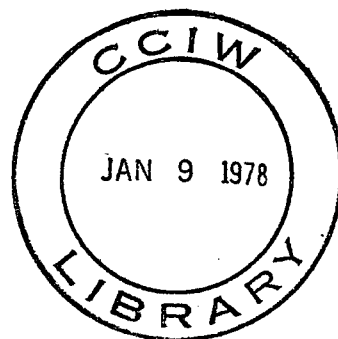


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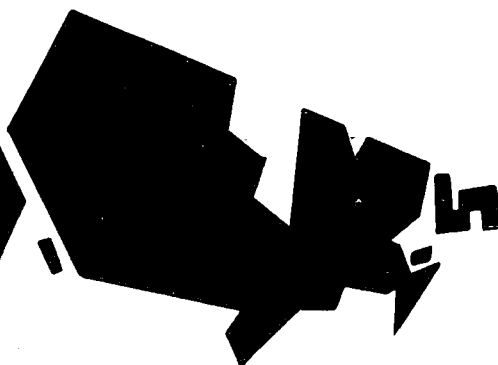
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CANADA LAND INVENTORY



AGRICULTURAL LAND
and URBAN CENTRES

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AGRICULTURAL LAND AND URBAN CENTRES

An Overview of the Significance of Urban Centres to
Canada's Quality Agricultural Land

by

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Fisheries and Environment Canada
Lands Directorate

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Preface

The loss of prime agricultural land around major urban centres has become increasingly a topic of public discussion. Because much of the best land borders Canada's fastest growing cities, growth of these centres has often occurred at the expense of farming; farms have been taken out of production and the land paved over for dwellings. Urban areas also exert a great influence on land some distance from their immediate boundaries.

This publication is based on the Canada Land Inventory (CLI) and shows the relationship between Canada's major cities and the nation's best agricultural land. This is one of a series of publications produced by the Lands Directorate that present data on the quality of the land resource as it relates to important social and economic factors of Canadian life. Through better knowledge of the land resource and the factors that affect its use, better stewardship of this important resource for all Canadians can be realized.

R.J. McCormack
Director General
Lands Directorate

Conversion Factors:

1 mile = 1.609 kilometres

1 square mile = 2.589 square kilometres

1 acre = 0.404 hectares

AGRICULTURAL LAND AND URBAN CENTRES

The loss of Canada's best farmland due to urban encroachment has received considerable attention from agricultural organizations, academics, and politicians in recent years. This controversy has been characterized by a lack of data and a lack of appreciation of the substantial indirect impacts that urban centres have on their surrounding rural areas. This paper presents some new data on the location of Canada's agricultural land with respect to urban centres, and indicates the implications of this juxtaposition for the use of farmland.

Canada's Agricultural Land

Canada has a total area of over 3.5 million square miles, or 2.3 billion acres. However, only 11% or .4 million square miles, is capable of any form of agricultural use including rough grazing. The rest of Canada is unsuited to any agricultural use at all because of adverse climatic or soil conditions. Even some of the potentially arable land is unsuited for practical reasons because it is fragmented or occurs in remote areas (Map 1). To quote Kenneth Hare "Canadians should perhaps wonder how nature managed to put so little of use into an area so large".¹ In fact, less than one half of one percent of Canada's land area has no significant limitations for agricultural production (see Table 1).

Canada's agricultural land is concentrated in the southern parts of the nation; only scattered pockets are found in more northerly regions. Because of climatic and soil differences, the best land in southern Ontario will produce a much wider range of crops (including soy beans, soft fruits, grain corn, vegetables and tobacco) than will the best land of the Prairie Provinces which is generally limited to oilseeds, root crops and grains. The distribution of land between provinces according to the Canada Land Inventory (CLI) agricultural capability classes is shown in Table 2.

1 Hare, F.K., "Canada", in Warkentin, J., Canada: A Geographical Interpretation, Toronto, Methuen, 1968, p.7.

Agricultural Land and Urban Centres

Much has been said about the impact of urbanization on agriculture, but to date few facts have been available to permit a dispassionate analysis of the potential and actual influence of urban centres on Canada's quality agricultural land. If one sets a map locating the best agricultural land of Canada alongside one showing its major population concentrations, it becomes obvious that the two occupy the same areas of the nation. This is not surprising, since many of Canada's urban centres owe their origins to the high quality of the agricultural land that provided them with the resource base necessary for their growth.

In order to explore the relationship between urban areas and high quality agricultural land, the Lands Directorate of the Department of Fisheries and the Environment recently undertook an analytical exercise to determine the quality of land surrounding urban centres. The Canada Geographic Information System and the Canada Land Inventory were used to generate factual data on land capability within concentric circles focused on Canada's census metropolitan areas, as designated by Statistics Canada. Nineteen census metropolitan areas were included for the purpose of this paper.² The

² Census Metropolitan Areas (CMAs) are designated by Statistics Canada as those urban areas over 100,000 population. Twenty-two such CMAs have been designated. Data from three CMAs - St. John's, Vancouver and Victoria - were not available; however, their omission does not significantly affect the figures.

program that was created permits the selection of various sizes of circles centered on any census metropolitan area. Any combination of these can be used to calculate the value of such variables as agricultural land capability, present land use, recreation capability, and other spatial data sets. The first run of this program has produced the data presented in Table 3, which documents agricultural land capability within a 50-mile radius of 19 CMAs. Map 2 indicates the location of these 50-mile circles and their size in relation to the areas of Canada.

The most significant aspect of the results of this analysis is the discovery that 53.5% of Canada's Class 1, or best agricultural land, is located within a 50-mile radius of CMAs. This area also contains 28.6% of Canada's Class 2 land and nearly 20% of its Class 3 land.

The fact that in 1971, 44% of the total value of Canadian agricultural production was derived from land that lies within 50 miles of the 19 analyzed CMAs, indicates the importance of these limited areas to the Canadian economy.³ That there should be some relationship between agriculture and settlement is not surprising in the light of Canada's history, but that the relationship should be so strong in a country widely supposed to have resources for agriculture is of considerable importance. It is therefore apparent that the significance of urban centres for Canadian agriculture far exceeds the relatively small size of the area they occupy.

³ If the remaining 3 CMAs are added, the total is 46.8% for all 22 CMAs.

Urban-Dominated Agricultural Areas

Whether one chooses to call the urban-dominated regions the "urban fringe" or the "urban shadow", one can document a wide range of urban-generated influences that affect agriculturalists and through them the capability of the farmland to continue to supply agricultural produce.⁴ Recent improvements in transportation and changes in life style of urban-employed individuals have brought considerable pressures to bear on land within easy access of urban centres.

Commutersheds extend for 50 miles around nearly all census metropolitan areas and for even greater distances around the larger ones. The demand for "urban" residences in rural areas has therefore increased. Desires of urbanites for recreation have produced a demand for hobby farms, golf courses, and vacation homes, all of which require extensive land areas.

The growing demand for land for a variety of urban-oriented purposes has tended to raise prices for land within the urban shadow to reflect urban values, instead of the value derived from agricultural capability. Direct results of this phenomenon have been abandoned farms, land left idle under speculation, and serious difficulties for those who have continued to farm.

4 "Urban fringe" is used here to designate the area of direct urban impact on rural land; "urban shadow" is used to describe the zone of indirect influence, which is much more extensive.

The Urban-Shadow Farmer

Farmers within the urban shadow are the focus of many pressures that are generated by non-agricultural demands for land. Rising land prices do not always force farmers to sell or convert their land to non-agricultural uses, but they must nevertheless often react to urban pressures. The opportunity cost of the capital invested in their land may become so high that on a strictly economic basis it can actually cost them to continue to farm the land. By merely selling and investing the money received for the property, some farmers could receive higher incomes by collecting interest on invested capital than by labouring on their farms.

Faced with the situation where farmland has become valued for urban uses, farmers may react in two ways: 1) sell and invest the capital elsewhere, or 2) intensify agriculture on the farm unit. If the land is good and there appears to be a market for the produce of intensified agricultural production, the impact of the urban pressures for some farms may result in greater farm investment and more productive agriculture. Because of the current prices and profit uncertainty for farm produce however, it is far easier for many farmers to sell and live off the investment. Particularly for older farmers, this may be the only alternative as they may not be on the farm to reap the results of long-term investment and their sons may not be interested in farm life. Many farmers who are not prepared to retire completely may reduce the intensity of use of their units and become part-time farmers who turn to additional, often urban, employment.

There are few people who have enough capital to both purchase the land and develop it as a farm. In addition, many people see no future for urban-fringe farming and therefore cannot justify the investment except as a speculative one. For a variety of reasons therefore, good land may no longer be used for productive agriculture within the zone of urban influence.

Taxation practices also have a role to play in alienating land from agricultural use. Moreover, it is often through property taxes that farmers are made aware of the new value of their farmland. In some cases, the cost of taxes on land valued for its urban potential may be in excess of the returns to be made from the farming unit. The practice of assessing property with respect to potential or surrounding use, or with respect to market value as opposed to assessment for actual use and actual productivity, can augment the pressures to convert farmland to other uses.

On the inner edge of the farming area, the urban fringe, the pressures on farmers are more intense. Immediate windfall profits can often be made by direct sale of farmland to builders, through subdivision, or piece-meal sale by the farmer himself. Adjacent farmers who may not have zoning permission to subdivide or sell are also substantially influenced by the proximity of urban uses. Due to pressure by urbanites, local ordinances that restrict such farming practices as the keeping of "smelly" or noisy animals, manure spreading, and farm vehicle use of roads, are often put into effect.

Restrictions such as these may force farmers who are unable to subdivide to abandon farmland on the fringe of urban areas. Often, they are able to sell to speculators who are willing to hold the land in anticipation of future zoning changes. Vacant land on the immediate periphery of urban areas is a result of this phenomenon.

The Alienation and Reclamation of Farmland

The direct expansion of urban areas in the form of suburbs, roads, and industry can be said to permanently alienate land from agriculture, but other urban pressures tend to remove land from agricultural production on a more temporary basis. Around many centres, land held by speculators exceeds the projected potential growth of the centres.⁵ This land may well become available in future for further agricultural use. Activities such as hobby-farming, part-time farming, or recreational use of land do not permanently impair agricultural potential since the physical capability generally remains intact. Nonetheless, substantial barriers to future reclamation for agricultural production do exist. Subdivision results in fragmentation of land holdings making it more difficult to reassemble economically viable agricultural properties, or to expand remaining farm units because of the high non-agricultural value of such properties. Disuse or misuse of land may result in physical or chemical damage to soils; a common example is soil erosion due to lack of maintenance. Substantial rehabilitation costs will be incurred if lands degraded in this manner are ever restored to agricultural production.

5 Chung, J.H., Land Market and Land Speculation, Report to CMHC, Montreal, 1969.

Perhaps more important than the damage to the land itself is the loss of physical and human infrastructures from farming areas. As farmland is removed from production, storage facilities and farm-oriented marketing facilities are forced out of business and substantial investment is required for their return. Farming skills are also lost. The reclamation of farmland is therefore extremely expensive and this cost is reflected in the cost of foodstuffs in the marketplace. The immediate costs of appropriate planning legislation to maintain land in viable agricultural production are probably significantly less.

Conclusion

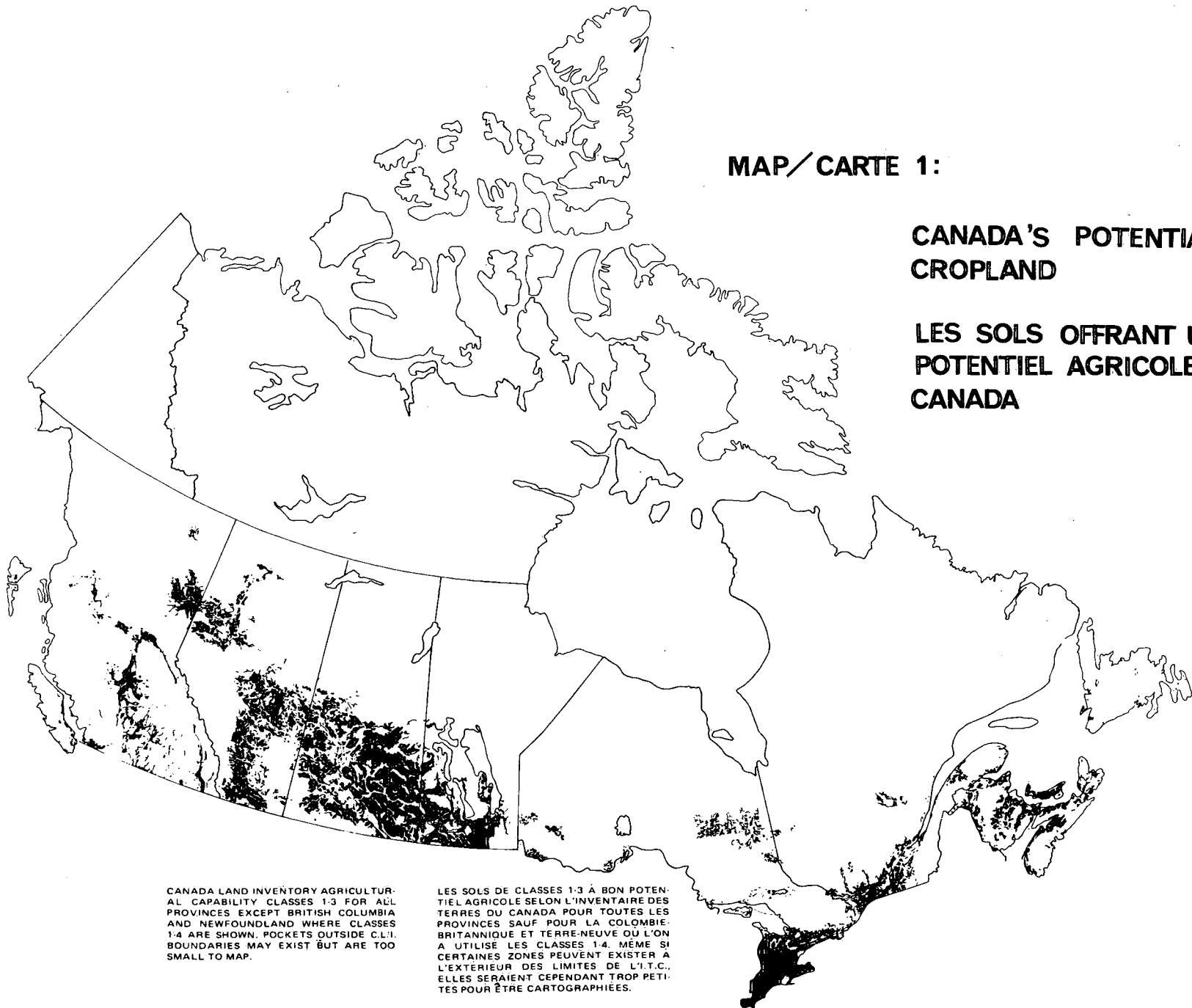
Much of the farmland being converted is not required to satisfy Canada's immediate food needs, either for domestic use or for export. Projections indicate however, that within fifty years, much of Canada's farmland will be required simply to serve her domestic needs.⁶ Loss of the best farmland will require either its replacement by poorer land, which will involve higher costs, or a growing dependence upon imports, which will affect the balance of payments. As long as imported foodstuffs are available, this is not a serious problem. However, as the world population continues to grow, security of supply may become increasingly important; movements towards, rather than away from self-sufficiency are indicated. We must therefore manage our land not only in the interests of short-term private profitability but also with a view to Canada's future resource requirements and the maintenance of an adequate standard of living for all Canadians.

⁶ National Land Budget, Lands Directorate. Projections indicate under several probable future scenarios a supply/demand problem for high quality farmland within fifty years.

MAP/CARTE 1:

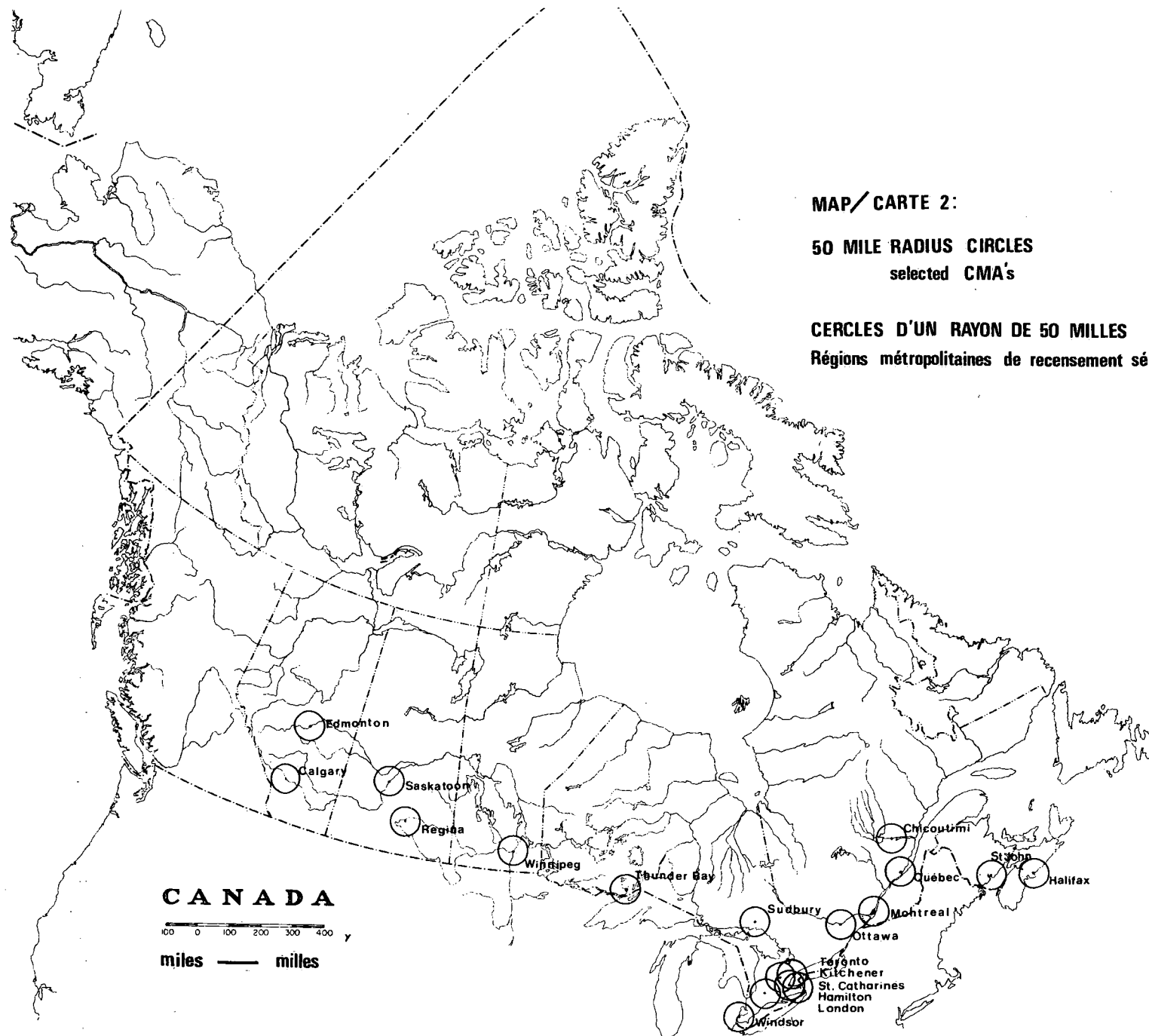
**CANADA'S POTENTIAL
CROPLAND**

**LES SOLS OFFRANT UN
POTENTIEL AGRICOLE AU
CANADA**



CANADA LAND INVENTORY AGRICULTURAL CAPABILITY CLASSES 1-3 FOR ALL PROVINCES EXCEPT BRITISH COLUMBIA AND NEWFOUNDLAND WHERE CLASSES 1-4 ARE SHOWN. POCKETS OUTSIDE C.L.I. BOUNDARIES MAY EXIST BUT ARE TOO SMALL TO MAP.

LES SOLS DE CLASSES 1-3 À BON POTENTIEL AGRICOLE SELON L'INVENTAIRE DES TERRES DU CANADA POUR TOUTES LES PROVINCES SAUF POUR LA COLOMBIE-BRITANNIQUE ET TERRE-NEUVE OÙ L'ON A UTILISÉ LES CLASSES 1-4. MÊME SI CERTAINES ZONES PEUVENT EXISTER À L'EXTÉRIEUR DES LIMITES DE L'I.T.C., ELLES SÉRAIENT CÉPENDANT TROP PETITES POUR ÊTRE CARTOGRAPHIÉES.



MAP/ CARTE 2:

50 MILE RADIUS CIRCLES
selected CMA's

CERCLES D'UN RAYON DE 50 MILLES
Régions métropolitaines de recensement sélectionnées

Table 1 - Agricultural Capability

CLI Agricultural Class	Characteristics	(1) Acres in CLI Coverage	% of Canada ⁽²⁾
1	No significant limitation	10,192,980 ⁽³⁾	0.5
2	Moderate limitation	39,432,550 ⁽³⁾	1.8
3	Moderately severe limitation	60,383,388	2.8
4	Severe limitation	57,271,137	2.7
5	Very severe limitation	67,446,435	3.0
6	Capable only of perennial forage Improvement practices not feasible	24,996,825	89.2
7	No agricultural capability	105,325,837	
8	Organic Soils	49,925,208	

(1) Does not include B.C., Nfld., and Yukon. B.C. and Nfld. are being completed for publication.

(2) Adjusted with official estimates from as yet unpublished maps.

(3) There is no Class 1 or 2 agricultural land in Newfoundland.

Table 2

CLI Classification of Soil Capability for Agriculture

Class		By Province and by CLI Class							
Province	1	2	3	4	5	6	7	Organic Soils(0)	Unclassified Land in CLI Area
(in acres)									
Newfoundland ¹	--	--	--	--	--	--	--	--	--
Prince Edward Island	0	645,791	349,700	122,998	187,877	0	68,378	16,489	0
Nova Scotia	0	410,821	2,427,617	1,048,319	203,080	35,387	8,674,795	287,189	0
New Brunswick	0	397,312	2,846,772	5,023,626	4,202,813	28,538	4,544,329	327,486	284,817
Quebec	48,266	2,247,767	3,165,413	6,388,113	4,100,406	26,368	51,310,434	3,774,044	3,617,343
Ontario	5,329,320	5,480,036	7,189,177	6,488,284	4,733,138	2,817,523	27,727,064	6,333,899	1,931,474
Manitoba	401,552	6,252,181	6,030,356	5,908,745	5,529,607	5,152,752	2,555,549	10,990,338	4,813,919
Saskatchewan	2,470,292	14,512,689	23,276,642	9,347,635	21,059,390	7,215,335	87,911	4,387,862	2,782,751
Alberta	1,943,550	9,485,953	15,097,711	22,943,417	27,430,124	9,720,922	10,357,377	14,807,901	6,563,704
British Columbia ¹	--	--	--	--	--	--	--	--	--
N.W.T. & Yukon ²	--	--	--	--	--	--	--	--	--
CANADA ³	10,192,980	39,432,550	60,383,388	57,271,137	67,446,435	24,996,825	105,325,837	40,925,208	19,994,008

¹ Data not yet available.² Not covered by CLI.³ Does not include B.C., Nfld., N.W.T. and Yukon.

Table 3 Fifty-mile Radius Agricultural Capability

Census Metropolitan Area	Class 1 (acres)	Class 2 (acres)	Class 3 (acres)	Class 4 (acres)	Class 5 (acres)	Class 6 (acres)	Class 7 (acres)	Class 8 ² (acres)	Class 9 ³ (acres)	Total ⁴ (acres)
Halifax	0	67,235	664,651	186,513	34,089	11,161	1,534,409	118	35,294	2,523,470
St. John	0	36,980	254,406	515,680	574,436	17,470	1,037,991	271,039	10,062	2,718,064
Chicoutimi	0	105,833	109,582	191,393	66,936	0	3,640,360	5,137	183,190	4,302,431
Quebec	0	118,422	397,530	1,021,273	419,017	0	2,371,266	18,039	274,797	4,611,344
Montreal	50,526	1,310,105	759,010	828,838	191,247	611	874,147	114,729	173,911	4,243,124
Ottawa	221,499	604,992	758,886	529,453	225,602	413,433	1,595,718	20,011	323,526	4,693,120
Toronto	1,215,845	670,832	444,253	224,095	137,926	198,167	36,080	169,646	169,841	3,266,685
Hamilton	1,055,844	1,028,936	559,521	191,150	175,582	116,387	15,825	166,227	97,947	3,407,419
St. Catharines	342,419	577,949	260,827	40,763	11,677	24,775	8,896	146,709	13,750	1,427,765
Kitchener	2,309,311	1,008,536	698,014	184,435	199,542	130,411	27,054	74,977	210,436	4,842,716
London	1,592,380	1,294,122	515,568	190,444	156,168	52,527	23,005	20,588	74,427	3,919,228
Windsor	52,881	743,123	129,069	0	2,980	2,191	29,907	14,887	5,672	980,710
Sudbury	0	25,858	108,936	85,283	173,874	106,805	3,655,042	3,443	70,990	4,230,231
Thunder Bay	0	21,585	194,130	173,940	343,213	76,201	1,313,289	6,351	70,111	2,198,820
Winnipeg	119,330	1,438,855	1,439,488	658,345	469,133	195,284	62,676	38,013	280,222	4,801,346
Regina	163,992	1,746,788	1,639,691	329,443	885,304	166,815	10,131	28,761	0	4,970,925
Saskatoon	39,111	656,772	2,007,620	922,191	793,951	472,600	2,084	12,033	0	4,906,362
Calgary	495,981	795,508	1,168,894	346,362	877,780	602,865	585,025	69,742	24,411	4,966,568
Edmonton	713,223	1,192,445	1,208,595	687,153	351,897	346,343	19,271	45,784	241,916	4,806,621
Total in ⁵ 50 miles	5,454,071	11,270,177	12,039,039	6,924,226	5,749,533	2,686,038	16,726,287	850,541	2,134,941	63,834,853
Canadian ⁶ Total	10,192,980	39,432,550	60,383,388	57,271,137	67,446,435	24,996,825	105,325,837	19,994,008	40,925,208	
% of Canadian Total in 50 miles	53.5	28.6	19.9	12.1	8.5	10.7	15.9	---	5.2	

1 St. Johns, Nfld. has almost no land of Class 3 or better. Data are not yet available for B.C. but they will not affect the percentage figures significantly.

2 Unclassified land (includes built-up areas and military bases).

3 Organic soils.

4 Totals do not add to the area of a 50-mile circle due to water bodies, areas outside the CLI coverage, and international boundaries.

5 This total excludes any double counting due to overlapping 50-mile circles.

6 Does not include B.C. and Nfld. Only includes area covered by CLI.