



# The complexities of Sustainable Agricultures in and around Urban Agglomerations

**Bryant CR<sup>1\*</sup>, Bousbaine AD<sup>2</sup> and Akkari C<sup>3</sup>**

<sup>1</sup>School of Environmental Design and Rural Development, University of Guelph, Canada

<sup>2</sup>LaPlec Laboratory, University of Liège, Canada

<sup>3</sup>Project Manager of the Water Master Plan and Communication Officer of the Watershed Organization AGIR Maskinongé, Canada

**\*Corresponding author:** Dr. Bryant CR, Adjunct Professor, School of Environmental Design and Rural Development, University of Guelph, Ontario, Canada, E-mail: christopher.robin.bryant@gmail.com

**Received Date:** November 10, 2018; **Published Date:** November 23, 2018

## Abstract

In this short article, we have focused on a conceptual framework based on the principal dimensions one needs to understand in developing Sustainable Agricultures and healthy food produce in and around urban agglomerations. The framework and the different dimensions are based on a range of research projects, reflected by a range of publications that have involved the authors and other graduate students who have undertaken research of different agricultural issues in different territorial and country contexts together with C. R. Bryant. The main conclusion is that while it is possible to identify the key dimensions that contribute to the success of Sustainable Agriculture projects including Food Land Belts, the relative importance and exact nature of each dimension can vary substantially between territories and between countries. The principal dimensions can also be linked to the 3 essential perspectives of sustainability, i.e. environmental, social and economic perspectives, which can also vary between different territories and countries.

**Keywords:** Productivist agriculture; Sustainable Agricultures; Food Land Belts; Healthy foodstuffs/nutrition; Negative externalities of food production; Alternative agricultural production systems; The priorities of different actors; Multiple stressors

**Abbreviations:** CSA: Community Supported Agriculture; CCV: Climate Change and Variability.

## Introduction

While a great deal of research has been undertaken in many countries on agriculture around cities since the late 1940s, the increasing emphasis on producing local

foodstuff for urban citizens is much more recent, and the emphasis on Sustainable Agricultures particularly with the production of Healthy Nutrition has been even more recent. Healthy Nutrition implies the production of foodstuffs without any negative externalities for consumers (see the various negative impacts associated with egg production in the Netherlands, Belgium, and other European countries in the last 3 to 4 years)

including some of the negative externalities on the environment particularly water pollution. Indeed, the progression of illnesses related to food, such as obesity, has been quite spectacular recently [1]. Giving rise to type 2 diabetes or cardio-vascular illnesses. As well, certain types of agriculture such as productivist agriculture have created negative externalities such as increased water pollution in many countries including Canada. Our intention in this short article is to present the key dimensions of the complexities of achieving Sustainable Agricultures in and around urban agglomerations. We refer to publications most of which have involved graduate students who have worked with C.R. Bryant.

### The essential dimensions of Sustainable Agricultures and healthy (and local) foodstuff

Figure 1 shows the basic dimensions of the complex processes that we need to emphasize in order to make our brief analysis. First, Box 2 shows our emphasis on the role of human beings, their cultural values and personal priorities. In undertaking any analysis of the success or failure of different projects such as food projects, it is critical to understand actors' values and priorities [2]. If cultural values in a territory do not attach much importance to agricultural production, even with respect to the local production of healthy foodstuff, it is clearly difficult to initiate sustainable agricultural and healthy

food projects. To develop this further, if consumers are more oriented to employment opportunities, their interest in healthy food projects may not be particularly important to them. Furthermore, government representatives who are focused more on industrial development and job creation may not pay much attention to food projects either. Similarly, in many western countries, governments emphasized the importance of increasing agricultural production and encouraged farmers to move towards a productivist form of agriculture (Box 3.1, Figure 1), e.g. in the province of Québec, Canada, starting towards the end of the 1960s and continuing for at least two decades with the result of creating an agriculture that became heavily indebted ... but this began to change during the 1990s. And more recently, there has been a rise in the consumer market for healthy foodstuff especially of local origin (Box 4.1, Figure 1). At the same time, it became apparent that this productivist agriculture had been creating various negative externalities such as water pollution. An increasing number of studies and analyses have pointed out these negative externalities, which have still not been taken effectively into account by many state and national governments. In many situations, it has rather been consumers who have begun to take into consideration the characteristics of their food system (e.g. in the Food Land Belts of Wallonia).

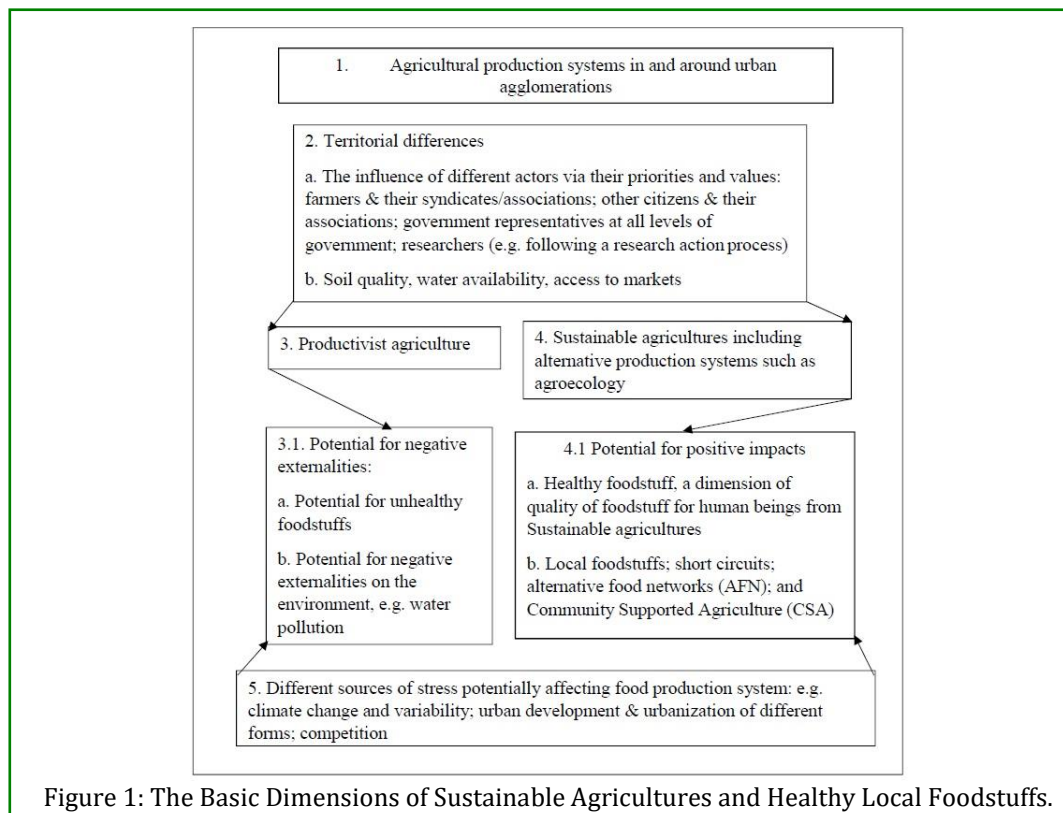


Figure 1: The Basic Dimensions of Sustainable Agricultures and Healthy Local Foodstuffs.

On the other hand, in some territories, e.g. around the City of Liège in Belgium, there were both segments of the consumer market as well as local government representatives who valued and encouraged the development of local food projects oriented to healthy foodstuffs [3]. Similar projects have also been developed in the Montréal metropolitan region – emerging initially with the development of relatively small-scale food projects, linking farmers with consumers, both informally as well as formally, and then eventually early in the 21<sup>st</sup> century putting in place the Montreal Food System, formally started in 2015 [4]. Around Liège, a Food Land Belt has been created and around Montréal, the Montréal Food System is very much like a Food Land Belt. This Food Land Belt concept aims to surround the city with nourishing lands in order to avoid the industrial agri-food system. It is possible to identify the conditions for success for such Food Land Belts and food projects [5]. But the conditions for success are not the same for every territory. Similarly, social networks have often been very important for farmers to help them develop appropriate strategies, for instance to cope with adaptation to climate change and variability [6]. And once again social networks are not the same everywhere in terms of their capacity to transfer ideas about approaches to developing Sustainable Agricultures and the production of healthy foodstuffs. Researchers can also play important roles in the development of Sustainable Agricultures and food projects, particularly when researchers as actors take on the role of pursuing action research processes with the farmers and other actors as was the case in several communities in the confines of the Montreal agglomeration [2,7].

It is also important to recognize the potential of government representatives at any level, their priorities and understanding of other actors' priorities. Regional scale projects such as a Food Land Belt ideally need the implication of local and regional government representatives, as well as representation from consumer groups and farmers. This raises the issue of co-construction of such initiatives. The success of such projects depends upon the involvement of a range of actors and the acceptance of real change for which all the actors in the food chain are implicated (production, transformation and consummation). While some research has been undertaken on the co-construction of policies and initiatives related to the adaptation of agriculture to climate change and variability [8-10] and also in relation to environmental issues [11], little explicit research of this nature has been undertaken so far on the co-construction of Food Land Belts.

Overall, the emphasis in our discussion has been placed on human values and how they have been changing and not just on different 'technologies'.

Figure 1, Box 3 identifies productivist agriculture as the major form of agriculture that developed rapidly from the middle of the 20<sup>th</sup> Century in many developed countries with the support of national and provincial governments, with the aim of increasing food production. On the other hand, Box 3.1 identifies some of the principal types of negative externalities that have been identified as linked to productivist agriculture; we focus on the production of unhealthy foodstuffs thus affecting potentially human health directly, and also on negative externalities for the environment, particularly water pollution. Certain externalities have emerged as more important in countries in the North than those in the South. Figure 1, Box 4 focuses on Sustainable Agricultures including alternative production systems such as agroecology. Box 4.1 identifies the potential for Sustainable Agricultures to have potentially positive impacts, both on human health, and as well the potential for enticing consumers from the urban agglomerations and their surrounding peri-urban territories to benefit from purchasing local foodstuffs, which can involve direct contact with food producers (a valuable food marketing orientation, including short circuits linking consumers to farmer producers, and alternative food networks as well as Community Supported Agriculture (CSA)).

Even with an understanding of all the issues discussed so far that can contribute to orienting consumers to local and healthy food produce, we have to emphasize that the conditions for success vary in importance between different agricultural territories in and around urban agglomerations in different countries [12]. This means that in mounting a Food Land Belt or any major food project, it is necessary to have a profound understanding of the conditions for success in the particular territory including how the project might also be affected by upper level government representatives and their values and priorities. While it is important to have a dialogue between all the different actors of a particular region, it is mandatory to have facilitators for the process such as watershed organizations and the farmers' organizations (e.g. the Farmers' Union of Québec) who can work together in an integrated and adaptive management [13]. For instance, an integrated watershed perspective (despite being a slow process) is vital in relation to the cumulative effects of climate change. Without it, degraded water resources will have cascading effects on biodiversity.

Furthermore, on Figure 1, Box 5 we identify another set of factors or stressors that can have an impact of success or failure in relation to certain food projects. These stressors include climate change and variability (which can vary substantially between territories and countries, competition in relation to healthy food produce that can arrive from other territories and different forms of urban development and urbanization, some of which can be dealt with via appropriate forms of development planning for agriculture and food projects [3].

## Conclusions

The discussion in this article has been based upon a series of case studies of Sustainable Agricultures around and within different urban agglomerations. Figure 1 has also been based upon these different case studies identified in the Bibliography. The conclusions from this discussion and framework stress the importance of first understanding the different contexts (cultural, political, economic) in which Sustainable Agricultures have developed. Second, it is critical to recognize the significance of human values both by producers and by consumers that have led to the development of different Sustainable Agricultures. Sustainable Agricultures are in effect sustainable partly because they allow producers/farmers and their families to generate reasonable incomes while at the same time as contributing healthy foodstuff to consumers. Thus, while Sustainable Agricultures have been developed in several territories both around and within urban agglomerations, it is important to recognize that these Sustainable Agricultures do not necessarily look the same, simply because the political, cultural and economic contexts can be quite different. In future, we feel that the framework we have developed can reasonably be used to analyze a range of different territories and their contexts, and thus emphasize that while there are common dimensions between several territories and their Sustainable Agricultures, it is important in terms of further research that is focused on practice, such as action research [7], that differences are explicitly identified with the fundamental question being how are these differences reflected in different Sustainable Agricultures.

## References

- Jean-Louis R, Gersi G (2010) The global food system Concepts and methods, analyzes and dynamics. Editions Quae, pp. 584.
- Christopher B, Antonia DB (2014) Actor Dynamics and Sustainable Development: Emerging Roles of Researchers. *Revue Canadienne de Géographie Tropicale* 1(2): 1-5.
- Bousbaine AD, Bryant C (2017) Innovative food systems, case study: the Food Belt Terre de Liège (Innovative alternative Agri-food systems: a case study of the Liege Food-Land Belt). *Belgeo* 2(4): 20.
- SAM (Système Alimentaire Montréal) (Montreal Food System) *Cultive ta ville (Cultivate Your City)* (2015).
- Bousbaine AD, Bryant CR (2018) Agri-Food Projects in Food Land Belts: Conditions for Success. *Curr Inves Agri Curr Res* 2(1): 139-141.
- Daouda O, Bryant CR, Akkari C (2015) Social networks and the diffusion of innovations, towards a critical partnership for a successful adaptation strategy: a case study of agriculture in southwestern Quebec. *International Journal of Climate Change: Impacts and Responses* 6(3-4): 37-58.
- Bryant CR, Chahine G (2015) Action research and reducing the vulnerability of peri-urban agriculture: a case study from the Montreal Region. *Geographical Research (for a Special Issue)* 54(2): 165-175.
- Bryant CR, Bousbaine AD, Akkari C, Daouda O, Delusca, et al. (2016) The roles of governments and other actors in adaptation to climate change and variability: The examples of agriculture and coastal communities. *AIMS Environmental Science*: 3(3): 326-46.
- Akkari C, Bryant CR, Marois C (2017) The Co-construction of Agricultural Policies as a Bottom-up Adaptation Strategy to Climate Change and Variability (CCV) in the Regional County Municipality of Haut-Richelieu, Québec. *Journal of Agricultural Studies*: 5(2): 141-162.
- Akkari C, Bryant CR (2016) The co-construction approach as approach to developing adaptation strategies in the face of climate change and variability: A conceptual framework. *Agricultural Research*: 5(2): 162-173.
- Bryant CR, Carvajal NS, Delusca K, Daouda O, Adama Sarr (2013) Metropolitan Vulnerability and Strategic Roles for Peri-urban Agricultural Territories in the Context of Climate Change and Variability. *Cuadernos de Geografia*: 22(2): 55-68.
- Bryant CR, Diaz JP, Karaita B, Lohgberg F, Yokohari M (2016b) Urban agriculture from a global perspective.

- In: Lohrberg F et al. (Eds.), Urban Agriculture Europe. Jovis, p. 30-37.
13. Akkari C, Bryant CR (2017) Toward Improved Adoption of Best Management Practices (BMPs) in the Lake Erie Basin: Perspectives from Resilience and Agricultural Innovation Literature. *Agriculture* 7(7): 54.
  14. Bousbaine AD, Bryant CR (2018) The co-construction of projects with environmental externalities. In: C Choquette and V Fraser (Eds.), *Environmental Mediation: An International Survey*. Routledge Research in International Environmental Law/Taylor and Francis: London and New York, pp. 157-179.
  15. Bousbaine AD, Akkari C, Bryant CR (2017) What Can Agricultural Land Use Planning Contribute to Food Production and Food Policy? *International Journal of Avian & Wildlife Biology*: 2(1): 13-20.