AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Number 5/2004/p.83-94 www.CAFRI.org

Current Agriculture, Food & Resource Issues

A Journal of the Canadian Agricultural Economics Society

Differences in Canadian and U.S. Farm Structure: What the Canadian Farm Typology Shows

Robert A. Hoppe
Agricultural Economist, Economic Research Service,
U.S. Department of Agriculture

Deborah Niekamp
Agricultural Economist, Agriculture and Agri-Food Canada

David Banker
Agricultural Economist, Economic Research Service,
U.S. Department of Agriculture

Ken Nakagawa
Agricultural Economist, Agriculture and Agri-Food Canada

This paper was presented at the annual meeting of the Canadian Agricultural Economics Society (Montreal, July 2003) in a session entitled "Changing Dimensions of Canadian and U.S. Agriculture: Farm Income, Farm Structure, Typology and Farmland Markets". Papers presented at CAES meetings are not subjected to the journal's standard refereeing process.

The views expressed here are not necessarily those of the Economic Research Service, the U.S. Department of Agriculture or Agriculture and Agri-Food Canada.

The Issue

Canadian and U.S. farms vary widely in size and other characteristics, ranging from very small retirement and residential farms to firms with sales in the millions. Agriculture and Agri-Food Canada (AAFC) and the United States Department of Agriculture's (USDA's) Economic Research Service (ERS) have each developed a farm typology to classify farms into more homogeneous groups. These typologies provide useful insights into farm structure in each country. It is difficult, however, to use the typologies to compare farm structure in Canada and the United States, because the definitions within the two typologies differ. To make direct comparisons of farm structure in the two countries the Canadian typology was applied to the farms in both nations.

Implications and Conclusions

Applying a single typology in both countries reveals that farm structure in Canada and the United States is similar in some respects and different in others. As examples of similarities, farm revenue is highly concentrated among larger farms, and families operating smaller farms rely heavily on off-farm income, regardless of country. Perhaps the most striking difference is the greater prevalence of lifestyle farms – whose operators rely heavily on off-farm income – in the United States. This may reflect the greater availability of off-farm work in the United States, as well as favourable treatment of losses from farming in U.S. tax codes. Off-farm employment and taxes are often overlooked during farm policy discussions, but this comparison between Canada and the United States suggests they can have an important effect on farm structure.

Background

Canada and the United States each developed a farm typology in the late 1990s to categorize farms into homogeneous groups for purposes of policy development and evaluation. Unfortunately, it is difficult to compare farm structure in Canada and the United States using the farm typologies developed by the two countries. The typologies employ different sets of definitions, use different surveys to gather data and are based on different currencies. The development of the typologies and some of their differences are outlined below.

By early 1997, researchers at ERS had developed a proposal for a typology to classify small farms, with small farms being defined as those with annual sales of less than US $50,000. Before research began, the National Commission on Small Farms was appointed by the Secretary of Agriculture to recommend a national policy on small farms. ERS provided analyses based on the proposed typology to the commission. The commission finally selected US $250,000 as the cutoff between small and large farms, because sales that large are necessary to generate a net farm income comparable to the average income of nonfarm families (USDA, 1998, p. 28). The current form of the U.S. typology, incorporating the US $250,000 cut-off, is outlined in table 1.

In 1998, analysts at AAFC began segmenting farms into more homogeneous groups in order to analyze the beneficiaries of government programs. Various classifications were tested by AAFC – including those developed by ERS. The final version used by AAFC is similar in many respects to the ERS typology, but more reflective of the economic situation and government policies in Canada. One of the main differences between the typologies developed by the two countries is how small farms are defined. ERS sets a maximum of US $249,999 in sales to define a small farm, as discussed above; AAFC lowers the maximum to Cdn. $49,999 in gross revenue. AAFC's farm typology has evolved over the last few years, and the 2001 form of the Canadian typology appears in table 1.

Table 1 Farm Typology Group Definitions, 2001

Canada (defined in Canadian dollars)	United States (defined in U.S. dollars)
Family farms	**Small family farms (sales less than $250,000)**

· **Retirement:** farms managed by an operator 60 years of age or older receiving pension income with no children involved in the day-to-day operation of the farm.
· **Lifestyle:** small farms (revenues of $10,000 to $49,999) managed by families with off-farm income greater than $50,000. This category excludes the retirement category.
· **Low-income:** small and medium farms (revenues of $10,000 to $99,999) managed by families with total income less than $30,000. This category excludes the retirement and lifestyle categories.
All other family farms are separated further, based on total revenues. These groups exclude family farms in the retirement, lifestyle, and low-income categories.
· **Small, business-focused:** revenues of $10,000 to $49,999.
· **Medium, business-focused:** revenues of $50,000 to $99,999.
· **Large, business-focused:** revenues of $100,000 to $499,999.
· **Very large, business-focused:** revenues of $500,000 and over.
	· **Limited-resource farms:** Small farms with sales less than $100,000, farm assets less than $150,000, and total operator household income less than $20,000. Operators may report any major occupation, except hired manager.
	· **Retirement farms:** Small farms whose operators report they are retired. (Excludes limited-resource farms operated by retired farmers.)
	· **Residential/lifestyle farms:** Small farms whose operators report a major occupation other than farming. (Excludes limited-resource farms with operators reporting a nonfarm major occupation.)
	· **Farming-occupation farms:** Small farms whose operators report farming as their major occupation.
	  · **Low-sales farms:** Sales less than $100,000. (Excludes limited-resource farms reporting farming as their major occupation.)
	  · **High-sales farms:** Sales between $100,000 and $249,999.

Nonfamily farms	**Other family farms**
· **Nonfamily farms:** Hutterite colonies, other communal operations, and co-operatives.	· **Large family farms:** Sales between $250,000 and $499,999. · **Very large family farms:** Sales of $500,000 or more.
Note: The survey used in Canada collects information on farm businesses and farm *families*, while the survey used in the United States collects information on farm businesses and farm *households*.	**Nonfamily Farms**
	· **Nonfamily farms:** Farms organized as nonfamily corporations or co-operatives, as well as farms operated by hired managers.

Sources: Agriculture and Agri-Food Canada, 2002; Hoppe, 2001

Only one farm survey in each country is complete enough to produce a farm typology. The Canadian farm typology is based on the Farm Financial Survey (FFS), a biennial survey conducted jointly by Statistics Canada and AAFC. The FFS covers farms with revenues of Cdn. $10,000 or more. The U.S. farm typology is based on the Agricultural Resource Management Survey (ARMS) conducted jointly by ERS and the USDA's National Agricultural Statistics Service. ARMS is an annual survey that represents all U.S farms.[1]

Applying the Canadian Typology to the United States

To make direct comparisons of farm structure in the two countries the Canadian typology was applied to U.S. farms. All comparisons of Canadian and U.S. farms presented here are based on the Canadian typology definitions as applied to both Canadian and U.S. farms.

Applying the Canadian typology to U.S. farms required a number of adjustments to the ARMS data, generally based on the procedures outlined Grimard, Green and Banker (1996). U.S. dollars can readily be converted to Canadian dollars, and most of the FFS variables used to sort Canadian farms into the typology groups either exist in ARMS or can be approximated. To be consistent with the FFS, farms with sales of less than Cdn. $10,000 were excluded from ARMS. Fitting U.S. farms to the Canadian typology was fairly straightforward for most typology groups. The greatest difficulties were encountered when identifying retirement and nonfamily farms.

In Canada, retired farmers were identified as operators above 60 – the minimum retirement age under the Canada and Quebec Pension Plans – who receive pension income and who do not report farming with a child acting as an operator. Unfortunately, ARMS does not collect information about pension income specifically. It does, however, have a separate question about the receipt of income from public programs, including the major public retirement programs: Social Security, military retirement and civil service retirement. Nor does ARMS collect information on children who operate the farm with parents. U.S. farms were thus identified as retirement farms in the Canadian typology if they met both of the following conditions:

- the operator was at least 62 years old, the minimum retirement age for Social Security, the most universal U.S. public retirement program; and
- the operator reported receipt of income from public programs.

Because ARMS and FFS data for nonfamily farms cannot be adjusted to be consistent with each other, the nonfamily farm group in each country was left unchanged. Nonfamily farms in the FFS are defined solely in terms of business organization and consist largely of co-operatives, communal operations (Hutterite colonies, etc.), estates and joint ventures. The FFS does not distinguish between family and nonfamily corporations. Therefore, farms organized as corporations (family or otherwise) are classified as family farms.

Using ARMS, ERS defines nonfamily farms to include farms organized as co-operatives, estates and trusts, and nonfamily corporations (at least 50 percent of the stockholders are not related). In addition, operations with a hired manager – even those organized as sole proprietorships, partnerships or family corporations – are classified as nonfamily. No adjustments were made to ARMS to move nonfamily corporations or any of the farms with a hired manager to a family category, since no family income data were collected for these operations.[2] The ARMS questionnaire does not specifically identify

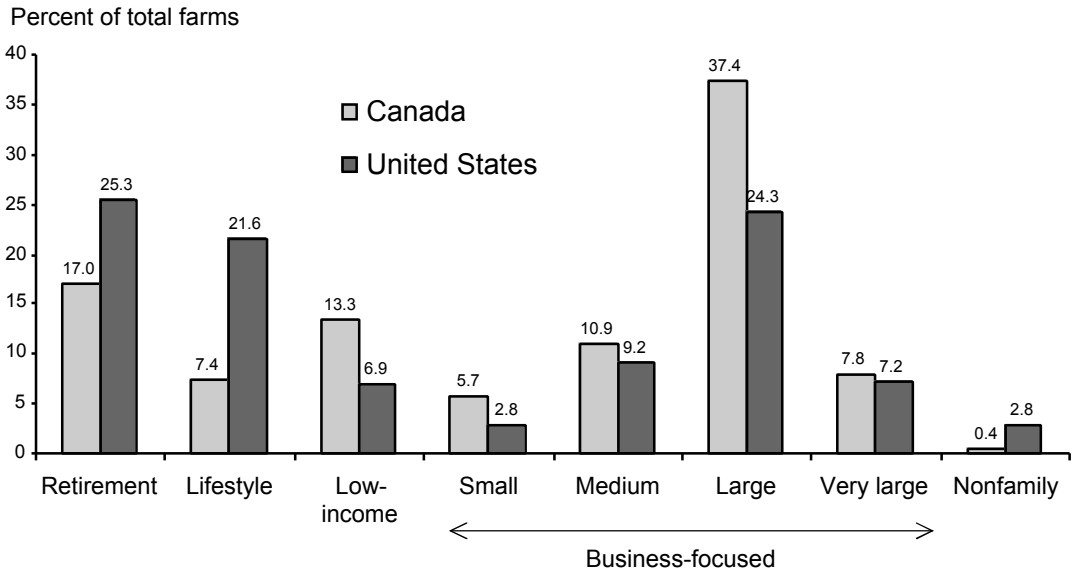

Figure 1 Distribution of Canadian and U.S. farms, by typology group, 2001.

Sources: 2002 Farm Financial Survey for Canada and 2001 Agricultural Resource Management Survey for the United States.

communal operations. They are classified as family farms or as nonfamily farms depending on how they are organized.

Analysis

After the Canadian typology is applied to both Canadian and U.S. farms, direct comparisons of farm structure in the two nations can be made. In particular, this article examines the distribution of farms and revenue among the typology groups in the two countries. It also compares farm size and farm specialization. Finally, differences between Canada and the United States in farm families' reliance on off-farm income are examined.[3]

Distribution of Farms

There are major differences in the distribution of farms by typology group between Canada and the United States (figure 1). The share of farms in the large, business-focused group is much higher in Canada (37 percent) than in the United States (24 percent). Canada also has a larger share of farms in the low-income group than the United States (13 and 7 percent, respectively). In contrast, the United States has a higher share of farms in the retirement and lifestyle groups, which account for nearly half of U.S. farms. The retirement category is overstated in the United States, however, since it includes farms operated by older farmers with an adult child.

The lifestyle group's much larger share of farms in the United States (22 percent) than in Canada (7 percent) may reflect greater off-farm employment opportunities for farmers in the United States. A recent study by the U.S. Bureau of Labor Statistics found that the

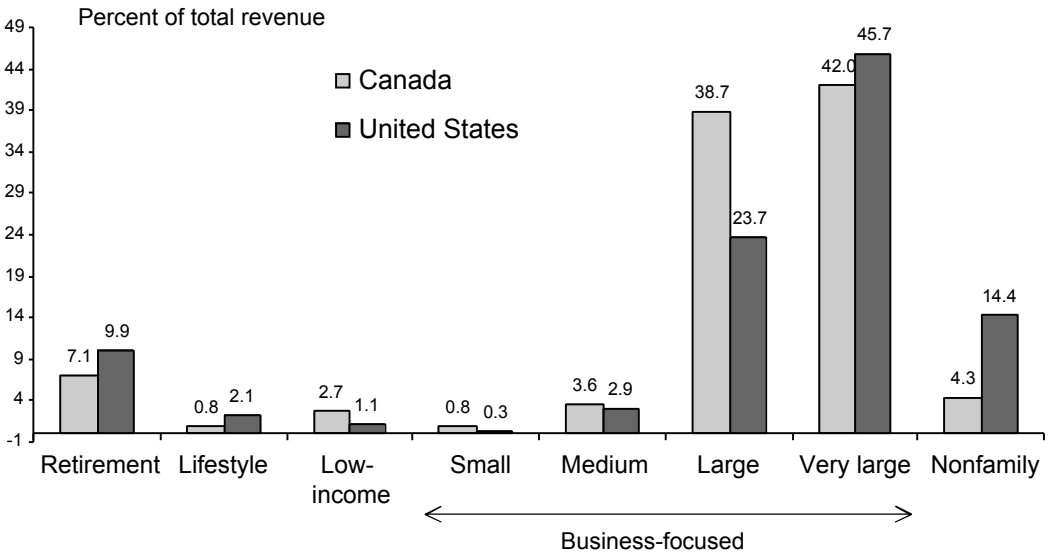

Figure 2 Distribution of revenue in Canada and the United States, by typology group, 2001

Sources: 2002 Farm Financial Survey for Canada and 2001 Agricultural Resource Management Survey for the United States.

unemployment rate during the 1990s averaged 8.6 percent in Canada, compared with only 5.6 percent in the United States (Sorrentino and May, 2002, p.19). Similarly, the higher share of low-income farms in Canada may reflect lower Canadian income levels. Canadian per capita GDP was US $20,800 in 1999, compared with US $33,800 in the United States (U.S. Census Bureau, 2001, p. 841).

Earlier research suggests that differences in taxation contribute to the different farm size distributions between Canada and the United States (Freshwater and Reimer, 1995, p. 219-220; Harrington and Reinsel, 1995, p. 7). The U.S. tax code has more favourable allowances – virtually unlimited – for writing off farm losses against other income, compared with an $8,500 maximum in Canada. Write-offs may encourage the existence of lifestyle farms, since families operating these farms may have substantial off-farm income to offset with farm losses. Marginal tax rates are also higher in Canada than in the United States, a situation which provides incentives for Canadian farmers to reinvest income in their farms to convert income to capital gains. This should result in more full-time family farms in Canada, which is consistent with Canada's higher share of large, business-focused farms in figure 1.

Distribution of Revenue

The distribution of revenue by typology group is similar in Canada and the United States (figure 2) despite major differences in the distribution of farms. In both countries the five smallest groups – retirement; lifestyle; low-income; small, business-focused; and medium, business-focused – contribute little to total revenue. The large and very large groups,

Table 2 Acres Operated in Canada and the United States, 2001

	Retire-ment	Life-style	Low-income	Business-focused				Non-family	Total
				Small	Med.	Large	V. large		
Canada:									
				Acres per farm					
Total land operated per farm	665	290	580	355	835	1,155	1,850	6,025	925
Owned & operated[a]	500	220	400	250	485	725	1,055	4,495	595
Rented in	165	70	180	105	350	430	795	1,530	330
				Percent					
Share rented in	24.8	24.1	31.0	29.6	41.9	37.2	43.0	25.4	35.7
United States:									
				Acres per farm					
Total land operated per farm	566	228	367	226	523	925	2,660	2,665	763
Owned & operated[a]	364	140	163	164	205	388	1,161	2,349	400
Rented in	202	88	204	63	318	536	1,499	316	362
				Percent					
Share rented in	35.7	38.6	55.6	27.9	60.8	57.9	56.4	11.9	47.4
				Percent					
Land operated per farm in Canada as percentage of land operated per farm in the U.S.	117.5	127.2	158.0	157.1	159.7	124.9	69.5	226.1	121.2

[a] Land owned by the farm, less the amount of land rented out.

Sources: 2002 Farm Financial Survey (FFS) for Canada and 2001 Agricultural Resource Management Survey (ARMS) for the United States.

taken together, account for the majority of revenue in both Canada (81 percent) and the United States (69 percent).

Nevertheless, important differences exist in the distribution of revenue between the two nations. The large, business-focused group accounts for nearly 39 percent of revenue in Canada, compared with 24 percent in the United States. The larger share of Canadian revenue from large, business-focused farms reflects that group's domination of the Canadian farm count. The next largest typology group – very large, business-focused farms – accounts for a somewhat larger share of revenue in the United States (46 percent) than in Canada (42 percent). Nonfamily farms account for another 14 percent of production in the United States, compared with only 4 percent in Canada. The nonfamily farm group in the United States, however, includes nonfamily corporations – often with large output – that would be classified as family farms in Canada.

Farm Size

The average number of acres operated is 21 percent larger in Canada (925 acres) than in the United States (763 acres), as table 2 shows. Size differences between the two countries vary by typology group. For each typology group – except the very large, business-focused group – average acreage operated is larger in Canada, by varying degrees. Nonfamily farms are more than twice as large on average in Canada (6,025 acres) as in the United States (2,665 acres). A large share of the nonfamily farm group in Canada is made up of co-operatives and communal operations, which tend to operate large acreages.

The very large, business-focused group operates a higher average acreage – almost 50 percent higher – in the United States (2,660 acres) than in Canada (1,850 acres). Average acres owned and operated by very large farms are almost the same in the two countries, however – about 1,100 or 1,200 acres. The difference in total acreage operated results from more rented land in the United States. In general, a larger share of the total land operated is rented by farms – rather than owned – in the United States (47 percent) than in Canada (36 percent).

Specialization

There are three major differences in farm specialization between Canada and the United States. First, a larger proportion of farms specialize in grains and oilseeds in Canada (35 percent) than in the United States (23 percent), reflecting differences between the two countries in latitude and climate. The greater propensity for Canadian farmers to specialize in grains and oilseeds applies to most typology groups. Canadian specialization in grains may help explain the higher number for average acres per farm in Canada, because grain production is land extensive.

Second, U.S. farms are more likely to specialize in beef cattle (35 percent of all farms in the United States versus 28 percent in Canada). The higher U.S. specialization in beef reflects the high percentage of U.S. farms in the retirement and lifestyle groups and the heavy specialization of U.S farms within these groups in beef (47 and 52 percent, respectively). Beef cattle farms – particularly cow-calf operations – often have low labour requirements (Cash, 2002, p. 21) and are compatible with off-farm work and retirement.

Third, the share of farms specializing in "other commodities" is also higher in the United States (22 percent) than in Canada (15 percent). In the United States, this category includes farms with no production[4] as well as farms specializing in various commodities. Subtracting the percentage of all U.S. farms with no production (5 percent) from farms specializing in other commodities (22 percent) results in 17 percent, which is close to the 15 percent estimate for Canada.

Operator Family Income[5]

Farm families' total income from all sources is higher in the United States than in Canada, on average (table 3). The only exception is families operating small, business-focused farms, whose income was practically identical in the two countries. The higher average

Table 3 Source and Level of Farm Family Income in Canada and the United States, 2001

	Retire-ment	Lifestyle	Low-Income	Business-focused				Total
				Small	Med.	Large	V. large	
Canada:			***Canadian dollars per family***					
Average family income	50,700	92,000	11,400	42,600	70,900	83,300	228,100	76,500
Farm income	23,600	-1,600	700	10,600	21,600	59,900	206,300	45,700
Off-farm income	27,100	93,600	10,700	32,000	49,300	23,400	21,700	30,800
			Percent of income					
Share of total income from off-farm	53.5	101.7	93.9	75.1	69.5	28.1	9.5	40.3
			Percent of farm operator families					
Positive household income and a loss from farming	17.2	38.4	21.3	11.4	11.1	4.0	1.6	12.1
United States:			***Canadian dollars per family***					
Average family income	86,154	123,673	d	41,558	131,406	104,025	364,014	116,648
Farm income	16,389	-7,247	-11,303	6,788	13,970	49,093	316,592	39,158
Off-farm income	69,765	130,921	13,306	34,770	117,436	54,932	47,422	77,489
			Percent					
Share of total income from off-farm	81.0	105.9	d	83.7	89.4	52.8	13.0	66.4
			Percent of farm operator families					
Positive household income and a loss from farming	28.5	60.8	28.1	d	23.7	10.1	3.7	28.7

d = Data suppressed due to insufficient observations.

Sources: 2002 Farm Financial Survey (FFS) for Canada and 2001 Agricultural Resource Management Survey (ARMS) for the United States.

income in the United States is largely attributable to off-farm income. Average off-farm income is higher for each typology group in the United States, often by a large margin. In contrast, average farm income is higher in Canada than in the United States for all typology groups except the very large, business-focused group. This pattern – higher average off-farm income in the United States but higher average farm income in Canada – appears to be persistent. An earlier AAFC-ERS study (Grimard, Green and Banker, 1996) found the same pattern in 1991 and 1993.

About 66 percent of farm family income comes from off-farm sources in the United States, compared with only 40 percent in Canada. In both countries, however, the percentage of income from off-farm sources varies substantially by typology group. Reliance on off-farm income is highest for the five smallest groups and lowest for the large and very large groups.

The heavier reliance of U.S. farmers on off-farm income may reflect more off-farm employment opportunities in the United States. As mentioned earlier, the unemployment rate during the 1990s averaged three percentage points higher in Canada than in the United States. Allowing U.S. farmers to write off all farm losses against other income may also encourage off-farm work and the existence of and growth in lifestyle farms. The unlimited write-off helps explain why 61 percent of U.S. lifestyle farmers had negative farm income but positive total income.

Summary and Discussion

In some respects, farm structure is similar in the United States and Canada. Both countries have a diverse set of farms, which makes farm typologies useful for structural analyses. Revenues in the two countries are heavily concentrated in the large and very large groups in Canada and in those groups plus nonfamily farms in the United States. Farm families in both countries, particularly those operating smaller farms, have come to rely on off-farm income, although this reliance is more pronounced in the United States.

Nevertheless, there are important differences between the two countries. Nearly half of U.S. farms are in the retirement and lifestyle groups, while large, business-focused farms are the largest single group in Canada. Average farm size is larger in Canada, with some variation by typology group, but a larger share of farmland in the United States is rented. U.S. farms are more likely to specialize in beef cattle, reflecting the predominance of retirement and lifestyle farms in the United States. Canadian farms are more likely to specialize in grains and oilseeds, reflecting Canada's climate.

Farmers in Canada and the United States operate in different national economies and in different institutional settings that can lead to differences in farm structure, given enough time. The higher incidence of lifestyle farms in the United States (21 percent) than in Canada (7 percent) is a good example of such a difference in farm structure. One would expect more lifestyle farms in the United States, where unemployment rates were lower for at least a decade and where the tax codes treat farm losses favourably.

References

Agriculture and Agri-Food Canada. 2002. *Characteristics of Canada's Diverse Farm Sector.* Publication No. 2109/B, February.

Cash, James A. 2002. Where's the Beef? Small farms produce majority of cattle. *Agricultural Outlook* AGO-297, U.S. Department of Agriculture, Economic Research Service, December, pp. 21-24.

Freshwater, David, and Bill Reimer. 1995. Socio-economic policies as causal forces for the structure of agriculture. In *Farms, Farm Families, and Farming Communities,* a special issue of *Canadian Journal of Agricultural Economics,* edited by David H. Harrington, Leslie Whitener, Ray D. Bollman, David Freshwater and Philip Ehrensaft, pp. 209-222.

Grimard, Julie, Robert C. Green and David E. Banker. 1996. *Financial Characteristics of Canadian and U.S. Farms: 1991 and 1993.* Agriculture and Agri-Food Canada, Policy Development Division, Policy Branch, September.

Harrington, David H. and Robert D. Reinsel. 1995. A synthesis of forces driving structural change. In *Farms, Farm Families, and Farming Communities*, a special issue of *Canadian Journal of Agricultural Economics*, edited by David H. Harrington, Leslie Whitener, Ray D. Bollman, David Freshwater and Philip Ehrensaft, pp. 3-14.

Hoppe, Robert A. (ed.). 2001. *Structural and Financial Characteristics of U.S. Farms: 2001 Family Farm Report*. AIB-768, U.S. Department of Agriculture, Economic Research Service, May.

Sorrentino, Constance and Joyanna May. 2002. U.S. labor market performance in international perspective. *Monthly Labor Review* (U.S. Department of Labor, Bureau of Labor Statistics) 125(6): 15-35.

United States. Census Bureau. 2001. *Statistical Abstract of the United States: 2001*. November.

United States. Department of Agriculture (USDA), National Commission on Small Farms. 1998. *A Time to Act: A Report of the USDA National Commission on Small Farms.* MP-1545, January.

Endnotes

[1] ARMS collects information on farm *households*, while the FFS collects information about farm *families*. This is a relatively minor technical difference. A family is two or more people living together who are related by birth, marriage or adoption. A household is more inclusive and includes all the people (related or not) who share a housing unit. The terms "family" and "household" are used interchangeably in this paper.

[2] Without family income data, none of the nonfamily farms can be reclassified as retirement, lifestyle or low-income farms.

[3] The farm structure characteristics covered in this article are limited due to space constraints. The meeting paper from which this article was extracted covers additional characteristics, including the distribution of farm program payments, business organization, age of operator and farm net worth. For a copy of the meeting paper, please contact the authors.

[4] A farm may have no production due to drought or other adverse weather, or to crop and livestock disease, etc. Some U.S. farms have no production because all their cropland is enrolled in land conservation programs.

[5] The farm portion of operator family income was calculated by adding wages paid to the operator and other family members to net cash farm income. Note that depreciation *was not* deducted from net cash income, contrary to the procedure normally followed when calculating operator family income in the United States. Also, the operator family may have reported that it shared net income from the farm with another family, such as the family of a partner. If this were the case, the family income estimate included only the operator family's share of the net income.