


Chapter 8

Sustainable Urban Agro Ecology and Its Implications With Food Systems

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ABSTRACT

This chapter has the aim to analyze the implications and interrelationships between a sustainable urban agro ecology and the food system. The beginning assumption of this analytical review considers that sustainable urban agro ecology has positive implications in the development of a sustainable urban food system. The analysis is based on the theoretical and empirical literature review confronted with common spatial-functional observations of urban development and configurations. The analysis concludes that the sustainable urban food system based on agro ecology is growing as an alternative movement towards the building and maintenance of a fairer and healthier urban sustainable environmental development.

INTRODUCTION

The aim of this paper is develop a framework to guide research and action in urban agro ecology and its relationship with sustainable food systems. Spatial-functional analysis can be used to assess the ecological and production functions of the configuration (Lovell et al. 2010). There is a geographical colonialism of knowledge in the agro ecological literature (Gómez et al. 2013) in the publication of agro ecological knowledge between the place where the topic takes place and where it is published. Agro ecology gained ground in academia disseminating information and knowledge sharing with farmer and producers' cooperation on the alternative agriculture production. Agro ecology is a new high knowledge used to diversify farming systems aimed to produce their own fertilizers and pest controls diminishing dependence on external inputs such as chemical fertilizers and pesticides (Altieri and Nicholls 2004).

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The current food crisis is driven by human activity causing a natural catastrophic event in climate change with serious consequences in agriculture activities linked to the biodiversity crisis. It is the ecology of food systems (Francis, *et al.* 2003). Cities are recognizing the relevance of urban agro ecology using biological diversity rather than chemical inputs. The shift of local food economies towards agro ecological small scale and diverse production limited by access to land, affordability and regulations on land use and housing, is a challenge. Agro ecology production is in debate with food sovereignty questioning the food insecurity due to the stresses of the existing modes of food production based on commodity fluctuations of prices and claiming for a new food system.

Urban agro ecology and farming contribute to sustainable food systems change, healthy nutrition, food security and sovereignty, health, wellbeing, community development, economic efficiency, social inclusion and equity, political involvement, environmental sustainability, etc., and the benefits have been associated with food justice to benefit the disadvantaged urban communities. However, the urban agro ecological movement has not received a rigorous analytical scrutiny.

URBAN AGRO ECOLOGY

Agro ecology requires a fundamental cultural and philosophical approach to productive and efficient agriculture. Farming land had been incorporated by ancient cities. The new colonies of Greeks and Romans were settled around the agricultural activities (Kostof, 1991). Mediterranean and Middle Eastern societies have cultivated gardens for aesthetic and production purposes (O'Brien, 2010a). During the medieval times, agricultural farming land was available around the city walls (Cockrall-King, 2012; Howe et al., 2005; Steel, 2008). Steel (2008) and Van der Schans and Wiskerke (2012). During the pre-industrial times, intensive farming disappeared from cities and agriculture was relocated in an urban-rural divide.

Some former industrial cities in developed countries, now in shrinkage processes have a large supply of vacant lots where a large range of people are engaging in urban agro ecology (Colosanti & Hamm 2010). Urban agro ecology is a strategy for regenerating shrinking cities and leveraging a treatment for vacant land. The shrinking cities context of urban agro ecology in community garden projects have an influence on the benefits to community members contributing to the stability of (Tranel & Handlin, 2006).

The green agricultural revolution has increased the crop production but has proved to be unsustainable due to the side effects that damage the environment, biodiversity losses, etc. A cropping system in traditional agro ecology contributes to the stability and productivity of peasant farming in stressful conditions of the environment. Urban agro ecology practices are questioned if they can overcome the structural drivers, income and health disparities and poverty (Raj, Raja, & Dukes, 2016).

The agro ecological practices promote the reintroduction of biodiversity in farming structure and management through agroforestry, multiple cropping, ecologically-based rotations, and the integration of animals with crops. Agro ecological practices emphasize cover cropping that increase diversity and crop rotations. Crop rotation is an organic practice applied for weed control. Globalized industrial agriculture based on export crops, transgenic and biofuel crops is reshaping the world's food supply with economic, social and environmental impacts.

However, agro ecological practices may be fully compatible with gradual mechanizing farms. Agro ecological and organic methods and practices produce equal and most if the times substantially increased yields to elaborate enough food compared to conventional methods in many units of production. Biodynamic and organic agro ecology farming employ alternative practices such as the use of nitrogen-fixing

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