

Agricultural Resources, Agricultural Production and Settlement at Confederation

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Agricultural Resources, Agricultural Production and Settlement at Confederation

IN EASTERN CANADA THE AGRICULTURAL LANDS were largely settled by the time of Confederation, although on many farms much soil still lay under forest.¹ Most families gained a livelihood by farming, but in the earliest days of creating a farm from the wilderness many also worked for wages, perhaps on others' lands, perhaps in lumber camps or the fishery. Once sufficient acreage was cleared, the land supplied a large portion of a family's needs; meat, milk, butter, vegetables and cloth were all produced on the farm.² Other farm products required local processing before they were useful; wheat needed to be ground to flour and oats to meal, logs provided better housing when sawn into boards, hides were tanned to leather and manufactured into harnesses or shoes by skilled artisans, wool was carded and home spun cloth was fulled, and for some the enjoyment of rye and barley was much increased by distillation or brewing. As a result, agricultural communities always enjoyed a degree of diversification, since farming families' willingness to exchange farm produce for processed goods gave artisans a livelihood.

Even with local manufacturing, neither the farms nor the cluster of activities in farming communities could meet all the needs and wants of settlers. Sugar, tea, coffee, fine cloth, quality shoes and boots added greatly to settlers' comforts, while tools, nails and other iron goods helped farmers become more efficient in their trade.³ To secure these imported commodities, external markets for some local produce had to

1 On settlement patterns, see Marvin McNinnis, "Immigration, Emigration, and the Canadian Economy of the Late Nineteenth Century" (paper presented to the 19th Conference on the Use of Quantitative Methods in Canadian Economic History, Montreal, April 1994). I would like to thank a number of people whose kind assistance greatly facilitated work on this paper. Marvin McNinnis and Tony Ward have generously made many very helpful comments. Paul McIsaac's work as a research assistant was highly competent and essential to the project. Diana Doyle provided helpful editorial comment. Ann Marie MacPherson provided most useful secretarial assistance. Anonymous reviewers made comments which assisted greatly in improving the paper. The staff at the Bedford Institute of Oceanography kindly provided access to their facilities and assistance in using their charts. And not least, the University Council for Research and the Centre for Regional Studies at St. Francis Xavier University provided funding for the project.

2 Marvin McNinnis, "Marketable Surpluses in Ontario Farming, 1860", *Social Science History*, 8 (1984), pp. 395-424; Rusty Bittermann, "Middle River: The Social Structure of Agriculture in a Nineteenth Century Cape Breton Community", M.A. thesis, University of New Brunswick, 1987; Frank D. Lewis and M.C. Urquhart, "Growth and the Standard of Living in a Pioneer Economy: Upper Canada, 1826 to 1851", *William and Mary Quarterly*, 3rd series, LVI, 1 (January 1999), pp. 151-81.

3 Douglas McCalla, "What Were Country Stores For? Some Selected Evidence", (paper prepared for the Fourth Canadian Business History Conference, Peterborough, Ontario, October 1994). By 1870, some of these goods were produced in larger cities within Canada.

be found. Established families with sufficient good land were able to provide for their basic needs and to produce goods for sale on local or export markets; less fortunate families, however, continued to rely on wage labour to purchase both local and imported goods.

This study is motivated by the belief that the ability to produce agricultural goods was an important stimulant to the formation of a vibrant domestic economy. Agriculture was only a part of the economies of the provinces of Canada in 1871, but it was the most important single sector. Where a large number of people secured a livelihood in agriculture, a sound foundation had been established for a rich domestic market. An understanding of the relationship between resources and agricultural development is essential to appreciating the patterns of economic development in the different regions of Canada.

The dominance of the staples thesis diverted the attention of Canadian economic historians away from the vibrant domestic economy with its rich network of exchanges which existed in the confederated provinces. According to Harold Innis, Canada's economic history was the story of a series of staple exports, and agriculture's contribution to economic development depended on the production of products for export.⁴ In this view, dynamic forces which set the pace of economic development appeared to originate outside the domestic economy. The staples thesis began to lose favour when Marvin McNinnis and Douglas McCalla observed that Ontario's settlement and development preceded wheat exports. They described vigorous domestic markets where most people were farmers and wheat was only the most important of many agricultural products.⁵ Movement away from the staples thesis has taken a somewhat different path in study of the Maritimes' economy. There, rejection of the staples interpretation of the evolution of the region's economy began with the description of the region's successful industrialization following the post-Confederation construction of railroads and the introduction of protective tariffs. Reinterpretation of the role of agriculture eventually followed these inquiries. The characterizations of Maritime agriculture as subsistence production by farmers who were either culturally unsuited to the task or who were easily distracted by lumbering and fishing have been dismissed.⁶ Historians of the Maritimes have recognized that

4 H.A. Innis, "The Importance of Staple Products", in W.T. Easterbrook and M.H. Watkins, eds., *Approaches to Canadian Economic History* (Toronto, 1978), pp. 16-19.

5 McCalla has developed this argument in a number of works. For an overview, see Douglas McCalla, *Planting the Province: The Economic History of Upper Canada, 1784-1870* (Toronto, 1993). See also Marvin McNinnis, "Perspectives on Ontario Agriculture, 1815-1930", in Donald H. Akenson, ed., *Canadian Papers in Rural History*, vol. 8 (Gananoque, 1992), pp. 17-128, which draws together a number of his papers. Lewis and Urquhart, "Growth and the Standard of Living in a Pioneer Economy", explicitly recognizes the richness of the domestic market. For a discussion of this changing interpretation of the staples thesis, see T.W. Acheson, "New Brunswick Agriculture at the End of the Colonial Era: A Reassessment", in Kris Inwood, ed., *Farm, Factory and Fortune: New Studies in the Economic History of the Maritime Provinces* (Fredericton, 1993), p. 40.

6 W.T. Easterbrook and Hugh G.J. Aitken, *Canadian Economic History* (Toronto, 1956), p. 239, provide a convenient summary of this view. See also A.R.M. Lower, *The North American Assault on the Canadian Forest* (Toronto, 1936); Lower, *Settlement and the Forest Frontier in Eastern Canada* (Toronto, 1936). Dugal Campbell and R.A. MacLean, *Beyond the Atlantic Roar: A Study of the Nova Scotia Scots* (Toronto, 1974), associate cultural preferences of the Highland Scots with limited economic development. Alan MacNeil, "Cultural Stereotypes and Highland Farming in Eastern Nova

most families lived on farms and that the economic and social life of the Maritimes cannot be understood without a thorough understanding of farming and rural communities.⁷ Overall descriptions of the nature of agriculture provided important initial contributions,⁸ while studies of individual communities have shown the great diversity of agriculture within the Maritimes.⁹ Some communities and some farmers prospered by meeting the needs of their own tables and by supplying surpluses to the market; others struggled to survive, supplementing incomes derived from farming with work on more prosperous farms or in diverse non-agricultural activities.¹⁰

- Scotia, 1827-1851", *Histoire Sociale/Social History*, 19 (1986), pp. 39-56, effectively attacked cultural stereotypes. Graeme Wynn argued that economic circumstances, not cultural traits, shaped agricultural practices. See Wynn, "Late Eighteenth Century Agriculture on the Bay of Fundy Marshlands", *Acadiensis*, VIII, 2 (Spring 1979), pp. 80-9. See also Wynn, "Exciting a Spirit of Reform Among the 'Plodholes': Agricultural Reform in pre-Confederation Nova Scotia", *Acadiensis*, XX, 1 (Autumn 1991), pp. 5-51.
- 7 Graeme Wynn, *Timber Colony: A Historical Geography of Early Nineteenth Century New Brunswick* (Toronto, 1980); Alan R. MacNeil, "Society and Economy in Rural Nova Scotia, 1761-1861", Ph.D. thesis, Queen's University, 1990; Acheson, "New Brunswick Agriculture at the End of the Colonial Era", pp. 1-60. See also Kris Inwood and James Irwin, "Canadian Regional Commodity Income Differences at Confederation", in Inwood, ed., *Farm, Factory and Fortune*, pp. 93-120, for a discussion of the large contribution of agriculture to income. See also Julian Gwyn, *Excessive Expectations: Maritime Commerce and the Economic Development of Nova Scotia, 1740-1870* (Montreal and Kingston, 1998).
- 8 Graeme Wynn, "The Geography of the Maritime Colonies in 1800: Patterns and Questions", in Margaret Conrad, ed., *They Planted Well: New England Planters in Maritime Canada* (Fredericton, 1988), pp. 138-50; Robert MacKinnon and Graeme Wynn, "Nova Scotian Agriculture in the 'Golden Age': A New Look" and Michael J. Troughton, "From Nodes to Nodes: The Rise and Fall of Agricultural Activity in the Maritime Provinces", in Douglas Day, ed., *Geographical Perspectives on the Maritime Provinces* (Halifax, 1988), pp. 47-60, 25-46.
- 9 A.R. MacNeil, "Early American Communities on the Fundy: A Case Study of Annapolis and Amherst Townships, 1767-1827", *Agricultural History*, 62, 3 (Spring 1989), pp. 101-19; Béatrice Craig, "Agriculture in a Pioneer Region: The Upper St. John River Valley in the First Half of the 19th Century" and Alan R. MacNeil, "The Acadian Legacy and Agricultural Development in Nova Scotia, 1760-1861", in Inwood, ed., *Farm, Factory and Fortune*, pp. 17-37, 1-16. T.W. Acheson also contributes a substantial discussion of agriculture in the two communities. See Acheson, "New Brunswick Agriculture at the End of the Colonial Era", pp. 1-60.
- 10 Bittermann, "Middle River: The Social Structure of Agriculture in a Nineteenth Century Cape Breton Community"; Rusty Bittermann, "The Hierarchy of the Soil: Land and Labour in a 19th Century Cape Breton Community", *Acadiensis*, XVIII, 1 (Autumn 1988), pp. 33-55; Stephen Maynard, "On the Market's Edge: Family, the Productive Household and the Capitalist Formation of the Maritime Country side, Hopewell, Nova Scotia, 1870-1890", M.A. thesis, Queen's University, 1987; Debra McNabb, "The Role of the Land in the Development of Horton Township, 1760-1775", in Conrad, ed., *They Planted Well*, pp. 151-60; Stephen J. Hornsby, *Nineteenth Century Cape Breton: A Historical Geography* (Montreal and Kingston, 1992); Rusty Bittermann, "Farm Households and Wage Labour in the Northeastern Maritimes in the Early 19th Century", *Labour/le Travail*, 31 (1993), pp. 13-45; Maynard, "Between Farm and Factory: The Productive Household and the Capitalist Transformation of the Maritime Countryside, Hopewell, Nova Scotia, 1869-1910", in Daniel Samson, ed., *Contested Countryside: Rural Workers and Modern Society in Atlantic Canada, 1800-1950* (Fredericton, 1994), pp. 70-104; Hugh Millward, "Changing Patterns of Agricultural Settlement in the Canadian Maritimes", in Kenneth B. Beesley and Pamela J. Macintosh, eds., *Rural Research in the Humanities and Social Sciences: Selected Papers* (Proceedings of the Inaugural Colloquium of the Rural Research Centre, Nova Scotia Agricultural College, 1994), pp. 93-111; Kris Inwood and Phyllis Wagg, "Wealth and Prosperity in Nova Scotia Agriculture, 1851-71", *Canadian Historical Review*, LXXV, 2 (June 1994).

Changes in the interpretation of the role of agriculture in economic development requires reinterpretation of the role of agricultural resources in shaping that development. Within the staples thesis, resource endowment played a crucial role in determining whether a region was able to produce an agricultural staple.¹¹ While staples theorists gave some recognition to the impact of endowments with agricultural resources, these comments have not stimulated work on the relationship between the ability to produce for the domestic market and economic development. The weak development of the Maritimes has generally been attributed to the unfortunate nature of its staples. Studies of agricultural development in the Maritimes written outside the staples tradition have sometimes acknowledged the role of agricultural resources and at other times dismissed it.¹² Even very poor land can be forced to yield a few crops and some forage for animals, but may not be sufficiently productive to attract settlers. Only a systematic study can help us understand how good the land needed to be before settlers found it provided sufficient reward for their labours. This study presents a survey of the relationship of the extent of settlement to agricultural resources in

11 In this study, the term "staples thesis" is narrowly defined to refer to the study of the impact of the export of primary products on a region's or nation's development. A broader definition was used by Kris Inwood in "Maritime Industrialization from 1870 to 1910: A Review of the Evidence and its Interpretation", in Inwood, ed., *Farm, Factory and Fortune*, p. 149.

12 Charles M. Tiebout, "Exports and Regional Economic Growth", *Journal of Political Economy*, 54 (April 1956), pp. 160-4, criticized the exposition of the staples thesis in Douglass North, "Location Theory and Regional Economic Growth", *Journal of Political Economy*, 53 (June 1955), pp. 243-58, for ignoring a region's ability to supply goods other than the staple. For some discussion of the limitations created by poor agricultural resources, see Harold A. Innis, "An Introduction to the Economic History of the Maritimes Including Newfoundland and New England", *Essays in Canadian Economic History* (Toronto, 1956), p. 33, reprinted from the Canadian Historical Association Report, 1931; M.H. Watkins, "A Staple Theory of Economic Growth", in W.T. Easterbrook and M.H. Watkins, eds., *Approaches to Canadian Economic History* (Toronto, 1978), pp. 59, 67; S.A. Saunders, *The Economic History of the Maritime Provinces* (Fredericton, 1984), reissue of 1939 edition. Innis and Watkins acknowledged that the contrast between Newfoundland's and New England's development depended to some extent on differences in agricultural resources.

Anthony Winson explicitly dismisses poor resources as an important cause of limited agricultural development in the Maritimes. See Winson, "The Uneven Development of Canadian Agriculture: Farming in the Maritimes and Ontario", *Canadian Journal of Sociology*, 10, 4 (1985), pp. 411-38. Troughton acknowledges the limitations in the resources of the Maritimes, but he asserts that agricultural development "has never pushed hard against even a strict appraisal of those limits". See Troughton, "From Nodes to Nodes", pp. 25-46. Inwood and Irwin refer to an absence of Malthusian pressures, but do not distinguish between population per square mile and population pressure on agricultural resources. See Inwood and Irwin, "Canadian Regional Commodity Income Differences at Confederation", p. 97. Historical geographers have paid considerable attention to resource endowment. See Andrew Hill Clark, *Acadia: the Geography of Early Nova Scotia to 1760* (Madison, 1968); Clark, *Three Centuries and the Island: A Historical Geography of Settlement and Agriculture in Prince Edward Island* (Toronto, 1959); MacKinnon and Wynn, "Nova Scotian Agriculture in the 'Golden Age'", p. 48. On soil surveys see Acheson, "New Brunswick Agriculture at the End of the Colonial Era", pp. 42 and 49-50; MacNeil, "The Acadian Legacy", p. 3. Bittermann provided careful documentation of soil quality in "Middle River: The Social Structure of Agriculture in a Nineteenth Century Cape Breton Community". Craig in "Agriculture in a Pioneer Region", p. 18 and Graeme Wynn, "A Region of Scattered Settlements and Bounded Possibilities: Northeastern America 1775-1800", *The Canadian Geographer*, 31, 4 (1987), p. 331, made more general references to soil quality.

Ontario, the Maritimes and a small portion of Quebec.¹³ Comparison of the extent of agricultural development in 1870 to the quality of soils available establishes the normal relationship between resources and agricultural activity. Once the norm is established, deviations from the norm can be identified and explanations for the deviations can be sought.

Data on agricultural resources for this study are taken from the Canada Land Inventory, a systematic survey of soils and climates which resulted in a classification of Canada's resources according to their potential for agriculture.¹⁴ Soil surveys were conducted over many years, but the inventory used in this study was completed in the early 1970s. These surveys measured the characteristics of soils such as soil structure, drainage, stoniness and depth to bedrock. Information about climate and topography was also very important in determining the suitability of the land to various uses. Descriptions of soils are available to help determine if a district was well suited to a specific crop with unique requirements, such as tobacco or blueberries. However, an overall measure of the suitability of land to agriculture was required, and a general classification system was devised. The system was intended to provide an assessment of the potential of resources. Contemporary social, economic or cultural factors were not introduced into assessment criteria. As a result, the current use of the land, the size of farms, the location of the land in relationship to roads or markets and the skills or cultural traits of the current owners did not influence the classification of the land. If improvements to the land could be made by an individual owner – for example, clearing the land – the land was classified as if the improvements had been made. If the improvements were beyond the capability of an individual – for example, some forms of drainage – the land was classified according to its unimproved state.¹⁵ The surveys assumed that soils were well managed and that mechanized farming systems were used.

The classification system grouped lands into seven classes according to their capability for agriculture. Cultivation of arable crops was deemed possible on the first four classes of land, although with increasing difficulty as the quality of the land

13 Changes in the boundaries of census districts in Quebec make comparison of data from the 1871 census with the modern land quality inventory extremely difficult, precluding inclusion of more than a small proportion of Quebec.

14 *The Canada Land Inventory: Objectives, Scope and Organization*, Lands Directorate Report No. 1, rev. ed. (1970; reprint, Ottawa, 1978), p. 1, available at <http://geogratias.cgdi.gc.ca/CLI/frames.html>; *Agriculture Capability by Province – Census Division Breakdown: Quebec and Ontario*, R002150 (Ottawa, 1980); *Agriculture Capability by Province – Census Division Breakdown: Prince Edward Island, Nova Scotia, New Brunswick*, R002150 (Ottawa, 1980). See also Paul G. Gajoie, *Agricultural Lands in Southern Quebec: Distribution, Extent, and Quality* (Ottawa, 1975); L.J. Chapman and D.M. Brown, *The Canada Land Inventory: The Climates of Canada for Agriculture*, Report No. 3, rev. ed. (Ottawa, 1978). The *Census of Canada, 1870-71*, vol. 3 (Ottawa, 1875), provided data on agricultural development. Most of northern Ontario and Quebec were excluded from the inventory because of limited agricultural potential. All of the Maritime provinces were included.

15 *Canada Land Inventory*, p. 22. Presumably, if improvements requiring collective action had been made, the land was classified according to its improved condition. The implications of this aspect of the classification system for areas such as southwestern Ontario and parts of eastern Ontario, where drainage was very poor, are discussed below.

declines, while classes five and six could support only perennial forage crops.¹⁶ Class seven soils have no capability for agriculture. Two additional categories refer to soils that were not classified. First, class eight soils were not mapped because of urban development, inclusion in provincial parks or other factors which made them unavailable for agriculture.¹⁷ Second, the potential of organic soils was not determined, and they were left unclassified.

A great advantage of this survey for historical research is that the categorization of soils depended on their ability to support production of a wide range of crops. While 19th-century farmers produced surpluses for sale on the market, they also grew a variety of crops for their own table.¹⁸ Differences in land and climate had a strong influence on the particular crops produced in surplus for the market in each region. However, specialized production of a narrow range of crops was not feasible in the 19th century. Lack of mechanization meant that a variety of crops had to be grown to spread labour requirements throughout the seasons. High costs of transportation and difficulties preserving foods made the purchase of foodstuffs far less attractive than production of a wide range of crops for household consumption. While the ability to produce a marketable crop such as tobacco or small fruits was attractive, the land also had to be capable of producing a wide range of foodstuffs in order to be useful to settlers.

Nonetheless, care must be taken when using this modern classification system to determine the suitability of agricultural resources to 19th-century agriculture. One concern is that land quality may have changed over time through urbanization and permanent degradation due to poor farming practices. Although less extensive than today, urbanization was locally important in the 1960s and 1970s so that, for example, 45 per cent of the land area of the 1976 census district of metropolitan Toronto was not classified because it had been urbanized.¹⁹ However, only 0.5 per cent of Ontario's land was designated class eight because of urban development, so that while adjustments must be made in local areas, overall the problem is small.²⁰ The failure to classify organic soils was more important; 9 per cent of Ontario's soils and 8 per cent of New

16 A comparison of yields of several crops conducted on the four best soil classes in Ontario found large differences in productivity. See D.W. Hoffman, *The Assessment of Soil Productivity for Agriculture* (Guelph, 1971). Average output per acre on each class of land is presented as a proportion of output on class one land, which naturally has a ratio of one in all cases. Hoffman warns that the results for corn on class four lands are not highly reliable, because he could find very few acres of this category of land planted in corn.

Corn:	Class two: 0.77;	Class three: 0.59;	Class four: 0.43;
Barley:	Class two: 0.83;	Class three: 0.64;	Class four: 0.47;
Oats:	Class two: 0.81;	Class three: 0.69;	Class four: 0.58

17 Some acreage was listed as being under water. Presumably areas of lakes or rivers were included in the total land area of a census district and are listed in category eight in order to account for the entire area.

18 See McInnis, "Marketable Surpluses".

19 The area included in metropolitan Toronto has been excluded from this study.

20 Other areas in Ontario received a class eight designation because they were in provincial parks, but these were in census districts that were outside the settled area of Ontario in 1870. In all, 2.8 per cent of Ontario's land was placed in class eight. Almost 7 per cent of New Brunswick's land was class eight, but the vast majority of that classification was assigned to portions of census districts which were permanently under water. Less than 0.1 per cent of Nova Scotia and Prince Edward Island were in class eight.

Brunswick's were organic. Past misuse of the land may have caused erosion and salinity resulting in permanent reduction in the land's agricultural potential, but very little land was downgraded due to these factors.²¹ The classification according to potential soil fertility reduces concern about depletion of soil fertility due to poor crop rotation.

Climate change might also have altered the reliability of the 20th-century survey for 19th-century conditions. Some climate change had occurred by the 1970s. Temperatures rose during the last years of the previous century until 1940, then cooled slightly from those peaks; in the late 1970s, the current warming trend began. Even in Ontario, aridity and excessive heat were rarely limiting factors for agriculture; thus, the warming trend up to the date of the soil classification likely improved farming conditions in both regions. The Great Lakes Basin and the St. Lawrence Lowlands warmed more than Atlantic Canada (0.7 versus 0.4 degrees centigrade) between 1895 and 1991. However, the former region warmed considerably more than the latter in the 1980s, so that in the 1960s and 1970s the difference in trend was less than 0.3 degrees centigrade.²² It seems unlikely that the relative ranking of land would have been substantially altered by these changes in temperature. Most of the other factors which limited land's agricultural potential are largely immutable. Shallowness to bedrock, stoniness of soils, hilly topography, moisture-holding capacity due to soil structures (based on loam, sand or clay) are characteristics which do not change greatly with time. Perhaps in some areas, changes in river courses or shifts in the water table have altered vulnerability to flooding or changed other causes of excess water, but these changes are unlikely to have altered significant land areas.

A more troubling concern about the use of the modern survey for historical work stems from changes in agricultural technology rather than from changes in the land and climate. Agriculture was not mechanized in the 19th century, and difficulties created by conditions such as hilliness may have been less a problem in the past than in the present. Other problems which are relatively easy to correct today may have presented serious obstacles to farming in the past. For example, today's farmers have access to better technology and cheaper capital which together have greatly eased the difficulty of improving drainage. Much poorly drained land in southwest Ontario received a class two ranking, although 19th-century farmers found these soils difficult to improve sufficiently for agriculture. Substantial acreage was only brought into production after community-wide drainage projects were facilitated by legislation enacted in 1869 and 1873. Even by the criteria of the Canada Land Inventory, these lands would have received a lower ranking in 1870 than in 1970, since the improvements were beyond the capacity of individual farmers.²³ Quite possibly other changes in the technology of

21 The only places reporting salinity were three census districts in New Brunswick where 3,120 hectares (0.18 per cent of the land area) were downgraded for that reason. Erosion was a problem in 38,758 hectares or 0.14 per cent of the land area of Ontario, but was not reported in the Maritimes. However, much land was downgraded because of unspecified poor soil characteristics. Salinity or erosion may have been among the problems afflicting these lands.

22 D.W. Gullett and W.R. Skinner, *The State of Canada's Climate: Temperature Change in Canada 1895-1991* (Ottawa, 1992).

23 Kenneth Kelly, "The Artificial Drainage of Land in Nineteenth-Century Southern Ontario", *Canadian Geographer*, 19, 4 (1975), pp. 279-98; Charles Herniman, "Development of Artificial Drainage Systems in Kent and Essex Counties, Ontario", *Ontario Geography*, 2 (1968), pp. 13-24.

farming and land improvement have altered the relative productivity of different types of land. At the same time, flat land was always preferred to hilly land; rich, deep soils to shallow, stony soils; warm long summers with good rainfall to short cool summers or to excessive aridity. Ideally, historians would have access to an objective assessment of the agricultural potential of lands appropriate to conditions of the 19th century. Without such an ideal, historians have made use of the imperfect tool of land quality surveys designed for contemporary conditions. Systematic comparison of agricultural development to agricultural resources as defined by this tool should be instructive. While the tool must be used with care, it should help in understanding the pattern of agricultural development in Canada at the time of Confederation.

The results of the Canada Land Inventory indicate that good agricultural land is very unevenly distributed. Due to the limitations imposed by the late springs and cool wet summers of the Maritimes, the region has no class one farmland. In contrast, Ontario possesses more than five million acres of class one land, more than 97 per cent of those lands in eastern Canada. Table One shows that the uneven distribution of land extends to other classes as well. Ontario has more than three times as much class one through three land as any of the other provinces. While Prince Edward Island has a very good proportion of its lands in class two, the total amount of good land available is naturally but a small fraction of the land in Ontario. New Brunswick is remarkable for the large proportion of land which is class four and is very marginal for agriculture. The absolute number of acres of good land in each province matters, because the total number of settlers who could establish themselves as farmers was limited by the number of acres of land suited to agriculture. The Maritimes were at a disadvantage not just because a small proportion of its land area was suited for agriculture, but also because the absolute quantity of good quality land was so limited.²⁴

Table Two presents the distribution of the four top classes of agricultural land among groups of census districts in the regions. Perhaps most noteworthy is the very large concentration of excellent farmland in Ontario west of Lake Simcoe and south of Georgian Bay.²⁵ This part of the province has 7.4 million acres of class one and two lands, 62 per cent of the class one and two lands in all of the districts included in this study. The eastern half of Ontario is less well-endowed, although the region still has large pockets of class one and two lands. Prince Edward Island has very good farmland, possessing 646,000 acres of class two lands or 46 per cent of its land area. The remainder of the Maritimes contains 900,000 acres of class two lands, but they are scattered in pockets in northwestern New Brunswick, along the St. John River, in central Nova Scotia, along the Northumberland Strait in Nova Scotia and in Bonaventure, Quebec.²⁶ Finally, the south and east shores of Nova Scotia, the coast of the Bay of Fundy and the counties along the Northumberland Strait of New Brunswick contained only small amounts of the best farmland, so that very few farmers in these areas had access to soils better than class three.

24 This is a point which Marvin McInnis has emphasized in conversation.

25 This region includes the following areas in Ontario: South West, Lake Erie, Lake Huron, Western, Central Western and West Lake Ontario.

26 The 1871 census districts do not facilitate isolation of the Annapolis Valley. The central Nova Scotia area includes Kings and Hants counties. Only 14 per cent of the land area of Annapolis County consisted of class four or better soils, and the county possessed only 1,688 acres of class two land. The county resembled Digby far more than the better-endowed Kings and Hants counties.

Table One
Land by Agricultural Class
(Thousands of Acres)

Class Land	One and Two	Three	Four	Total Acres*
Ontario	10,809	7,188	6,486	68,029
Quebec	2,504	3,366	6,988	74,020
New Brunswick	397	2,844	5,021	17,649
P. E. I.	646	350	123	1,392
Nova Scotia	411	2,429	1,049	13,105

Brief descriptions of the various classes of farm land:

Class

- 1 No significant limitations in use for crops.
- 2 Moderate limitations that restrict the range of crops or require moderate conservation practices.
- 3 Moderately severe limitations that restrict the range of crops or require special conservation practices.
- 4 Severe limitations that restrict the range of crops or require special conservation practices, or both.

Classes not listed in the table:

- 5 Very severe limitations that restrict their capability to producing perennial forage crops, and improvement practices are feasible.
- 6 Capable only of producing perennial forage crops, and improvement practices are not feasible.
- 7 No capability for arable culture or permanent pasture.
- 8 Soils removed from agriculture by urbanization or not classified for other reasons.
- O Organic soils not placed in capability classes.

*Northern portions of Ontario and Quebec were not included in the Canada Land Inventory. All of the Maritime provinces were surveyed.

Source: *Agriculture Capability by Province – Census Division Breakdown: Quebec and Ontario*, R002150, Canada Land Data Systems, Land Data and Evaluation Branch, Directorate, Environment Canada, 1980 (The description of land classes is quoted from this source.); *Agriculture Capability by Province – Census Division Breakdown: Prince Edward Island, Nova Scotia, New Brunswick*, R002150, Canada Land Data Systems, Land Data and Evaluation Branch, Lands Directorate, Environment Canada, 1980; Paul G. Gajoie, *Agricultural Lands in Southern Quebec: Distribution, Extent, and Quality*, Soil Research Institute, Research Branch, Agriculture Canada, 1975.

Table Two
 Distribution of Agricultural Land by Census District
 (Thousands of Acres)

Area	Acres in Class			Total Land Area in Acres
	One and Two	Three	Four	
South west Ont.*	1,963.3	344.6	18.5	2,541.3
Lake Erie	1,542.7	379.2	208.1	2,403.4
Central West Ont.*	692.6	221.5	58.3	1,170.5
Lake Huron*	1,113.0	186.8	38.0	1,838.7
Western Ont.*	1,002.0	258.4	87.4	1,942.9
West Lake Ont.	1,061.1	256.7	259.6	2,016.8
Northern Fringe*	425.1	226.0	366.1	3,785.0
East Lake Ont.	625.6	212.6	195.9	1,536.4
Bay of Quinte	484.2	372.8	139.6	2,959.7
North east Ont.	117.9	36.0	49.1	1,986.9
St. Lawrence R.	264.1	279.5	57.3	802.7
Ottawa River	311.7	322.6	163.8	1,168.7
South west Que.	742.4	151.2	280.0	1,476.8
Bonaventure	93.8	127.8	75.6	2,135.9
Fundy N.B.	2.7	102.4	288.3	1,654.5
Low. St. John R.	25.8	244.8	539.3	1,780.0
Mid. St. John R.	80.8	539.4	1,106.6	3,705.2
Acadian pen.	0.0	662.1	1,331.1	4,161.3
North west N.B.*	286.1	585.9	1,039.3	4,310.0
Northum. St. N.B.	1.3	710.0	716.7	2,037.5
Central N.S.	97.5	416.2	212.8	1,289.0
Fundy N.S.	4.9	273.5	147.4	1,941.3
South shore N.S.	0.1	106.7	4.4	1,917.1
East shore N.S.	10.4	284.6	76.9	2,352.1
Northum. St. N.S.	271.8	850.4	470.9	3,022.8
Cape Breton	26.2	497.2	136.3	2,582.4
P. E. I.	646.3	349.7	123.0	1,392.4

* Settled late

Source: *Agriculture Capability by Province – Census Division Breakdown: Quebec and Ontario and Agriculture Capability by Province – Census Division Breakdown: Prince Edward Island, Nova Scotia, New Brunswick*, R002150, Canada Land Data Systems, Land Data and Evaluation Branch, Lands Directorate, Environment Canada, 1980; Paul G. Gajoie, *Agricultural Lands in Southern Quebec: Distribution, Extent, and Quality*, Soil Research Institute, Research Branch, Agriculture Canada, 1975.

These endowments of agricultural land had a strong impact on the numbers of people who settled in each district and on the extent of agricultural development. However, the timing of settlement was determined largely by access to markets, proximity to earlier settlement and political circumstances. Settlement in North America followed a distinct pattern.²⁷ Typically a district experienced a long period in which it was too isolated to attract settlers, followed by a relatively brief period of rapid population growth. Once a district was filled up by this rapid growth, a lengthy period of net emigration began in which the natural increase in population joined new immigrants in peopling districts formerly too remote to attract settlers. Most rural districts in Ontario reported their peak populations in the censuses of 1871 or 1881, although many peaked earlier and a few counties grew until the early 20th century.²⁸ Urbanization reduced net out-migration, but for Canada as a whole to have eliminated the net emigration experienced from the 1860s to the 1890s would have required extraordinary rates of urbanization. Instead, Canada experienced net emigration until a new frontier opened in the west.²⁹

The observed pattern of migration seems to reflect sensible behaviour which can be modelled in the following way. People migrated when they expected to receive a higher income in the area of new settlement than they could secure at home. A particular district attracted migrants only if it offered the possibility of earning an income comparable to the income available in other districts open for settlement.³⁰ Closeness to markets and proximity to previous settlement increased the income earned from a given quality of land by providing higher prices for output. The presence of neighbours enriched life and reduced the risks of settlement, so that satisfactory land in the most accessible districts was preferred to land in more remote districts.³¹ As a result, good land in remote districts was often unclaimed while settlement proceeded in more conveniently located districts. Once the good land in a

27 Graeme Wynn provides a description of the pattern of settlement in New Brunswick, while J. David Wood gives a much more nuanced discussion of the pattern settlement than presented here. See Wynn, "Population Patterns in Pre-Confederation New Brunswick", *Acadiensis*, X, 2 (Spring 1981), pp. 124-38; Wood, "Population Change on an Agricultural Frontier: Upper Canada, 1796 to 1841", *Patterns of the Past: Interpreting Ontario's History* (Toronto, 1988), pp. 55-77. Jacob Spelt describes the filling up of agricultural land and James T. Lemon describes a similar process in Pennsylvania. See Spelt, *Urban Development in South-Central Ontario* (Toronto, 1972), pp. 118-21; Lemon, *The Best Poor Man's Country: A Geographical Study of Early Southeastern Pennsylvania* (Baltimore, 1972).

28 *Seventh Census of Canada, 1931* (Ottawa, 1933-42). See Patricia A. Thornton, "The Problem of Out-Migration from Atlantic Canada, 1871-1921: A New Look", *Acadiensis*, XV, 1 (Autumn 1985), for a description of migration patterns in 1871.

29 McInnis, "Immigration", p. 17.

30 Lewis and Urquhart in "Growth and the Standard of Living in a Pioneer Economy" present a more complex model of settlement which is concerned with settlers' earnings through time. The model presented here implicitly assumes that settlers compared the present value of anticipated lifetime earnings from settling in different districts.

31 Lack of access to markets did not always prevent settlement, although it made earning a good income more difficult. See Douglas McCalla, "Above the Falls: The Economic Development of Western Upper Canada, 1784-1851" (paper prepared for the Conference on the Rural Economy and the Beginnings of Industrialization, Université de Montréal, February 1992). Of course, settlers preferred to locate near to friends or kin, and mistakes were often made in choosing a location. But presumably friends or kin provided information about poor as well as good areas for settlement. While mistakes often resulted in considerable hardship for individual families, extensive settlement was likely to have persisted only where families earned a good income.

district had been taken up, new farms yielded a lower income than land in other districts, either because the added farms were smaller or because they were on poorer quality soil. Many of the children of the first settlers were forced to emigrate or to accept a lower income as the price of remaining near to kin. In districts with excellent access to markets, high prices for farm produce tended to offset declining farm size or soil quality, so that more intensive settlement was possible without seriously reducing incomes. As a result, settlement was more likely to have been extended onto poorer lands in those longest settled districts which were closest to markets. Districts where the descendants of the settlers were particularly reluctant to emigrate would also have developed more poor land.

Low land prices could not induce settlement on lands too poor to provide an adequate income. The price of poor land was low because it yielded less income for a given amount of effort.³² Even if the land were free, a family would refuse to settle on it if it yielded less income than could be earned working for wages, after allowing for differences in the risks and conditions of work in the alternate occupations.³³ Families able to pay a high price for land exchanged financial assets for productive real estate which yielded a good income. Families with more limited financial assets were too poor to secure such valuable properties, and had to content themselves with the lower income produced by poorer land. The payments to purchase land were merely transfers of assets between buyers and sellers. The implications of this model of migration are that families ceased to enter a district when additional farming families would earn lower incomes than they could obtain elsewhere, so that migration often ceased when much poor land was unsettled. In districts where most of the land was good, declining farm size limited settlement.

The productive capacity of the land and market conditions were not the sole determinants of the timing or the extent of settlement. Political circumstances drove out the Acadians and attracted the Loyalists, while military considerations and the suitability of harbours directed the establishment of many urban centres.³⁴ In addition, other types of primary production such as fishery, forestry and mining attracted significant numbers of settlers. This study does not intend to diminish the importance of these other influences by focussing on agriculture. Nonetheless, since settlers were dependent on local agricultural production, districts with rich agricultural resources were likely to support far more settlers than those without, whatever the initial reason

32 If land was sold in efficient markets, its price equalled the present value of the future flow of rental income from the land. Rents were the portion of the farming family's income in excess of the opportunity cost of their labour and capital. When contemporaries calculated an appropriate price for land as a multiple of its rental value, they were calculating the present value of the land. The multiple was the reciprocal of the interest rate used in a present value calculation. Of course, governments did not alienate land in efficient markets. Early settlers were enriched by free grants of good land. The government expected later settlers to pay an administratively set price for poor lands, but often had great difficulty making sales. See Hornsby, *Nineteenth Century Cape Breton*, pp. 48-52; Bittermann, "The Hierarchy of the Soil".

33 K.H. Norrie discusses settlers' disinterest in Canadian prairie lands after the Homestead Act made them freely available, but before changing circumstances increased the incomes those lands could yield. See Norrie, "The Rate of Settlement of the Canadian Prairies, 1870-1911", *Journal of Economic History*, 35, 2 (June 1975), pp. 410-27.

34 Gwyn discusses the consequences of the expulsion of the Acadians in *Excessive Expectations*, pp. 25-7.

for settlement. Agriculture resulted in a much denser population per square mile than any other form of primary production. For example, mining established concentrated urban centres, but mining towns did not necessarily create a higher population density than that stemming from a substantial district of good farmland. In 1871, Pictou County, Nova Scotia, with a seaport, coal mines and timber production as well as farming, had 29 people per square mile. Wellington County, Ontario, by comparison, without the seaport and coal mines, but with excellent farmland, had 50 people per square mile.³⁵

Although other factors also influenced settlement, the productive capacity of the land had a very strong impact on the number of settlers and on the extent and nature of agricultural development. The tendency of good farmland to attract settlers is illustrated in Figure One.³⁶ In well-endowed districts (solid symbols) where much of the agricultural land was class one and two, additional acres of land attracted additional farming families, so that the number of occupiers increased in proportion to the acres of agricultural land.³⁷ In sharp contrast, in very poorly endowed districts (Xs), where much of the land was class four, additional acres of land failed to draw more settlers, and the number of occupiers did not rise with the acres of land. In poorly endowed districts (open triangles), where class three lands predominated, the number of occupiers increased with agricultural acres, but the relationship was looser than for well-endowed districts.

Not only the number of settlers, but also the amount of land they improved varied with the quality of land.³⁸ Except where settlement was late, so that clearing was incomplete, the number of acres improved usually equalled or exceeded the acres of class one and two lands (Table Three).³⁹ Because farmers owned so few acres of excellent land in the poorly and very poorly endowed districts, the ratio of acres improved to acres of class one and two lands was highest there. In contrast, the proportion of class one through four lands improved was much lower in the less well-endowed than in the well-endowed districts. Only exceptionally did the number of acres improved exceed the acres of class one through three lands (Table Four).

35 Settlement in Wellington County began roughly a half century later than in Pictou County. See George Patterson, *A History of the County of Pictou, Nova Scotia* ([1877] Belleville, Ont., 1972), chapter 4. See also Millward, "Changing Patterns of Agricultural Settlement in the Canadian Maritimes", pp. 93-111; Wood, "Population Change on an Agricultural Frontier", pp. 55-77.

36 Three very poorly endowed districts contained more than 800,000 acres of agricultural lands. They are shown on the far right border of Figure One.

37 An occupier was a head of a household who operated a farm.

38 Improved land had been cleared sufficiently to be used in agriculture. Lewis and Urquhart in "Growth and the Standard of Living in a Pioneer Economy" discuss the time required to clear land. The location of the improved acres with respect to land of each quality is not known. If settlers had always developed all better land before developing poorer land, then we could determine with certainty how much land of each class had been improved. Casual inspection of land quality maps and civil maps indicates a strong tendency in this direction. The settlements of 1871 were far more frequent in the portions of a district with good farm land than with poor land. However, systematic improvement of all better land before any of the poorer land in a district was unlikely. Some poorer land may have been improved because it was conveniently located relative to towns, roads or farm houses, while better land was left idle because it was in a more remote location.

39 While the location of improved acres cannot be determined here, if the number of acres improved was less than the acres of class one through three lands, some of those lands must have been left unimproved.

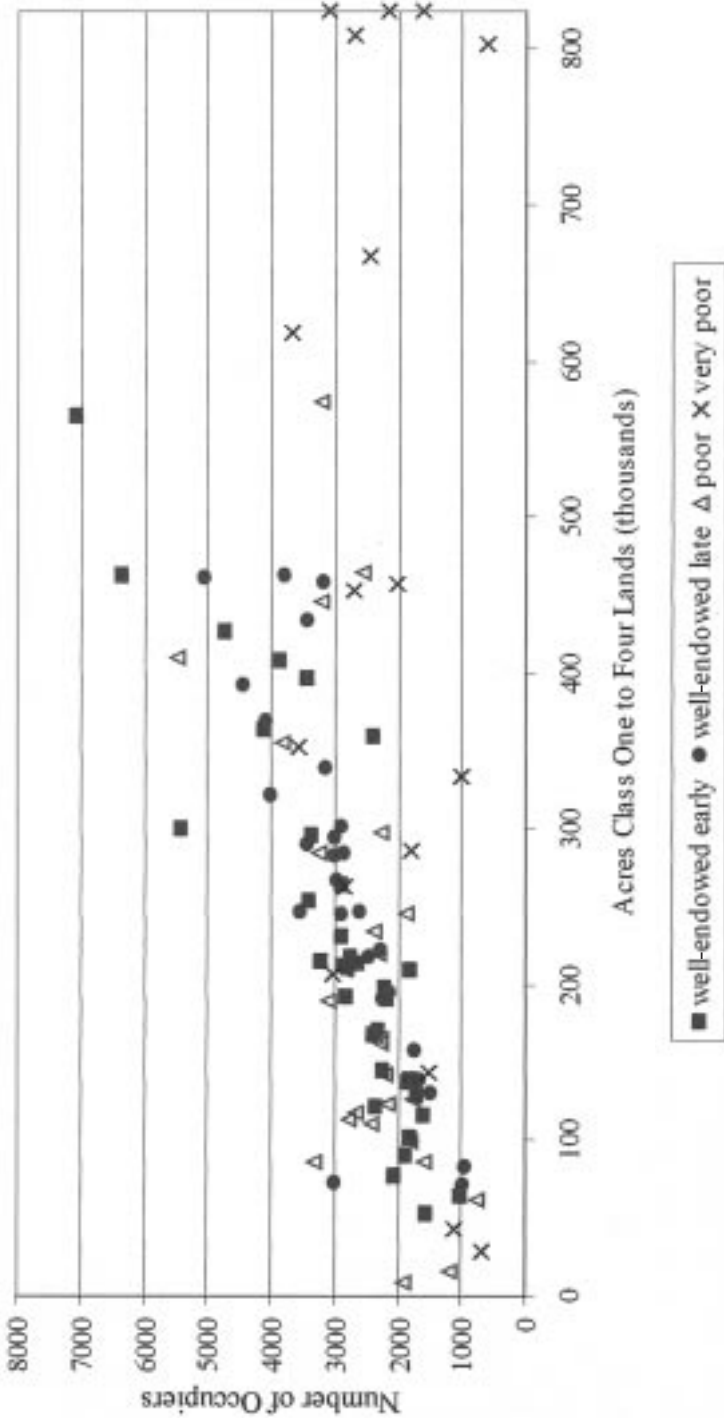


Figure One
Relationship of Occupiers to Agricultural Land

Source: *Agriculture Capability by Province - Census Division Breakdown: Quebec and Ontario, and Agriculture Capability by Province - Census Division Breakdown: Prince Edward Island, Nova Scotia, New Brunswick R002150, Canada Land Data Systems, Land Data and Evaluation Branch, Lands Directorate, Environment Canada, 1980. R002150, Canada Land Data Systems, Land Data and Evaluation Branch, Lands Directorate, Environment Canada, 1980. R002150, Canada Land Data Systems, Land Data and Evaluation Branch, Lands Directorate, Environment Canada, 1980. Paul G. Gajoie, *Agricultural Lands in Southern Quebec: Distribution, Extent, and Quality*, Soil Research Institute, Research Branch, Agriculture Canada, 1975. *Census of Canada 1870-71*, Vol. III, Table XXI.*

Table Three
Ratio of Acres Improved and of Agricultural Lands

Districts	Improved Acres per Acre of Class One and Two Lands	Improved Acres per Acre of Agricultural Lands	Acres of Agricultural Land per Occupier
Well-endowed, early	1.0	0.68	80
Well-endowed, late	0.7	0.52	93
Poorly endowed	2.8	0.48	81
Very poorly endowed	2.6	0.16	242

Definitions:

Well-endowed districts: more than 40 per cent of the agricultural lands in classes one and two.

Poorly endowed districts: less than 40 per cent of the agricultural lands in class one and two and less than 40 per cent of the agricultural lands in class four.

Very poorly endowed districts: more than 40 per cent of the agricultural lands in class four.

Early: Population in the late 1820s at least 10 per cent of the 1871 population.

Late: Population in the late 1820s less than 10 per cent of the 1871 population.

Almost all poorly and very poorly endowed districts were settled early.

Source: *Agriculture Capability by Province – Census Division Breakdown: Quebec and Ontario and Agriculture Capability by Province – Census Division Breakdown: Prince Edward Island, Nova Scotia, New Brunswick*, R002150, Canada Land Data Systems, Land Data and Evaluation Branch, Lands Directorate, Environment Canada, 1980; Paul G. Gajoie, *Agricultural Lands in Southern Quebec: Distribution, Extent, and Quality*, Soil Research Institute, Research Branch, Agriculture Canada, 1975; *Census of Canada 1870-71*, Vol. III, Table XXI.

While the pattern of agricultural development in response to resources is clear, some areas deviated from that pattern. Table Four shows that in much of eastern Ontario, farming families settled on and improved poorer land than in most of Canada. To a lesser extent, the same pattern of overdevelopment is found in southwest Quebec. The figures for areas represent averages that obscure the precise location of overdeveloped districts, so that deviations are best discussed at the district level. The most overdeveloped districts were Addington, Lanark South and Lanark North in the area called “North Eastern Ontario” and Peterborough North in the “Northern Fringe”. In these places, lands worse than class three were not only improved for pasture or hay, but were pressed into arable. In other districts in Ontario, acres improved, but not acres in arable, exceeded acres of class one to three lands. These were Frontenac, Prince Edward, Hastings North and Lennox along the Bay of Quinte, Durham East along East Lake Ontario, Leeds South, Leeds North Grenville, Brockville and Grenville along the St. Lawrence and portions of southwest Quebec near the Richelieu River and

Table Four
Acres per Occupier

Area	Class 1 and 2	Class 1 through 3	Improved	Arable less Hay	Hay and Pasture
South west Ont.*	94	110	41	21	19
Lake Erie	58	73	54	28	23
Central West Ont.*	55	73	62	36	24
Lake Huron*	77	90	47	27	18
Western Ont.*	69	87	45	27	18
West Lake Ont.	58	72	60	39	20
Northern Fringe*	47	72	41	22	18
East Lake Ont.	49	66	60	38	21
Bay of Quinte	27	47	57	26	30
North east Ont.	18	23	57	23	33
St. Lawrence R.	38	78	47	21	25
Ottawa River	44	90	44	22	22
South west Que.	43	52	62	29	32
Bonaventure	41	97	17	6	10
Fundy N.B.	0	19	33	8	25
Low. St. John R.	5	49	55	19	36
Mid. St. John R.	12	92	41	16	25
Acadian pen.	0	143	20	11	9
North west N.B.*	128	391	34	18	16
Northum. St. N.B.	0	112	36	16	20
Central N.S.	18	95	50	10	40
Fundy N.S.	1	39	40	10	29
South shore N.S.	0	17	21	4	16
East shore N.S.	2	58	23	3	20
Northum. St. N.S.	22	89	43	12	31
Cape Breton	3	54	29	7	22
P. E. I.	56	87	39	na	na
Average	43	76	47	22	23
Average West**	56	74	52	27	22
Average East***	13	79	36	11	25

*Settled late: less than 10 per cent of the 1871 population present in the late 1820s.

**Ontario and Quebec, excluding Bonaventure.

***Bonaventure, New Brunswick, Nova Scotia and Prince Edward Island.

Source: *Agriculture Capability by Province – Census Division Breakdown: Quebec and Ontario and Agriculture Capability by Province – Census Division Breakdown: Prince Edward Island, Nova Scotia, New Brunswick*, R002150, Canada Land Data Systems, Land Data and Evaluation Branch, Lands Directorate, Environment Canada, 1980; Paul G. Gajoie, *Agricultural Lands in Southern Quebec: Distribution, Extent, and Quality*, Soil Research Institute, Research Branch, Agriculture Canada, 1975; *Census of Canada 1870-71*, Vol. III, Table XXI.

Huntingdon.⁴⁰ In nine of these 14 districts, class one and two lands were more than 40 per cent of agricultural lands. In six of these nine well-endowed districts, the number of acres improved exceeded the available acres of agricultural land, so that farmers were necessarily using class five lands. The juxtaposition of pockets of very good land and quite poor soils may have led farmers in these districts to clear land of a quality usually left idle. Farmers in the seven less-well-endowed districts also cleared more land than farmers in comparably endowed districts elsewhere, although the acres improved exceeded acres of agricultural land only in Leeds South. The very early start to settlement in most of these areas and the stimulus of markets in the lumber camps of the Ottawa Valley, and in Kingston, Montreal and the United States may explain the excessive development.⁴¹ In the Maritimes, improved acres exceeded the acres of class one to three lands in Saint John and King's counties in New Brunswick and Annapolis, Shelburne and Queen's counties in Nova Scotia. Farmers were forced to use lands worse than class four only in the Nova Scotia counties. The early date of settlement and the ability to combine farming and fishing may have encouraged farmers to push agriculture onto poorer lands.

Another group of districts stand out because they were underdeveloped. The quality of class one and two land was sufficiently high that farmers normally attempted to bring all of it into agricultural production. In 1870, farmers in many late-settled districts had not yet cleared all the class one and two lands. In most cases, late settlement resulted from the inland location; settlers moved to districts with better market access and with more neighbours before they moved to remote districts. The sheer quantity of land to develop may also have led to a failure to clear all good land; in half the underdeveloped districts, class one and two lands were more than 80 per cent of all the agricultural lands. Farmers in these more remote districts simply had not yet had time to clear all the good land.

The farmers who settled along Lake Erie also had left class one and two land unimproved. Lake Erie provided good access to markets only after the completion of the Erie Canal in 1825. Distance from markets may have contributed to slow development even in some of the southwestern districts such as Essex and Middlesex East where political factors induced early settlement. The proportion of good land improved increased sharply from the southwest to eastern Lake Erie, possibly reflecting the influence of access to markets. However, it is likely that the Canada Land Inventory misrepresents the value of the land to 19th-century farmers in these districts. Most of the land classified as class two in southwestern Ontario was poorly drained. Community, as well as individual, drainage projects were required before the land could be brought into production.⁴² Problems with drainage may also explain the shift from overdevelopment to underdevelopment in districts such as Russell in eastern Ontario. Large portions of the agricultural lands were downgraded due to poor drainage in that part of Ontario as well. However, the correlation between poor

40 In a handful of scattered districts improved acres exceeded class one to three by two or fewer acres per occupier, and are not discussed here.

41 Spelt, *Urban Development in South-Central Ontario*, p. 31.

42 Kelly, "The Artificial Drainage of Land in Nineteenth-Century Southern Ontario"; Herniman, "Development of Artificial Drainage Systems in Kent and Essex Counties, Ontario". For a discussion of improvements to drainage in southwestern Ontario, see William Marr and Donald Patterson, *Canada: An Economic History* (Toronto, 1980), pp. 104-7.

development and poor drainage is far from perfect. A larger proportion of the good land was poorly drained in extremely overdeveloped Addington County than in Russell County. The problem warrants further investigation.

A few other districts also failed to improve all of their best lands. More than half the land in the New Brunswick counties of Victoria and Restigouche was class four, but each of these districts had substantial pockets of class two lands. The acres improved were only one-third of the good lands in Victoria County and one-sixth of the good lands in Restigouche. As Béatrice Craig has shown, market access and the uncertainty of the location of the Maine border slowed settlement and resulted in this failure to develop good lands.⁴³ While Restigouche had access to the sea, its class two lands were located well inland, and were as remote from markets as were the good soils in land-locked Victoria County. The underdevelopment of a neighbouring district, Bonaventure, is not so easily explained. Almost one-third of its agricultural land was class two, and much of that land was located along the coast. Settlement began relatively early, but by 1870 farmers had only cleared 17 acres each, far less than the good land available. Rosemary Ommer correctly observed the low level of development and argued that it resulted from the influence of the Robin's Company, but a more detailed study would be welcome.⁴⁴ Another anomalous area is Prince Edward Island which improved fewer acres than the vast majority of similarly endowed districts where settlement began early. The proportion of all agricultural lands improved resembled that of neighbouring poorly endowed districts of Nova Scotia. Even the number of occupiers was fewer than in most well-endowed, long-settled districts. Arguments that the land tenure system slowed agricultural development may be correct.⁴⁵ Finally, although improved acres greatly exceeded acres of class two lands, Hants, Cumberland and Colchester counties in Nova Scotia had developed somewhat less agriculturally than their resources seem to justify. A considerably larger share of the lands of Cumberland and Colchester were class two than in Pictou County, and Hants County had more good land than Antigonish County. Yet the ratio of occupiers and improved acres to agricultural land, and of improved acres to class one and two lands, was much lower in these counties than in their easterly neighbours.

While deviations from the normal pattern are numerous, the general patterns of development are clear. Class one and two lands appear to have been highly attractive to settlers. In most districts where sufficient time had passed from initial settlement,

43 Craig, "Agriculture in a Pioneer Region".

44 Rosemary Ommer, *From Outpost to Outport: A Structural Analysis of the Jersey-Gaspé Cod Fishery, 1767-1886* (Montreal and Kingston, 1991), chapter 5. For a discussion of agriculture in the region, see also Nicholas Landry, "L'exploitation agricole à Caraquet : Étude basée sur le recensement de 1861", *Acadiensis*, XX, 2 (Spring 1991), pp. 145-57.

45 For a discussion of the land tenure system, see Andrew Hill Clark, *Three Centuries and the Island: A Historical Geography of Settlement and Agriculture in Prince Edward Island* (Toronto, 1959), pp. 211-14; Matthew G. Hatvany, "An Enduring Mythology: The Proprietary Burden in Prince Edward Island", in *Cheminements: Mythic History and Symbolic Landscape*, Actes du projet d'échange Laval-Queen's, Octobre 1995-96, pp. 21-9. For discussion of the land tenure problem, see Rusty Bittermann, "Escheat! Rural Protest on Prince Edward Island, 1832-1842", Ph.D. thesis, University of New Brunswick, 1991; Ian Ross Robertson, *The Prince Edward Island Land Commission of 1860* (Fredericton, 1988).

the number of improved acres exceeded the acres of class one and two lands. Class three lands were of value to settlers, although the proportion of the agricultural lands cleared were substantially smaller where those lands were predominately class three than where those lands were predominately class one and two. Class four land was of very little value to settlers. Additional acres of class four land failed to attract settlers, and most of the agricultural land in the very poorly endowed districts was not improved for cultivation. Some of the deviations from these patterns seem to be explained by differences in access to markets and by the timing of settlement. Other deviations are not easily explained; identifying the patterns of typical development is helpful in identifying districts that developed atypically and warrant further study.

The nature of agricultural production also responded to differences in agricultural resources. The number of acres in arable only very rarely exceeded the number of acres of class one through three lands, and usually did not exceed the acres of class one and two lands (Table Four).⁴⁶ Output of wheat, corn, barley and oats per occupier was much higher in well-endowed areas, while buckwheat and rye, crops suited to poorer soils, were generally important in areas where the acres in arable exceeded the acres of good soil (Table Five).⁴⁷ Potato production is well suited to the climate of the Maritimes and the good soils in Prince Edward Island and parts of the St. John River Valley are well adapted to that crop, so that its production was well maintained in the Maritimes. Poor soil is better able to support pasture and hay than arable crops, so hay production and acres in hay and pasture did not decline with soil quality. Nonetheless, while farmers in the Maritimes had as much hay and as many acres in pasture as farmers with more good land, the output of meat, wool, butter and cheese was lower (Table Six).⁴⁸

Some examples illustrate the patterns of land use. Farming families living in the early settled census districts along the western end of Lake Ontario had access, on average, to 58 acres of class one and two lands per farm. They improved 60 acres of land per family and planted 39 acres in arable crops, putting 20 acres into hay and pasture. The area had large outputs of grain; wheat output alone averaged 141 bushels per occupier. Table Six shows that production of animal products was also substantial. In contrast, families in the Northumberland Strait area of Nova Scotia had access to 22 acres of class two lands per farm and had improved 43 acres per family, so that these farmers were forced to conduct more agriculture on class three lands than their counterparts in Ontario. They responded by placing only 12 acres in arable crops, fewer acres than the available class two lands. Oats and potatoes, tolerant of acid soils and cool temperatures, and buckwheat, well suited to poor soils, were the most important crops. Hay and pasture tolerated poorer quality land and benefited from the

46 Arable crops require ploughing for their cultivation. The 1871 Census included in the arable category acres in hay as well as acres in all grain and vegetable crops. In this study, the acres in hay are subtracted from the acres in arable and added to the acres in pasture. The Land Survey assumes that forage crops can be grown on much poorer soils than most arable crops.

47 J.A.R. Lockhart and A.J.L. Wiseman, *Introduction to Crop Husbandry* (Toronto, 1983), pp. 79, 96. "Common Buckwheat" adapted from Agdex 118/20-2, April 1998, Alberta Agriculture, Food and Rural Development.

48 Only cheese and butter produced on farms are reported in Table Six. Nova Scotia had only one cheese factory, in Annapolis County. See *Census of Canada, 1870-71*, vol. 3, table 36.

Table Five
Output per Occupier (bushels)

Areas	Wheat Barley and Corn	Oats	Rye and Buckwheat	Potatoes	Hay (tons)
South west Ont.*	169	129	2	62	9
Lake Erie	193	131	5	71	13
Central West Ont.*	199	170	3	125	14
Lake Huron*	136	133	0	75	10
Western Ont.*	123	138	0	87	9
West Lake Ont.	256	150	2	102	11
Northern Fringe*	75	102	2	115	9
East Lake Ont.	194	124	12	129	10
Bay of Quinte	116	86	27	113	10
North east Ont.	65	77	15	107	10
St. Lawrence R.	76	157	8	135	10
Ottawa River	54	151	6	175	9
South west Que.	58	162	16	97	13
Bonaventure	16	71	20	267	5
Fundy N.B.	4	45	14	141	11
Low. St. John R.	2	94	78	235	16
Mid. St. John R.	9	153	60	185	13
Acadian pen.	14	60	8	274	5
North west N.B.*	16	91	56	168	7
Northum. St. N.B.	16	119	27	246	10
Central N.S.	13	51	8	245	13
Fundy N.S.	8	14	3	102	11
South shore N.S.	13	6	3	68	7
East shore N.S.	3	20	4	64	7
Northum. St. N.S.	21	89	12	138	12
Cape Breton	7	58	1	104	6
P. E. I.	38	272	7	293	6
Average	103	120	11	124	10
Average West	141	141	8	110	10
Average East	14	74	19	161	10

Source: *Census of Canada 1870-71*, Vol. III, Tables XXI, XXIII.

damp climate of the region, and each farm used 31 acres for these uses. Although farms in the Northumberland Strait area devoted 11 more acres to the support of livestock, the number of animals on these farms (except for sheep) and the output of animal products (including wool) tended to be lower than in the west Lake Ontario area (Table Five). Apparently, pasture on class three land was unable to support as

Table Six

Area	Animals Killed or Sold per Occupier			Output per Occupier (lbs.)	
	Cattle	Sheep	Swine	Wool	Butter and Cheese**
South west Ont.*	1.8	4.6	5.3	37	197
Lake Erie	1.7	6.1	5.3	41	218
Central West Ont.*	2.2	5.9	5.6	46	251
Lake Huron*	1.7	4.1	4.6	35	187
Western Ont.*	1.5	3.7	4.1	31	182
West Lake Ont.	1.9	5.1	6.4	40	260
Northern Fringe*	1.1	2.5	3.2	26	181
East Lake Ont.	1.6	5.1	4.6	43	232
Bay of Quinte	1.5	6.7	3.2	38	274
North east Ont.	1.8	6.5	2.9	38	276
St. Lawrence R.	1.3	5.0	2.9	35	335
Ottawa River	1.3	3.7	3.1	30	260
S W Que.	1.8	5.6	3.1	30	235
Bonaventure	1.0	2.3	2.1	16	73
Fundy N.B.	0.7	2.7	1.1	21	150
Low. St. John R.	1.2	4.3	2.8	34	252
Mid. St. John R.	1.4	4.5	1.9	30	214
Acadian pen.	0.8	2.0	1.9	17	93
North west N.B.*	0.7	2.7	2.1	23	98
Northum. St. N.B.	0.9	2.4	2.0	25	131
Central N.S.	1.0	4.9	1.5	27	162
Fundy N.S.	0.7	2.6	0.9	19	152
South shore N.S.	0.5	1.5	0.8	15	95
East shore N.S.	0.6	2.0	0.7	17	99
Northum. St. N.S.	1.3	4.0	1.6	34	210
Cape Breton	0.9	2.5	0.9	24	177
P. E. I.	na	na	na	na	na
Average	1.4	4.3	3.4	32	205
West	1.7	5.1	4.5	37	232
East	0.8	2.7	1.3	21	151

**One pound of cheese was equated to 0.4 pounds of butter. The conversion factor is the ratio of the quantity of milk used in a pound of cheese to the quantity of milk used in a pound of butter. The output of the cheese factories, all located in Ontario and Quebec, is not included.

Source: *Census of Canada 1870-71*, Vol. III, Tables XXI, XXII.

many animals as pasture on class one or two lands. In Cape Breton, farmers had far less good land than their mainland neighbours, on average only three acres of class two lands per farm. Families averaged 29 improved acres and restricted the arable to seven acres. Oats and potatoes were the most important crops. Twenty-two acres were in pasture and hay. With fewer acres in production, average output of all products was lower than along the Northumberland Strait. A somewhat different pattern appears in Sunbury, Carleton and York Counties along the middle Saint John River. Farmers on average had 12 acres of class two lands. They improved 41 acres, placing 16 acres in arable, so that they were forced to plant at least one-quarter of the arable crops on lands poorer than class two. In addition to oats and potatoes, these farmers produced substantial quantities of buckwheat. With four more acres in arable than along the Northumberland Strait in Nova Scotia, the output of most crops was higher than in that area. However, production of animal products was quite similar to that part of Nova Scotia.

In the atypical areas where very poor land was developed for agriculture, the types of farming were adjusted to the quality of the agricultural resources. Either the acres in arable tended to be substantially fewer than in neighbouring areas, or farmers grew more rye or buckwheat – crops suited to poor soils – than in neighbouring areas.⁴⁹ Lanark North and South in northeast Ontario and Leeds North Grenville near the Bay of Quinte were exceptions in placing substantial acreages on poor land without resorting to the production of buckwheat or rye.

Some exceptional areas in the Maritimes merit discussion. Table Four re-emphasizes the extent to which good land was underutilized in Prince Edward Island, Bonaventure and northwestern New Brunswick. The acres of class one and two lands per occupier exceeded the acres improved by 17 acres in Prince Edward Island, 24 acres in Bonaventure and 94 acres in northwest New Brunswick. The composition of agricultural output in these areas also deviated from the norm. Island farmers improved only 39 acres per farm, scarcely above the average of 36 acres in the Maritimes and well below the average of 57 acres in Central Canada. Nonetheless, they produced more oats and potatoes than in any of the other areas included in this study. Presumably these farmers tended to specialize in those crops. However, in Bonaventure and northwest New Brunswick, crop production resembled less well-endowed districts in spite of the abundance of good land. Although potato output per occupier in Bonaventure was second only to Prince Edward Island, farmers in that area planted only six acres in arable crops, and buckwheat production was substantial. In northwest New Brunswick, more than half the improved acres were in arable crops, but as with the counties along the Saint John River, buckwheat production was quite important. Agricultural activity in this area failed to reflect the quality of the land available. In northwest New Brunswick, location may have encouraged farmers to use

49 Outputs of buckwheat per occupier were high in the francophone districts of southwest Quebec, Bonaventure, northwest New Brunswick and Kent County along the New Brunswick Northumberland Strait. However, the highest outputs were in the strongly anglophone counties along the lower and middle Saint John River and the anglophone areas in Fundy, New Brunswick. Farms in the Nova Scotian Northumberland Strait region produced as much buckwheat per occupier as some of the francophone areas. The relative importance of cultural preferences and resource endowments in influencing crops grown requires more attention.

well-located poor lands instead of remote good lands. The pattern in Bonaventure is more difficult to understand.

The tendency to have less agricultural development rather than less productive agriculture is indicated by information on yields. Unfortunately, information on yields for one year is not very reliable. The census gives the acres planted in wheat, potatoes and hay, so that yields of these crops can be calculated and are shown in Table Seven. In the 1870 crop year, Maritime farmers enjoyed yields of these crops comparable to or slightly better than yields in Ontario. However, information on yields from a single year must be used with great caution, because agricultural output varies so greatly from year to year. In this census year, yields seem to have been unusually low, particularly in Ontario. Marvin McInnis reported Ontario wheat yields of 17 bushels per acre in 1861. The census of 1881 indicates wheat yields of 14 bushels in Ontario, 12 in New Brunswick and 13 in Nova Scotia.⁵⁰ Speculating about the implications of the yields for each area is tempting. But the data are not reliable enough to permit the assumption that the overdevelopment of areas such as northeast Ontario caused the low yields found there in 1870. Still, the observation that yields varied far less than the number of acres planted in the crops seems safe enough. This observation provides added support for the argument that Maritime farmers competently adapted their practices to their circumstances.

The results of this study help to explain the apparent contradiction between studies showing that the Maritimes was a poor place for agriculture and studies demonstrating that many farms had quite good levels of production. Maritimers put their energies into clearing and ploughing only the limited quantities of productive lands which yielded sufficient returns for their labours. Rather than growing crops such as wheat, barley or corn which were poorly suited to the region, they raised potatoes and oats and put land into pasture and hay production, uses of the land better suited to a cool wet climate and poor soils. In areas with the least good farmland, such as southeastern Nova Scotia, improved acres per farm were less than half the national average and 80 per cent of the improved acres were in pasture or hay. In a better-endowed area such as the Northumberland Strait of Nova Scotia, improved acres per farm were about 90 per cent of the national average, although acres in arable were only 55 per cent of the average. In general, Maritime farmers responded to the limited quantity and quality of agricultural resources by farming less, improving fewer acres where soils were poor and planting fewer of those acres in more demanding arable crops.

While planting fewer acres and raising less-demanding crops was an intelligent response to limited resources, the result was that the output per occupier of almost every agricultural product, including animal products, was substantially lower in the Maritimes than in the western part of the country. The only exceptions were potatoes, buckwheat and hay. The implication is that farm families in the Maritimes on average

50 McInnis, "Perspectives on Ontario Agriculture", p. 45; *Census of Canada, 1880-81*, vol. 3 (Ottawa, 1883). Almos Tassonyi, Senior Economist, Ministry of Finance, Government of Ontario, kindly provided me with data he had collected on yields of various crops from the 1850s through the 1870s in Ontario. He reports no year in which the yield of wheat in Ontario was lower than the value given for 1870.

Table Seven
Yields per Acre

Area	Wheat (bushels per acre)	Potatoes (bushels per acre)	Hay (tons)
South west Ont.*	11	90	1.2
Lake Erie	11	93	1.2
Central West Ont.*	10	96	1.3
Lake Huron*	9	89	1.1
Western Ont.*	8	95	1.1
West Lake Ont.	13	104	1.2
Northern Fringe*	10	104	0.9
East Lake Ont.	11	112	1.0
Bay of Quinte	10	96	0.8
North east Ont.	9	83	0.8
St. Lawrence R.	9	110	0.9
Ottawa River	11	112	0.9
South west Que.	7	113	1.0
Bonaventure	12	186	1.1
Fundy N.B.	13	144	1.0
Low. St. John R.	12	146	1.0
Mid. St. John R.	15	139	1.0
Acadian pen.	10	148	0.9
North west N.B.*	12	129	1.0
Northum. St. N.B.	9	123	1.1
Central N.S.	12	122	1.0
Fundy N.S.	13	111	1.1
South shore N.S.	14	114	1.1
East shore N.S.	12	97	1.2
Northum. St. N.S.	12	115	1.1
Cape Breton	12	79	1.0
P. E. I.	na	na	na
Average	10	108	1.1
Average West	10	99	1.1
Average East	11	123	1.0

Source: Calculated from *Census of Canada 1870-71*, Vol. III, Table XXIII.

earned substantially less from agriculture than their counterparts in Ontario.⁵¹ However, restricting agricultural activity freed labour and capital for other uses. Off-farm earnings likely did more to improve incomes than attempting to nurture additional crops in thin stony soils; thus occupational pluralism was a sensible response to poor agricultural resources.⁵²

The differences between the agricultural resources of the Maritimes and those of Ontario, particularly the western portion of Ontario, created very different domestic economies. The large proportion of Ontario's land area that was well suited to farming and the high quality of that land attracted more farm families than the poorer agricultural land of the Maritimes. The result contributed greatly to denser population per square mile (Table Eight). Even if income per capita had been the same in both regions, Ontario would have had a higher income per square mile.⁵³ Local saw mills, grist mills, tanneries, carding and fulling mills, harness shops, shoe factories, woolen factories and foundries drew on substantially larger local markets than were available in the Maritimes. Ontario's shops and mills could achieve more cost-reducing economies of scale, without incurring transportation costs, than the shops and mills of the Maritimes.⁵⁴ The occupational pluralism of the Maritimes encouraged its own pattern of diversification; fishing, forestry, shipping, shipbuilding and mining complemented and supported agriculture by providing markets for farm products and employment for settlers.⁵⁵ These economic activities tended to be export oriented, and trade per capita was substantially higher in the Maritimes than in Ontario.⁵⁶ However, this diversification did not attract as large a population as Ontario's good land did and failed to raise population density sufficiently to create local markets comparable to those in Ontario.

At Confederation, the foundations for economic development in the two regions differed greatly. That the economic policies adopted in Ottawa harmed the economy of the Maritimes is a theme in the literature which deals with the economic development of the Maritimes. Because of the differences in the structures of the economies of the Maritimes and Central Canada at Confederation, policies which assisted the development of one region were likely to be ill suited to the other.

51 The model of settlement used in this study assumes that families settled in a district until the income earned by one more family equalled their opportunities elsewhere. However, the families up to the last ones that settled likely earned higher incomes where land was good than where it was poor. In economic terminology, marginal value product was equalized, not average value product.

52 Bittermann, "Farm Households and Wage Labour in the Northeastern Maritimes", pp. 34-69; Hornsby, *Nineteenth Century Cape Breton*, pp. 139-43.

53 The work by Inwood and Irwin on commodity incomes in Canada in 1871 indicates that per capita income was lower in the Maritimes than in Ontario. See Inwood and Irwin, "Canadian Regional Commodity Income Differences". Subsequent work by Marilyn Gerriets in "Maritimers as Fishers, as Farmers, or as Jacks of All Trades?" (paper presented at Atlantic Canada Workshop, St. Francis Xavier University, August 2001), confirms these results.

54 Marilyn Gerriets and Kris Inwood show that in 1871 Ontario manufacturing firms operated on a larger scale and at higher levels of efficiency than those in the Maritimes, but the differences in efficiency tended to disappear when firms of the same size were compared. See Gerriets and Inwood, "Comparison of the Relative Efficiency of Industry in the Provinces of Canada in 1871", *Acadiensis*, XXVI, 1 (Autumn 1996), pp. 32-51.

55 Daniel Samson, "'Whatever May Increase and Employ the Population': The General Mining Association and Industrial Colonisation, Northern Nova Scotia, 1827-1842", *Acadiensis*, XXIX, 1 (Fall 1999), pp. 3-28.

56 S.A. Saunders, "The Reciprocity Treaty of 1854: A Regional Study", *Canadian Journal of Economics and Political Science*, 2 (1936), p. 52.

Table Eight

Area	Population per sq. Mile	Land Area in Classes One and Two
South west Ont.*	42	77%
Lake Erie	63	64%
Central West Ont.*	72	59%
Lake Huron*	40	61%
Western Ont.*	36	52%
West Lake Ont.	52	53%
Northern Fringe*	13	11%
East Lake Ont.	50	41%
Bay of Quinte	37	16%
North east Ont.	18	6%
St. Lawrence R.	46	33%
Ottawa River	32	27%
South west Que.	70	50%
Bonaventure	5	4%
Fundy N.B.	34	0%
Low. St. John R.	14	1%
Mid. St. John R.	9	2%
Acadian pen.	6	0%
North west N.B.*	3	7%
Northum. St. N.B.	15	0%
Central N.S.	21	8%
Fundy N.S.	18	0%
South shore N.S.	16	0%
East shore N.S.	20	0%
Northum. St. N.S.	20	9%
Cape Breton	19	1%
P. E. I.	43	46%
Average	26	20%
Average West	41	40%
Average East	15	5%

Source: Population density is calculated from the fifth column of Table Two and *Census of Canada 1870-71*, Vol. III. The shares of land in classes one and two are calculated from Table Two.

Appendix One
The Definition of Districts

Most often, the districts are geographically identical with the districts of the 1871 Canadian census with the addition of Prince Edward Island. The purely urban districts – London, Hamilton, Toronto, Kingston and Ottawa – were excluded. Parts of York East and York West were also excluded because of high levels of urbanization at the time of the modern land surveys. The northern districts from 83 to 90 were also excluded since they were beyond the fringe of agricultural settlement in 1871.

For the purposes of this study, individual census districts have been grouped into geographical areas (e.g., South West Ontario). Because data from the Canada Land Inventory was correlated with modern census boundaries, some townships had to be removed from their 1870 census districts to corresponding modern census districts. The following list indicates the geographic area and the corresponding district names included within each. The asterisk denotes areas and/or districts that were settled late. South West Ontario*: Essex , Kent*, Bothwell*, Lambton*, Elgin W, Middlesex W*, Middlesex N*

Lake Erie: Elgin E, Middlesex E, Oxford S, Oxford N*, Brant N and S, Haldimand and Norfolk, Lincoln and Monck, Niagara and Wellington

Central West Ontario*: Wentworth N and S; Perth S; Waterloo S and N*; Wellington S*; Wellington C*

Lake Huron*: Huron S*; Huron N*; Bruce S*; Bruce N*

Western Ontario*: Perth N*; Wellington N*; Grey S*; Grey N*

West Lake Ontario: Halton; Peel (and Caledon, Albion); Cardwell (Mono Adjala only); Simcoe S*; York (and York W. and Markham); Ontario S; Ontario N* (and Cartwright)

Northern Fringe*: Simcoe N*; Victoria N*; Peterborough N*; Renfrew S*; Renfrew N*

East Lake Ontario: Durham W (less Cartwright); Durham E; Victoria S*;

Northumberland W; Northumberland E; Peterborough W*; Peterborough E*

Bay of Quinte: Prince Edward; Hastings W; Hastings E; Hastings N*; Lennox;

Frontenac; Leeds S; Grenville and Brockville; Leeds and Grenville N

North East Ontario: Addington*; Lanark S; Lanark N

St. Lawrence River: Dundas; Stormont and Cornwall; Glengarry

Ottawa River: Prescott; Russell; Carleton

South West Quebec: Beauharnois, Chateauguay, Huntingdon E and W; Laprairie, Napierville, St. Jean, Chambly, Verchères; Richelieu, St. Hyacinthe, Rouville

Bonaventure: Bonaventure

Fundy New Brunswick: Saint John; Charlotte; Albert

Lower St. John River: King's; Queen's

Middle St. John River: Sunbury; York; Carleton

North West New Brunswick*: Victoria*; Restigouche

Acadian Peninsula: Gloucester; Northumberland

Northumberland Strait New Brunswick: Kent; Westmorland

Central Nova Scotia: Hants; Kings

Fundy Nova Scotia: Annapolis; Digby; Yarmouth

South Shore Nova Scotia: Shelburne; Queens; Lunenburg

156 Acadiensis

East Shore Nova Scotia: Halifax (W and E); Guysborough

Northumberland Strait Nova Scotia: Cumberland; Colchester; Pictou; Antigonish

Cape Breton: Inverness; Victoria; Cape Breton; Richmond

Prince Edward Island: Kings; Queens; Prince