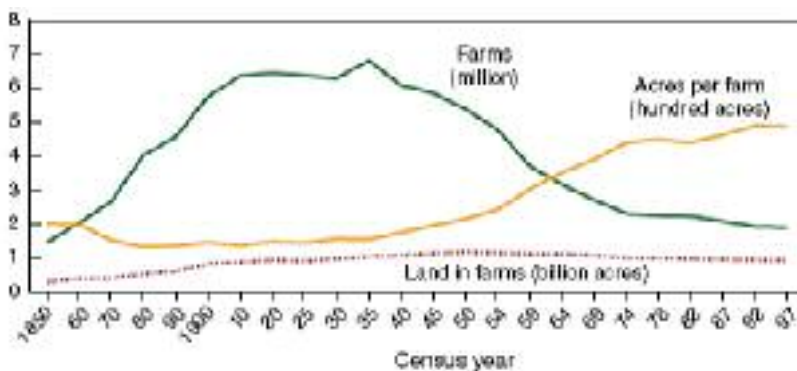
Land tenure in US agriculture is an interesting issue for Canada, since the two countries have such integrated agricultural systems. Figure 22 plots US trends in numbers of farms, average acres per farm and total land in farming. We can compare this US data with the Canadian data presented previously in Figure 16. Since 1951, farm trends in the two countries are very similar: decreasing numbers of farms, increasing number of acres per farm, and relatively stable or slightly decreasing

Table 6 : Owned acres on farms, Canada, 1951-2001

Census year	Percent of farms declaring owned acres	Percent of farms declaring leased acres	Percent of farms declaring both
1951	77	8	16
1956	77	7	16
1961	73	7	21
1966	72	6	23
1971	68	5	27
1976	66	6	28
1981	63	6	31
1986	59	7	34

Source: Statistics Canada, Census (1951 to 1991), 1996 and 2001: <http://estat2.statcan.ca/cgi-win/cnsmcgi.exe?LANG=E&C91THEME=1640>, "Land tenure".

Figure 20 : Farms, land in farms, and average acres per farm, United States, 1850-1997



Source: Hoppe & Korb (2005), ERS, <http://www.ers.usda.gov/publications/aib797/aib797c.pdf>, p. 5.

amount of total farmland.

Hoppe and Wiebe⁷ analysed the evolution of leased land as a percentage of total farmland in the US from 1910 to 1997 (Figure 23). From Figure 23 it is clear that leased land as a percentage of total US farmland has been increasing quite steadily since the 1950s, and particularly after 1969. More and more US farmers were leasing, rather than owning the land they farm. Hoppe has written much about land tenure in the US for the last 100 years. He had the following to say about land tenure trends in the US:

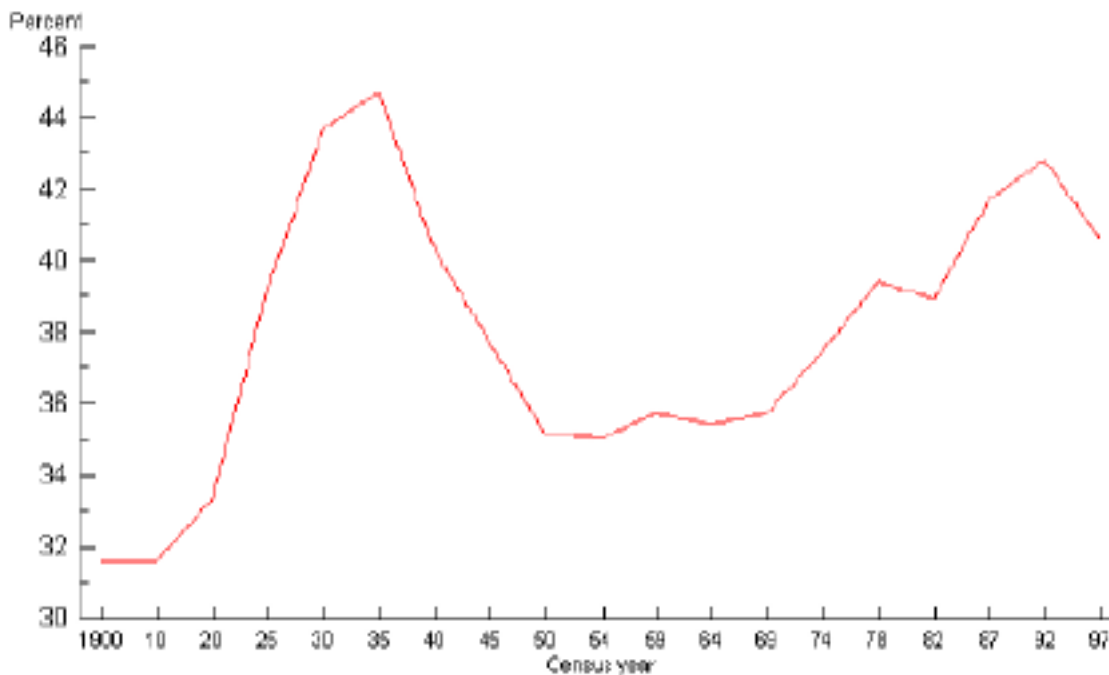
*“Farming operations need access to land in order to produce agricultural products. Access may be obtained through renting as well as through outright ownership, and the share of farmland that is rented has changed over time. Farm operators leased 41 percent of total farmland in 1997, down slightly from 1992 (43 percent), but higher than in most census years since the turn of the century, except during the Great Depression(...) Leasing land was traditionally viewed as the bottom rung of the tenure ladder. Young farmers would begin their careers by leasing all their land, often from relatives. As they grew older, they would buy some land, but continue to rent. The oldest farmers would cut back on farming by no longer leasing and concentrate on the land they owned. Renting land has changed from a method of entering into farming to a way of controlling additional land. Farms may rent land to avoid debt and risks of ownership and to enable rapid response to changing markets. Pinpointing when this shift occurred is difficult, but it was probably underway by the 1950s. Until then, farm tenancy was considered a serious social problem, particularly in the Southeast, and full ownership was viewed as the ideal form of tenure”.*⁸

Thus, land tenure can be a very strategic and rationale choice, or a simple method to begin an agricultural producer’s career. It is quite probable that this same rationale applies to farm operators in Canada.

Figure 21 : Leased farmland as a percentage of total farmland, United States, 1910-1997

⁷ Economic research service, 2002, http://www.ers.usda.gov/Publications/arei/ah722/arei1_3/, chapter 1.3, p. 21.

⁸ Economic Research Service, 2002, <http://www.ers.usda.gov/Briefing/FarmStructure/Questions/rentedland.htm>.



Source: Hoppe & Wiebe (2002), ERS, <http://www.ers.usda.gov/publications/arei/ah722/arei13/AREI13farmtenure.pdf>, pg 21.

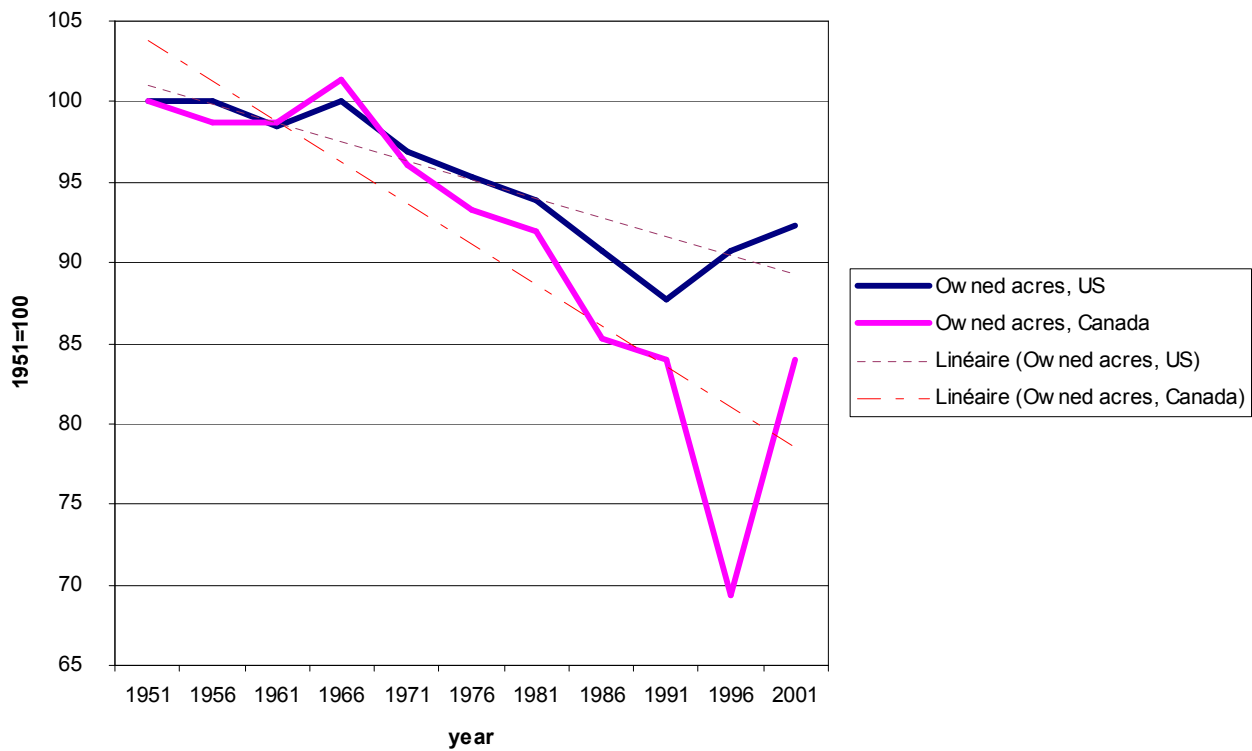
We now extend the analysis of owned versus leased farm land by first converting the 1951-1997 US percentages of leased land, as presented in Figure 23, into percentages of “owned acres”. We then added the percentage of leased land from the 2002 US farm census.⁹ These percentages can now be compared with the Canadian percentages of owned acres originally presented in Figure 19. According to Figure 19, the percentage of owned acres in Canada was slowly decreasing between 1951 and 2001, which essentially translates into an increasing percentage of acres being rented. As can be seen in Figure 24, the percentages of owned acres in the US and Canada were extremely similar between 1951 and 1980. However, since 1980, the percentage of owned acres has decreased more rapidly in Canada than in the US. Perhaps because of the 1991 crash in Canada, the gap in owned acres between Canadian and US farmers increased considerably, but has since somewhat recovered.

From 1951 to 1986, Canadian farmers were increasingly dividing their labour between land that they owned and land that they rented. It is likely that this trend continued throughout the 1990s and into the 21st century. From the available data, it is clear that the percentage of land owned by Canadian farm operators has been decreasing rather steadily since 1951. While this trend is also evident in U.S.

⁹ <http://www.nass.usda.gov/census/census02/volume1/us/index1.htm>, table 61, p. 219.

data, the decrease in percentage of land owned has followed a somewhat more rapid pace in Canada than in the United States.

Figure 22 : Percentage of owned acres, Canada-United States, 1951-2001



Sources : Figure 22 & 25, US Census Bureau, <http://www.nass.usda.gov/census/census02/volume1/us/st99101001.pdf> (2001 value of land tenure), our calculations.

Conclusion

In this paper, we have tried to provide a socio-demographic portrait of Canadian farm operators between 1951 and 2001. There were four chapters, or objectives, in the present study: 1) the demographic profile of Canadian farmer owner/operators for various sales classes and types of operation; 2) Canadian farmers and the skills required for on- or off-farm success; 3) farm consolidation trends impacting upon the socio-demographic profile of farmers and their use of human resources; 4) the demographic profile of farm owner/operators versus farm operators who rent land.

In the first chapter, we found that, between 1991 and 2001, the number of low income farms declined slightly, while the number of high income farms increased more substantially. These findings are likely related to the overall phenomenon of farm consolidation and concentration. Men were still overrepresented among farm operators, though there have been some increases in the numbers of women farmers. Women are making more inroads among operators of small or exotic animal farms, but they remain overrepresented among lower income farms. Sole proprietorship farms were also overrepresented among lower income farms. Corporate farms or farms under partnership agreements tended to generate more revenues. Younger farm operators (i.e., less than 35 years of age) were also in a minority among farm operators, regardless of principle production type or the financial size of farm. Over the years, there have consistently been few never-married, divorced or separated Canadian farm operators. The vast majority are married. The percentage of Canadian farms producing cattle or cereals, including oilseeds, has been steadily increasing across the years, while there are fewer and fewer who are producing wheat and milk. We also highlighted changes in the ethnic origins of Canadian farm operators. Today, 90 percent of Canadian farmers are Canadian born, while those who come from afar are now more likely to come from the United Kingdom than from the United States.

In chapter two, we studied the potential efficiency of farm operators, in terms of financial efficiency by the returns on assets ratio and the total factor productivity ratio, as well as in terms of technology use, education, and age. We found that farm operators seem to have difficulties in creating large financial wealth for themselves, even though they seem to be able to efficiently convert their inputs into outputs. More specifically, Canadian farm operators appear to be behind the general Canadian public in their uptake of new computer technologies. This is unfortunate because today's wide range of computer technologies could help them make more informed and strategic management decisions. Canadian farmers appear to have mostly to non-university, specialised post-

secondary education. While this may increase their agricultural know-how, it could be a limiting factor should they need to find off-farm revenues in alternative sectors of the economy. Finally, Canadian farmers are getting older, with fewer and fewer young farm operators entering into the profession.

Chapter three presented some additional analyses of consolidation trends. The numbers of farms and farm operators have been steadily decreasing since 1991, and more and more are turning to some off-farm employment for additional revenues. More farm operators are reporting that 50% or more of their household revenues come from off-farm sources. In 1995, Canadian farm couples who devote all their time to their farm spent more time per week meeting on-farm labour requirements than “non-traditional” farm couples. Non-traditional couples spent more time in off-farm labour activities, especially those who reported lower annual incomes. Total labour expenses on Canadian farms have been increasing since the late 1970s. This trend is coupled with a decreasing percentage of owned acres per farm and an increasing percentage of rented land.

Chapter four continued to explore the issue of owned versus rented agricultural land. It was found that the percentage of Canadian farms that both rent and own land has been steadily increasing since 1951, reaching 34% in 1986. This trend is comparable to trends in US farmland tenure statistics. However, since 1980, the percentage of owned acres has decreased more rapidly in Canada than in the US.

Canadian agriculture is continuing to face economic challenges, and net revenue per farm is one of them. Farm operators are certainly creating wealth for the nation, but finding remedies to farm financial health problems remains an urgent issue, especially as the number of young farm operators continues to go down. This will surely require continued debate between interveners from government, agriculture, and the agri-food sectors. The Canadian Agricultural Policy Institute’s recent initiative to study and better understand factors affecting current and future farm income prospects should help Canadian farmers to better meet future challenges.

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