



# The Conservation/Protection of Agricultural Land, a Major Heritage Resource of Canada: Challenges and Innovative Approaches in the Face of Urban Expansion and Climate Change<sup>1</sup>



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## Abstract

High quality agricultural land in Canada is often located in the vicinity of major cities. These lands and agricultural activities have long contributed to a number of important functions in Canada: food security and food sovereignty, support for rural landscapes including some heritage landscapes, and support for local rural tourism, as well as other functions. On the other hand, these agricultures near major cities, including Montreal, Toronto and Vancouver, have faced major challenges including the urbanization of much of these high quality agricultural lands, in addition to competition from other territories. With the emergence of the recognition of the phenomenon of "climate change", farmers and their crops in these areas must also cope with climate change and variability, which pose challenges in adapting these agricultures to this phenomenon. How have the governmental actors of these different territories responded to these challenges?

It is important to recognize that protecting agricultural land also requires the agricultures to be economically sustainable as well as having the support of citizens and the different collective actors. In the final section of this article, the emphasis is therefore placed on a number of innovative approaches adopted in Quebec, including constructing strategic development plans for agricultures in the agricultural reserves that take into account the multi-functionality of agricultural land and farm activities by involving non-farm actors as well as farmers, and more recently in tackling how agricultural adaptation to climate change can be integrated into the agricultural development plans. This article focusses on developing explanations of these different dimensions using examples. Readers are encouraged in the Conclusions to pose questions concerning how the innovative approaches in Canada could be applied in their own countries and territories.

**Keywords:** Climate change; Multi-functionality; Farmland

## Introduction

First, we start off with providing a summary of the author's research profile<sup>2</sup> during his career in the various domains of interest relevant to the theme of this article.

### Section 1

It is argued that agricultural lands represent one of the most important resources for many of Canada's territories; these can also be considered as a major heritage resource from several perspectives.

It is then argued that agriculture around many of Canada's major cities and metropolitan centers contribute substantial functions for the benefit of Canadian society.

### Section 2

There are significant challenges for Canada's governments (federal as well the various provincial governments) to engage in the conservation of these agricultural lands; the relative importance of these challenges can vary from province to province and territory to territory.

<sup>1</sup>This article is based on an invited Conference during the Canadian Day of Territories and Heritage, Université de Valenciennes, France, May 3<sup>rd</sup>, 2017.

<sup>2</sup>Bryant has spent 50 years studying peri-urban agriculture (France, Canada and several other countries), 26 years studying the adaptation of agriculture to climate change and variability (principally in Quebec, but also in Eastern Ontario and Vermont in the U.S.A.), 30 years of research and practice in the domain of local and community development and 30 years in the domain of sustainable development. Much of his research in the last 15 years has involved the adoption of an action research role. He was also Editor-in-Chief for the Canadian Journal of Regional Science (1998-2010), and Vice-President (1996-2000) and President (2000-2006) of the Commission on the Sustainability of Rural Systems (CSRS) of the International Geographical Union (IGU). Finally, since 1973 Bryant has received continuous research grants and contracts from a variety of different sources including the Social Sciences and Research Council of Canada (SSHRC), and many agencies and ministries dealing with peri-urban agriculture and the adaptation of agriculture to climate change.

## Section 3

The question of how government actors across Canada have responded to these challenges is tackled in this section.

## Section 4

Some important innovative approaches to protecting agricultural land and farm activities are presented and discussed, with the focus on the province of Quebec which has emerged as the province with the most innovative set of approaches for the protection or conservation of farmland and farm activities. Finally, some conclusions are given and a number of questions are posed to help readers focus on the key challenges that their own countries and territories face as well as what roles researchers can play in contributing to the conservation of farmland resources and maintaining sustainable agricultural activities.

### **Agricultural land, one of the most important territorial and heritage resources in Canada**

The Canada Land Inventory (1961) was in itself a relatively innovative effort, involving the identification of 7 categories of agricultural land by land quality for agriculture. It was undertaken under the Agricultural Rehabilitation and Development Act (ARDA), and produced a detailed federal-provincial inventory of potential and effective use of land for land use and regional resource planning and regional resource planning [1]. The maps rapidly became a major tool in efforts to plan land use across the country, and were quickly used to demonstrate the Importance of Agricultural Lands and Activities in Canada and the need to undertake an effective planning of their development, including their conservation.

This effort helped emphasize early on how much of the high quality agricultural land in Canada is located in the vicinity of major cities. In Ontario around Toronto, there are vast areas of the highest quality farmland, clearly demonstrating one of the largest challenges that farmland and farm activity conservation has had to face, i.e. urban expansion of different types. In South West (SW) Ontario, there is generally a large volume of high quality agricultural land, including much of the area around Toronto. In Quebec, the situation is similar in the sense that the highest quality farmland is also found around the Montréal agglomeration and along the St Lawrence river; however, beyond these areas the remaining farmland is generally not of such a high quality [1] which underscores even more the need to conserve high quality farmland in this province.

Increasingly since the early 1980s, the importance of agricultural land and their farm activities for supporting a number of important functions [2] in Canada as in several European countries has been increasingly recognized such as:

- a. Food security and food sovereignty, although for a long time in these territories agriculture was dominated by productivist agriculture which has more recently become

increasingly associated with negative externalities for the environment, such as water pollution, as well as negative effects of certain foodstuffs for human health (see the work on agroecology [3]).

- b. Providing support for the maintenance of rural landscapes including heritage landscapes (e.g. Quebec legislation on humanized landscapes [4]).
- c. Support for local rural tourism [5], as well as other functions [2,6].

These multiple functions are now known generally as representing the multi-functionality of agricultural land and agricultural activities. Note that in English, multi-functionality was initially referred to as multi-purpose use particularly in the U.S.A. and Canada (e.g. [7]). The use of the term 'multi-functionality' became widespread in the English language from the 1990s onwards.

### **Agriculture around major cities and metropolitan centers**

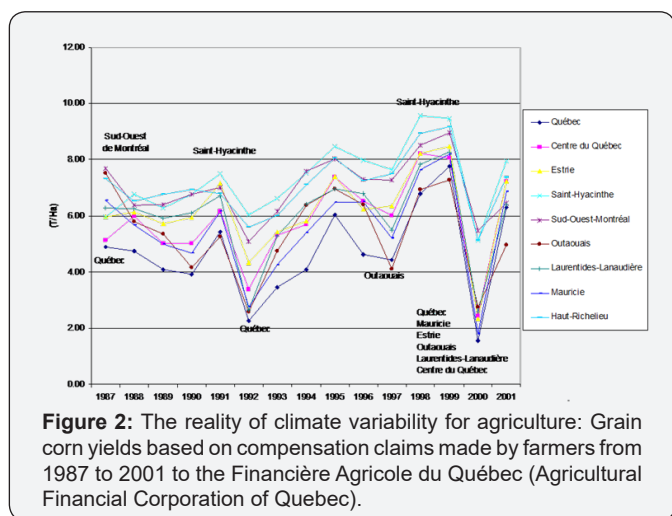
There are major challenges for agricultural lands and activities near major cities and metropolitan centers such as Montreal, Toronto and Vancouver. In particular, there are multiple stressors that affect these agricultures probably more so than in agricultural territories located at distance from the urban centers even though some of the stressors can be observed in both types of agricultural territories. For territories close to the major urban and metropolitan centers, the following stressors can be observed:

- a. Urbanization, including urban sprawl and the expansion of suburbs;
- b. The urbanization of the countryside (e.g. the development of neo-rurality or ex-urbanization); incidentally this has become worse in many rural areas in SW Ontario not far from Toronto thanks to the prices of housing of all kinds in the Toronto agglomeration that have increased incredibly over the last 2 years [8];
- c. The role of traditional land-use planning that cannot really control urban development - housing estates and industrial parks - even if agricultural areas are identified in these land-use plans;
- d. This is often due to land speculation which continues even in the agricultural zones identified in the traditional land-use plans, as developers and speculators purchase land with the hope that the lands will see their future utilization changed from agriculture to residential development. Figure 1 is a photo with a notice to announce that an application for residential development has been received by the municipality (Centre Wellington, SW Ontario, Canada). In this case, this future residential development was indicated in the land-use plan. The land had continued to be farmed

for just over 10 years, but the land had been purchased by a developer who was just waiting for the right moment ... and when this occurred, many citizens were very surprised.



**Figure 1:** Notice concerning an application to submit a plan for a subdivision development on prime agricultural land, Centre Wellington Township, SW Ontario (Source: photo taken by C.R. Bryant in the summer of 2016).



**Figure 2:** The reality of climate variability for agriculture: Grain corn yields based on compensation claims made by farmers from 1987 to 2001 to the Financière Agricole du Québec (Agricultural Financial Corporation of Quebec).

e. Competition from other agricultural territories and other countries

f. The agriculture of these territories must also cope with climate change and variability (CCV) and must therefore adapt to this relatively new phenomenon [9] with all that this means also for the roles of government and other actors [10]. Figure 2 shows by major region in Quebec for the period 1987 to 2001 the yields of grain corn taken by the FADQ from farmers' insurance claims (and transferred to the author's research team in 2004). On Figure 2, there is substantial variation in yields between regions as well as over time, with the variations becoming significantly larger over time.

g. In addition, many developing countries also have had to cope with this phenomenon and have difficulty meeting their own food needs [11]. Thus, it is worth asking the question "What is the role of agricultural territories and activities around major cities and metropolitan centres in Canada (and other western countries such as France) in contributing to food security in developing countries? While CCV can create problems in these territories in countries such as Canada, what has been happening in recent years in several developing countries, e.g. Ethiopia and Yemen, is much more serious.

h. The gradual rise of more sustainable agricultures with their food products increasingly sought by some consumers. New initiatives in agriculture are increasingly being recognized as certain segments of the food market are changing leading to the development and management of new forms of sustainable agriculture. In some territories around major cities and metropolitan centres in Canada some farmers have seen this as an opportunity that has led them to participate in the development of Food Belts in which farm producers and consumers become linked in the same system, e.g. around Montreal with SAM (Système Alimentaire de Montréal)), Toronto and Vancouver where more and more producers are linked with each other in short-supply networks [12]. This is similar to what is happening in other countries [13], e.g. Food Belts or Ceintures Alimentaires around Charleroi and Liège [14] in Belgium.

The consumer-producer networks that are being created are also leading to the improvement in the understanding of non-farmers in relation to agriculture. This has been the case in a small group of small-scale organic farmers in Senneville on the west end of Montreal Island, where these farmers sell their produce in urban and suburban market places [15].

A particular set of projects that were initiated in 2008 in the Montreal Food System (SAM – Système alimentaire de Montreal) was based on a network principally of producers and not-for-profit organizations, as well as consumer groups [12]. SAM has been evolving rapidly and sometime in 2017 SAM will likely be transformed into the Montréal Food Council, representing a more formal recognition of this phenomenon.

### How do Canadian government actors from the different territories in Canadas respond to these challenges?

Initially, the urbanization of these agricultural territories close to major cities and metropolitan centers in Canada attracted the greatest amount of attention from governments. However, it is important to note that this situation is not the same in all provinces. Indeed, there are only two provinces that have enacted legislation to formally protect farmland in British Columbia (1972) and Quebec (1978) [12,16,17].

In addition, Ontario, the largest Canadian province (with a population of 13,983,000 in 2016 or 38.5% of the

Canadian population), developed in 1978 a series of important recommendations for municipalities, counties and metropolitan regions for the planning and management of agricultural land use [17]. Generally, these recommendations were developed taking into account the challenges of rural urbanization (or ex-urbanization) in the 1960s and early 1970s. But it turned out that some of these recommendations have not taken account of the new trends in agriculture such as the development of small but very intensive and sustainable farms requiring relatively small parcels of land. Of course, there are ways of getting around this issue, for example by dividing up a large farm into smaller pieces of land (but not by creating new cadastral parcels) and the owner of the former farm (or another land owner who bought the former large farm) then renting the smaller units to farmers pursuing new forms of sustainable agriculture that only require small areas.

Subsequently, Quebec amended its legislation in the mid-1990s to include the protection of agricultural activities as well as farmland [12]. This represents the beginning of a new approach to conserving prime agricultural lands by placing a much greater emphasis on the need to ensure sustainable farm activities which this requires placing an emphasis on farm development.

### **Innovative Approaches to Protecting Agricultural Land and Activities: Quebec**

Obviously, the protection of agricultural land and activities by different forms of land-use planning has not been adequate [18,19]. Even governments have used their power to remove agricultural land from agricultural reserves for “the benefit of society” (e.g., for the development of an industrial park! (Note the saying: The road to hell is paved with good intentions ... (and the author’s addition: and rural Canada is paved with Industrial parks).

Protecting agricultural land also requires that the agricultural activities must be economically sustainable and have more general support from citizens and different collective stakeholders.

Since 2008, Québec has embarked on a much more innovative approach that has the potential to deal with this. This approach involved the construction of PDZAs (Plans de développement des zones agricoles or Agricultural Development Plans) in 8 pilot Regional Municipalities (MRC-Municipalités Régionales de Comté) in the agricultural reserves put in place by the legislation for the protection of agricultural land (1978) and its later modification (1996) to protect agricultural activities as well [20].

These plans resemble strategic development plans for the agricultural sector in these agricultural reserves which implies that they should take account of the opportunities and challenges facing agriculture, which can be quite different in different territories [21]. A strategic development plan is comprised of a Vision (what the actors determine is the vision or broad objectives they wish the plan to achieve) and different

Strategic Orientations. Note that some orientations can have a geographic focus which may mean they can be dealt with in land-use planning. But many Strategic Orientations tend to be sectoral (e.g. different types of agricultural systems) and/or transversal; for instance, one type of transversal orientation has been Effective Communications between all the actors and the citizens including the farmers. Such a transversal orientation cuts across many of the other strategic orientations and cannot be thought of as being represented in a land-use plan. These plans are quite innovative in that regional and local actors have been encouraged to become involved in the development planning process; in addition, the province encouraged the MRCs to take account of the multi-functionality of agricultural land and activities, implying that non-farm actors should be integrated into the planning process. This approach has the potential to increase citizen support to protect agricultural land and activities.

Finally, in September 2016, another innovative dimension was added to the PDZAs in Quebec—the development of tools to integrate the adaptation of agriculture to climate change and variability in a pilot RCM (the MRC Nicolet-Yamaska) PDZA; towards the end of 2017 thus process will be encouraged in all RCMs with agricultural reserves. In short, we are dealing with another bottom-up approach that can better take account of the territorial specificities in agriculture.

### **Conclusion**

Clearly, the protection of agricultural land and activities by different forms of land use planning in many territorial contexts has not been adequate to protect agricultural land. As argued earlier, even governments have used their power from time to time to remove agricultural land from agricultural reserves (e.g., in Quebec) for “the benefit of society”.

It was also argued that agricultural activities must be economically, environmentally and socially sustainable as well as having more general support from citizens and different stakeholders. It was also argued that the latter point can be achieved to a large extent by supporting and communicating to everyone the value of the multi-functionality of agricultural land and activities. Quebec has adopted quite innovative approaches in the last approximately 10 years which address all of these issues.

In relation to your own experience and understanding, the author would like to ask the readers of this article the following questions:

- A. To what extent do you think that agricultural land and activities should be protected around the cities in your country?
- B. Do you think that Quebec’s approach to constructing development plans (akin to strategic development plans for agriculture in agricultural reserves or zones) is possible in your country? If not, what could be done to make it possible?

C. Do you think that farmers, politicians and citizens would agree to integrate the adaptation of agriculture to CCV into agricultural development plans?

D. What could be the roles of researchers in your country or territory in protecting agricultural land and farm activities?

E. Is there a role for action research? If so, what can researchers should do to start such a research-action process?

As a final comment on the last question, it is important to recognize that research-action is becoming increasingly recognized and used by researchers in contributing to the construction of sustainable futures in a whole variety of domains including agricultural development [15]. In this approach, the researcher does not impose any of his or her perspectives on the people, such as farmers, that are involved. In the case of agricultural development planning, a researcher following a research-action process facilitates meetings and contributes to the discussions among farmers and other actors when asked to do so. In this way, the development of solutions is more easily appropriated by the actors involved and should not be seen just as the perspectives of the researcher. This approach has been increasingly accepted as a major dimension to the constructing of sustainable solutions.

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