

## **Regional Trends of Agricultural Restructuring in Canada**

Helen E. Parson  
Department of Geography and Environmental Studies  
Wilfrid Laurier University  
Waterloo, ON N2L 3C5

Agriculture, like other economic sectors in the developed world, has experienced significant structural change over recent decades as farm size, intensity, capitalisation and specialisation have dramatically moved from traditional to industrial configurations. From an historical perspective, the rate of change occurring in agriculture has varied from the imperceptible to the dramatic with many writers recognising three periods of great change or “agricultural revolutions” (Troughton 1986; Bowler 1992). The developments of recent decades make up the latest of these revolutions. The first agricultural revolution, the prehistoric domestication of crops and animals and the development of the plough, resulted in farming replacing hunting and gathering as the basis of subsistence. With the second agricultural revolution, many centuries later, farming changed from subsistence to commercial modes of production in response to the growing urban markets arising out of the industrial revolution. This new commercial agriculture diffused rapidly to the areas of overseas colonisation including Canada where most agricultural settlement by Europeans was market-oriented from the start. The third period of dramatic change has occurred since about the Second World War and is referred to as “agricultural industrialisation” or “agricultural restructuring” (Troughton 1982). Theory relating to agricultural restructuring suggests that changes in the spatial patterns of agricultural activity have resulted from the restructuring process. While these spatial changes can be examined at many scales, the purpose of this research note is to analyse broad, Canada-wide, adjustments using provincial-level data for the post-war restructuring period from 1951 to 1991.

## **Agricultural Restructuring**

Tremendous diversity characterises Canada's geography contributing to on-going regional disparity problems. In most parts of the country, the first non-Native immigrants came in search of farmland. With very different technology and priorities compared to the present, they settled many land types including the southern Shield, the uplands throughout the Maritime provinces and the northern Clay Belts, areas that are now considered agriculturally unsuitable. These regions, which have all experienced precipitous declines in agricultural activity over the twentieth century, illustrate the increasing relative disadvantage of certain locations and environments associated with recent agricultural restructuring (Mandale 1984; Parson 1979, 1990; Troughton 1982-83, 1988).

Many theories of the agricultural restructuring process in developed countries have been proposed (Pierce 1994). These theories take large to small scale approaches and examine the contribution of political, economic or individual factors in reshaping the structure and role of agriculture in the context of broader economic change. An important theme in this work relates agricultural change to the productivity gains resulting from the substitution of capital for labour (Hayami and Ruttan 1985). In terrelated is the growing significance of agribusiness as agriculture has become an increasingly international pursuit (Commins 1990; Found 1996; LeHeron 1993). Although regional and local markets still exist in urban-centred locations (Bryant and Johnston 1992), the development of global food systems means that many small producers with limited resources are increasingly marginalised.

With restructuring, agriculture has become increasingly intensive, spatially concentrated and specialised (Bowler 1992). Intensification, the increased use of off-farm inputs including machinery, chemicals, hybrids and technology, has resulted in significantly higher per hectare output and in capital replacing labour. Farmers who cannot afford to adopt these new technologies or whose land is unsuited, enter a cyclical downward spiral and eventually go out of business (Beattie et al 1981). Concentration, a related outcome, translates into farm production increasingly focused on fewer, larger farms in the most productive regions. Along with the trends to intensification and concentration is specialisation. Large, capital-intensive farmers focus on fewer farm products as resources are devoted to those items giving best comparative advantage.

Spatial change thus appears as an inherent aspect of the agricultural restructuring process. As marginal producers become disadvantaged, unable to compete in global markets, agriculture declines in those areas where they are clustered. Technological advances contribute to this process as the greatest productivity gains have occurred in areas with level topography, fertile soil and moderate climate. The retreat of agriculture from some areas and its concentration in others is further exacerbated by social, cultural and policy factors.

Agricultural restructuring in Canada has gone through two main stages (Troughton 1992). The first stage, in the 1950s and 1960s, was one of agricultural

mechanisation. In the immediate post-war period the adoption of mechanised methods accelerated. This, in part, resulted as rural labour migrated to the cities pulled by the expanding opportunities for urban jobs leaving a vacuum in the countryside that machinery came to fill. Simultaneously, rural labour was pushed out of the countryside by declining job opportunities as farmers eagerly adopted the new, relatively inexpensive implements that were becoming available. Other changes accompanied the labour changes as farmers attempted to improve their economic efficiency: farm numbers decreased, farm size increased and off-farm inputs were increasingly adopted. Thus, intensification and concentration occurred as restructuring progressed. In the second stage, since the 1960s, further agricultural restructuring has been brought about by the increased role of agribusiness which has turned farming into a specialised business enterprise.

Considerable empirical research on the causes, effects and implications of agricultural restructuring in Canada has been carried out beginning with a recognition of the problems of agriculture in physically marginal areas in the 1950s and 1960s (Resources for Tomorrow 1961; Buckley and Tihanyi 1967; Tremblay and Anderson 1966). Subsequently, the view expanded to see agricultural problems of these and other areas as part of broader processes of social and economic change in rural areas (Clibbon 1971; Parson 1977, 1979; Crewson and Reeds 1982). Issues relating to urban expansion into the countryside (Krueger 1978; Beesley and Russwurm 1981; Bryant and Johnson 1992; Caldwell 1995) and to rural sustainability (Troughton 1992; Pierce 1994) became important aspects of this research theme. Most empirical research in Canada has focused on a local or regional scale and not on the broader pattern of adjustment occurring within the country as a whole. It is at this latter macro level that the analysis in this research note is set.

### **Regional Adjustments in Canadian Agriculture**

Agricultural restructuring refers to the adjustments that the farm community has made in order to cope with the changing and demanding economic, technological and market environments that have developed in the post-war period. Adjustments are made at the farm level as operators attempt to remain profitable or, failing that, get out of the business. When these decisions are aggregated over a region, distinct patterns emerge. As a result, a changed regional balance of agricultural activity has resulted from agricultural restructuring in Canada. To establish the magnitude and the nature of these changes at the provincial level, key agricultural census data relating to land, population and returns for the 1951 to 1991 time period are analysed.

**TABLE 1 Percent Change in Farmland Areas, 1951-1991**

Region	Total Farmland	Improved Farmland	Cropland
East (of Man.- Ont. border)	- 45.9	- 35.2	- 16.4
West (of Man.- Ont. border)	+11.1	+33.2	+50.3
Canada	- 3.8	+16.3	+33.1

Source: Canada Census, 1951 and 1991

## Land

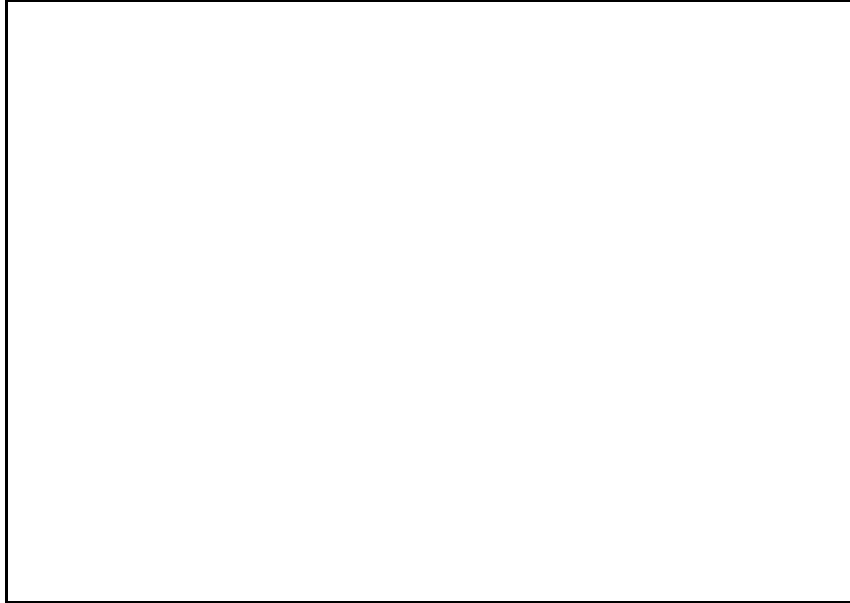
The Canada Census tabulates several categories of agricultural land. Total farmland is all land, regardless of use, that is part of a census farm. It consists of both improved and unimproved land. The improved portion has had inputs added to upgrade its utility for agricultural use beyond simply clearing the natural vegetation. Improved land and cropland, that portion of improved land planted to annual grain and forage crops, are more intensive uses of the resource base than unimproved land.

Between 1951 and 1991, the total census farmland area in Canada declined by 3.8%; the improved land area increased by 16.3%; and the cropland area increased by 33.1%. While these trends show that the overall use of Canadian agricultural land has become more intensive, they hide significant regional differences. East of the Manitoba-Ontario border, all three categories of farmland declined; to the west, all expanded (Table 1). In spite of this difference, agricultural land use intensification is evident in both regions. The east lost lower proportions of its improved land and cropland than of its total farmland while, in the west, the gains in improved land and cropland exceeded those in total land.

The magnitude of these agricultural land changes is further revealed by analysing the situation in each province by decade (Figures 1 and 2). In all provinces east of Manitoba (except Newfoundland)<sup>1</sup> large amounts of farmland went out of production in the 1950s and 1960s with the most extreme losses occurring in New Brunswick and Nova Scotia. These losses accompanied the widespread adoption of mechanisation in those decades. Many farmers on poorer land, unable to remain competitive, left farming. In the 1970s agricultural costs rose and profits fell creating an increasingly difficult economic environment for farming. All provinces (except Newfoundland) lost farmland in this decade with the rate of loss in the east exceeding that of the west. At the same time, however, all provinces except New Brunswick and Quebec gained improved land as farmers moved to more intensive specialisations in an effort to stay profitable. Be-

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1. In 1951 Newfoundland had very little agricultural land and few farms. As Newfoundland's farming modernised, its agricultural land area increased by 13,000 hectares between 1951 and 1991. While this growth translates into a dramatic rate of change because of the very small initial acreage, Newfoundland's contribution to the national agricultural scene, and to that of the Atlantic region is very small.



**FIGURE 1 Percent Change in Total Farmland**



**FIGURE 2 Percent Change in Improved Farmland**

tween 1981 and 1991 the general pattern of loss of total farmland in the east

(except Newfoundland) and gain in the west returned but with a difference. In the east, the losses of improved land now exceeded those of total farmland reflecting several factors: the much higher level of farmland that was improved compared to earlier decades and the fact that much unimproved marginal land had been previously abandoned. An aspect of the ongoing intensification of agricultural land use has been the move to higher proportions of total farmland in crop production in all parts of the country (35.7% in 1951; 49.5% in 1991).

A changed proportional distribution of agricultural land among the provinces has resulted from these differential losses and gains in farmland, improved land and cropland (Figure 3). The Atlantic provinces' percent share of Canada's agricultural land base -- total, improved and cropland -- was small in 1951 and continued to shrink to very low levels of between only 1% and 2% by 1991. Similarly both Quebec's and Ontario's proportional shares of all three variables declined although Ontario, with about 10% of Canada's cropland in 1991 lost agricultural land at a lower rate than the other eastern provinces. In contrast, the proportional shares of total farmland, improved land and cropland increased in all four western provinces.

With agricultural restructuring, production concentrates on fewer, larger farms in the most productive regions. In order to demonstrate that the regional shifts outlined above favoured the most productive areas, it is useful to relate the agricultural land trends to land capability as assessed by the Canada Land Inventory (CLI).<sup>2</sup> While the farmland area at any point in time does not correspond exactly with either the prime soils of CLI classes 1-3 or with all arable soils, CLI classes 1-4, nevertheless the correlation between them is high. To quantify this relationship, the 1951 and 1991 total census farmland areas in each province were divided by the relevant CLI class 1-3 and 1-4 areas (Table 2). Where more land was farmed than existed within the particular CLI grouping, the index exceeds 1.0. Where there was a surplus of potential farmland within the particular CLI grouping, the index is less than 1.0. In 1951 all provinces were farming an area in excess of their class 1-3 areas but only Quebec and Saskatchewan exceeded their 1-4 areas. Quebec, which in 1951 was farming an area three times the size of its 1-3 area and one and a half times its 1-4 area, had until the mid twentieth century encouraged the settlement of marginal areas in an effort to keep its citizens from leaving the province. Between 1951 and 1991 both indices declined in all regions of eastern Canada (except Newfoundland) as land went out of production. However, the level of decline went well beyond what one would expect on the basis of land quality alone. This decline was so severe that by 1991

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2. Canada Land Inventory classes 1 to 3 are those areas with soils most favourable for arable crops; class 4 soils, while still marginally suitable for arable crops have severe limitations that restrict both the range of choice and productivity; classes 5 and 6 have pasture but not arable crop potential and class 7 has no agricultural capability.

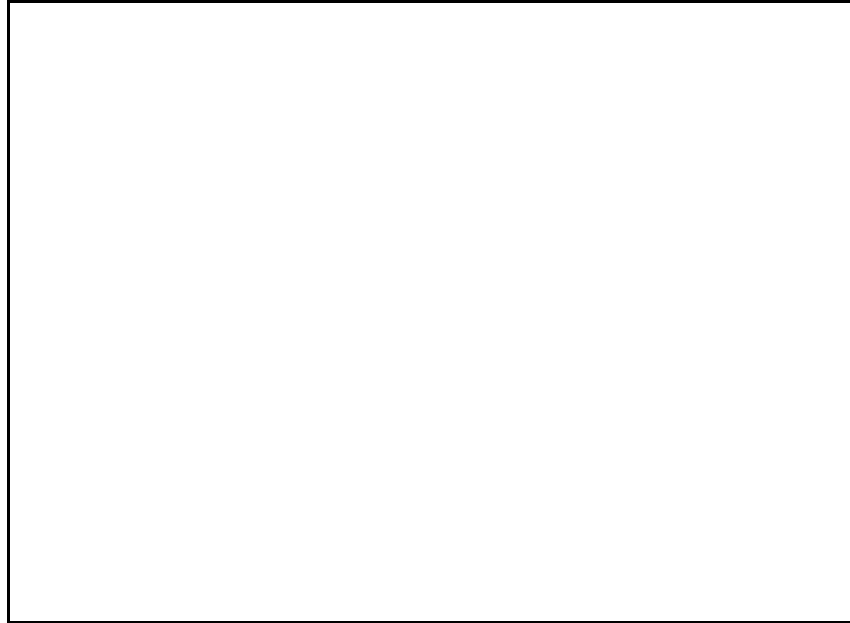


FIGURE 3 Regional Share of Total Farmland

TABLE 2 Total Farmland Area Divided by CLI 1-3 and 1-4 Areas, 1951 and 1991

	1951		1991	
	CLI 1 - 3	CLI 1 - 4	CLI 1 - 3	CLI 1 - 4
NF	6.25	0.51	8.60	0.70
PE	1.10	0.98	0.64	0.57
NS	1.12	0.82	0.35	0.25
NB	1.07	0.42	0.29	0.11
PQ	3.07	1.42	1.55	0.72
ON	1.16	0.85	0.75	0.55
MN	1.40	0.95	1.50	1.03
SK	1.53	1.24	1.65	1.34
AL	1.68	0.90	1.94	1.04
BC	1.30	0.53	1.63	0.66
CANADA	1.53	0.99	1.47	0.95

Source: Canada Census 1951, 1991; Environment Canada. Lands Directorate. 1979. *Canada's Special Resource Lands*. Ottawa: Supply and Services.

both Nova Scotia and New Brunswick were farming an area equivalent to only 30% of their respective CLI 1-3 areas suggesting that their land bases are now under-utilised in terms of their physical capability and that factors other than physical land quality have played a role in these trends. In western Canada both

indices have risen and, except for British Columbia, both exceed 1.0 as farmland expansion has brought lower capability land into production.

Significant changes to the spatial pattern of agricultural land in Canada has accompanied agricultural restructuring and has resulted in a closer adaptation of agriculture to the physical environment. Environmental adaptation is, however, only one aspect of the explanation for both farmland decline in the east and expansion in the west have exceeded the levels attributable to this cause.

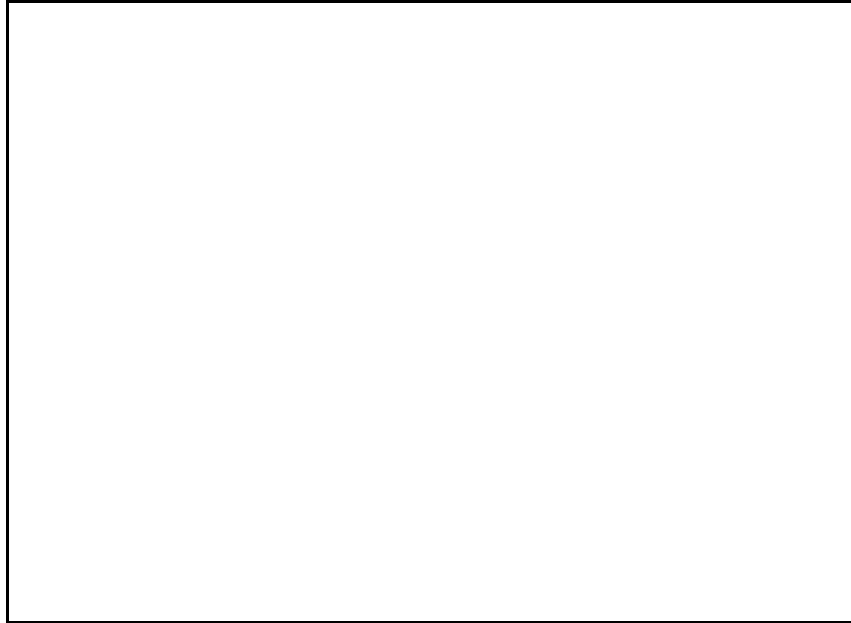
### **Farms and Farm People**

Accompanying the agricultural land changes are related farm number and farm population adjustments. All parts of Canada lost both farms and farm population between 1951 and 1991 with the result that the country as a whole had 55.1% fewer farms and 70.3% fewer farm people at the end of this time. As with the agricultural land variables, the rate of loss has differed by region with the highest percentage losses of both farms and farm population occurring in the Atlantic region followed by Quebec, then Ontario and finally the four western provinces. These rates range from those of New Brunswick which lost 87.7% of its farms and 92.7% of its farm population, to those of British Columbia where the rates of loss were 27.2% and 49.2% respectively. In all provinces, the decline in farm population has been greater than the decline in farm numbers reflecting Statistics Canada's more rigorous definition of farm population,<sup>3</sup> the ongoing substitution of capital for labour and smaller average family sizes. As a result of the differential loss in the number of farms and of farm population, the regional pattern of these variables throughout the country has changed (Figure 4). The greatest loss of proportional share of farm numbers and population between 1951 and 1991 occurred in Quebec where farm population fell from 27.3% of Canada's total to 14.8% and farm numbers from 21.6% to 13.6%. The overall result of the differential rates of decline in farm population and farm numbers, as with agricultural land, is a strengthening western concentration over time although the west does not dominate as strongly as it does in land. On a per farm basis, farms everywhere in the country in 1991 had about 70 % of the farm population of 1951.

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3. Starting with the 1981 Canada Census, farm population was defined as including the census farm operators and their households. Previously it was defined as including all residents of census farm dwellings.





**FIGURE 4** Regional Share of Farms

The difference between the rate of loss in the number of farms and the rate of change in the amount of farmland is reflected in the increase in average farm sizes in all provinces. The average farm in the three Prairie Provinces together increased by 93.0% from 191 hectares (472 acres) in 1951 to 369 hectares (911 acres) in 1991; the average farm in Quebec and the three Maritime Provinces increased by 105.6 % from 51 hectares (125 acres) to 104 hectares (257 acres). Ontario has had the least change in farm size with only a 41.0 % increase from an average of 56 hectares (139 acres) in 1951 to 79 hectares (196 acres) in 1991. In most provinces the greatest rates of change in average farm size occurred in the 1950s and 1960s corresponding with the high rates of farm loss and move to mechanisation of those decades. Rented land accounts for part of the increase in farm size in all areas. In 1951 the percentage of farmland rented was very low in Quebec and throughout the Atlantic region at only 2% or 3%, intermediate in Ontario at 11%, and higher at between 20% and 35% throughout the west. By 1991 rental rates had increased everywhere but were still relatively low at between 13% and 16% in Nova Scotia, New Brunswick and Quebec. Rental rates were intermediate in Ontario and Prince Edward island at 27% and were highest in the west at 37% to 41%.

Other related farm changes have occurred with restructuring. Of particular note is the fact that many farm operators have taken off-farm work. For the whole country the proportion of farms where the operator had off-farm work increased from 27.6% in 1951 to 39.2% in 1986. Starting in 1991 the Census recognised that

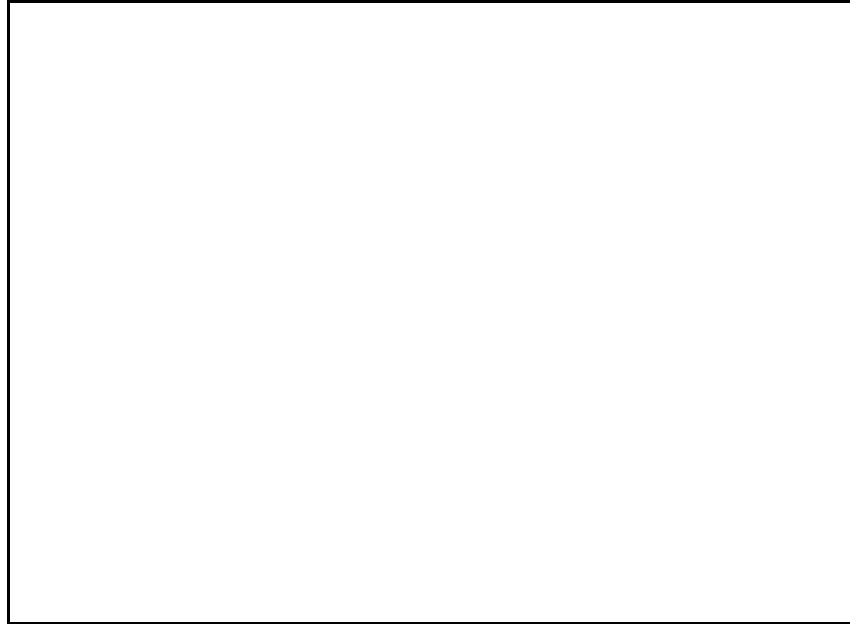
a farm could have more than one operator. With this revised definition, the proportion of all farm operators with off-farm work declined slightly to 37.1%. In spite of the overall country-wide increase since 1951, the proportion of operators with off-farm work has decreased over time in Newfoundland, Nova Scotia, New Brunswick and Quebec. What these provinces share in common are large areas of marginal land that continued in agricultural use into the mid-twentieth century. Often agriculture alone failed to provide sufficient family income and was combined with seasonal resource-based activities such as lumbering or fishing (Mandale 1984; Lamoureux 1985). Research in western Quebec, for example, has shown that many people farmed in summer and worked in the woods in the winter (Parson 1977). With post-war modernisation of the forestry industry, the opportunity for winter work disappeared and many abandoned agriculture at about the same time. This relationship provides an additional context for understanding the exceptionally high levels of farmland abandonment in Nova Scotia and New Brunswick where over half of all farmers had off-farm work in 1951.

Thus with agricultural restructuring, an absolute decline in farms and farm population has occurred everywhere with the greatest impact being in the eastern part of the country. At the same time those farms that continue in business in all parts of the country have made many adjustments to their size, rental land, and off-farm work, as they have adapted to new economic realities.

### **Returns and Capitalisation**

Additional insight into this process of change that has resulted in the strengthening position of western Canada particularly in land and, to a lesser extent, in farms and farm population, comes from an examination of the patterns and regional trends of farm receipts and farm capitalisation. The large proportional land gains in the western provinces have not translated into similar increases in their shares of either receipts or capital, suggesting that the land changes have served mainly to maintain and not to enhance their position (Figure 5). In terms of gross farm receipts, the east, and particularly Ontario, is in a much stronger position compared to shares of the land base. Ontario accounted for the largest provincial share of gross farm receipts from 1951 to 1991 and its 1991 share, 26.9% of the country's total, was a remarkable achievement given that this was produced on only 8.0% of the agricultural land.

Gross farm receipts over time were also analysed on a per farm and a per acre basis. Gross farm receipts per farm show the result of the restructuring process because farmers have made adjustments to their land, labour and capital



**FIGURE 5 Regional Share of Total Gross Farm Receipts**

in an effort to maintain and improve the farm's profitability. In 1951 Ontario's average per farm receipts (the highest) were 3.6 times those of Newfoundland (lowest) and a regional pattern existed. The highest returns in Ontario were followed by those of the three Prairie provinces, then British Columbia, Quebec and finally the four Atlantic provinces. By 1991 this regional pattern had disappeared and the returns of the highest province, Prince Edward Island, were only 1.7 times those of the lowest (Saskatchewan). Thus the land, farm and population changes have, in a financial sense, served to even things out region to region over time. The high levels of abandonment in parts of the Atlantic region, for example, have removed the unprofitable, marginal farms; those remaining are quite similar in returns to farms in all other regions of the country. In contrast to gross receipts per farm, the gap between lowest and highest average receipts per acre by province has widened over time. The three Prairie provinces stand out dramatically as having low per acre receipts, an indication that the land and farm size expansion in this region have been necessary to maintain the profitability of the farm unit over time.

The regional pattern of farm capital is comparable to that of gross farm receipts although Quebec and the Atlantic region are slightly under-capitalised, and Ontario and the west over-capitalised compared to the gross receipt pattern. Ontario's total farm capital is the highest in the country whether considered on the basis of regional share (31.0% of the country's total in 1991), per farm or per acre and its position has strengthened slightly over the study period. The picture **TABLE**

**3 1991 Regional Share as a Percent of 1951 Regional Share**

Region	Total		Farm	Farm	GrossFarm	Total Farm	Average (a) to (f)
	Farmland (a)	Cropland (b)	Number (c)	Population (d)	Receipts (e)	Capital (f)	
Atlantic	22.3	44.1	36.0	35.1	75.9	55.1	44.8
Quebec	52.5	52.5	63.0	54.2	98.0	61.4	63.6
Ontario	67.1	73.2	101.9	108.7	89.7	115.3	92.7
Prairies	114.9	112.4	128.6	145.5	107.3	102.6	118.6
BC	130.7	153.7	162.0	170.7	135.7	152.4	149.4

Source: Canada Census 1951 and 1991

of capitalisation becomes more complex when one examines its three components: land and buildings, machinery and equipment, livestock and poultry. In 1991, for the whole country, land and buildings accounted for 74.0% of total capital; machinery and equipment 18.0%; livestock and poultry 9.0%. Ontario's dominant position relates mainly to its high value of land and buildings, 84.0% of total capital in 1991. Significantly, only in Quebec and the four Atlantic provinces did the machinery and equipment proportion of total capital rise between 1951 and 1991, a reflection of not only low land values but also of the significant modernisation of agriculture that has occurred here since 1951.

## Conclusion

Agricultural restructuring has affected all regions of Canada over the 1951 to 1991 period. Changes in farm numbers, land, population, receipts, capital and operational arrangements show the emergence in all provinces of an intensive, capitalised industry made up of fewer but larger operations the gross receipts of which, on a per farm basis, do not vary greatly from province to province. Canadian farmers must now compete in demanding national and international markets rather than the isolated local markets that supported many in the past. In achieving this present situation significant shifts have occurred in the regional balance of agricultural activity. These shifts have come about because of variations across the country in such things as land availability and quality, the extent to which colonisation expanded onto agriculturally marginal lands, the initial level of agricultural modernisation, changing opportunities for other resource-based work, urbanisation pressure and market access. In general, the overall result of the differential regional changes is the increased significance of the west in Canadian agriculture at an aggregate level, and a distinct east-west gradient in the degree of change (Table 3). The greatest erosion of position has occurred in the Atlantic region, followed by Quebec. In contrast Ontario's agriculture, already highly capitalised and intensive in 1951 has maintained its strong position over time in spite of its declining farmland area.

With restructuring of the post-war period, agriculture has changed from a way

of life and a part of the community to a large-scale, specialised, intensive business undertaking. The process of change has had different impacts in the various regions of Canada because of the diverse range of physical and socio-economic conditions across the country. As a result, significant regional shifts in farming activity at the inter-provincial level have occurred between 1951 and 1991.

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