


Contributions of Urban Agro Ecological Agriculture to Ecosystem Services

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ABSTRACT

This paper has the aim to analyze the implications of the transition of ecosystem services based on urban agro ecology. It advances on the debate over the negative effects of the traditional and industrial oriented agricultural production on the ecosystem services, food systems, climate change, etc. and analyses the principles, methods, and some practices that support the transition to urban agro ecology. The method employed is the analytical of the theoretical and empirical literature review. It concludes that a transition from traditional and industrial-oriented agriculture towards more urban agro ecology is inevitable to improve the ecological and environmental services, the economic efficiency, the social equity and justice, and the environmental sustainability of cities.

KEYWORDS

Agro Ecology, Ecosystem Services, Transition, Urban Agro Ecology

INTRODUCTION

The following essay aims to assess the importance of urban agro ecology as a promoter of ecosystem services in cities. In response to a debate over the negative impacts of industrial input-intensive agriculture is leading to consider a feasible transition to other alternative forms capable to provide ecosystem services and produce food. Agro ecology emerges in response to the problems associated with the industrial model of agricultural production. The simplified form of agroecosystem is altered with the input substitution that occurs in industrial agro systems. The industrial agriculture framed in the free market economic model has a destructive impact on sustainable natural resources, biodiversity, food security, environmental services and climate change, leading to ecosystem disruption and human hunger. Conventional agriculture is not sustainable for the rarefaction of inputs, global competition, loss of biodiversity and benefits from ecosystem services, climate change, etc.

The current consumption model based on industrial agro culture is disconnected from food production leads towards poor consumption patterns and choices of diets beyond the requirements of urban land planning and development.

There is a gap in the agro ecological transitions between the agro ecological practices and the ecosystem services delivery. The relationship between agro ecology and nature is relevant in the

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current crisis is framed by the land used for agriculture and the land dedicated to conservation of biodiversity and ecosystem services.

The agro ecological struggles leading to demands for right to food, land redistribution, concerns for pollution of soil, land and water, provision of ecosystem services, corporate dismantling and access to fair markets of organic products, etc., are some of the emerging issues in urban environments. To break this pervasive relationship, it is required the incorporation of an integral conservation programs framed by minimizing land use dedicated to agriculture and more to conservation of agroforest ecological biodiversity and other ecosystem services.

Agro ecology and food production systems face some economic, social and environmental challenges when economies are organized around a competitive export orientation of crops that have impacts on the ecosystem services integrity, food quality, public health, and disruption of traditional rural livelihoods. The autonomy and solidarity between peoples of rural and urban agro ecology displaces the control of global markets.

Research on agro ecology is based on the assumption that there is a positive relationship between biodiversity and the rate of ecosystem services. Agro ecological research tends to enhance agroecosystem functions of biodiversity systems based on ecological principles such as facilitation, niche partitioning, competition, etc. Sustainable urban agro ecology take into consideration the efficient competition of resources between the strategies developed by actors in the urban environment to enhance benefits and securing access to land use.

In this sense, we ask ourselves why is urban agro ecology important as a promoter of ecosystem services in cities? To later present analytical perspectives on agro ecology, urban agro ecological systems and ecosystem services, and in subsequent sections analyze the following: contributions, transitions, transformative strategies for the agro ecological transition to urban agro-ecological systems. Starting from a thorough documentary review to analyze the theoretical contributions currently established on these issues.

AGROECOLOGY, URBAN AGRO ECOLOGY SYSTEMS AND ECOSYSTEMS SERVICES

Many studies have shown the unwanted effects of the current corporate agro-food system, emphasizing the fact of being a reproducer of hunger, disease, depletion of water, soil and energy, extinction of biodiversity, among others (Altieri and Toledo, 2011; Cuéllar-Padilla and Calle-Collado, 2011; De Molina, 2012; De Schutter, 2010). Leaving in evidence the weaknesses of this System, partly caused, because it reproduces the productivity logics of economic growth and capital accumulation, and which operates within the current economic system. A system that established a model for food production, which is developed based on mechanization, the use of monoculture and chemical fertilization (Gliessman, 2007; Ferguson and Morales, 2010; Altieri and Toledo, 2011); ignoring the organic or biological factors that determine food systems themselves (Altieri and Toledo, 2011).

In this field of criticism, agro ecology takes on importance. In this sense, as in a polysemy concept, such as science, practice and movement (Ferguson and Morales, 2010; Gliessman and Rosemeyer, 2009; Levidow, Pimbert and Valoqueren, 2014; Wezel and Soldat, 2009). From a more localized perspective, it relies on diversifications and synergies of biological interactions to improve food productivity, soil fertility and resilience through participatory frameworks while achieving high crop production, economic efficiency, sustainable environment. and social inclusion (Pretty, 2006, Rosset et al. 2011; Méndez, Bacon and Cohen, 2013).

Various experiences have shown that agro ecology based on social organization is very powerful. The case of Cuba, for example, where agro ecology was key to help the survival of Cubans during the crisis caused by the collapse of the socialist bloc between 1989 and 1990, and the subsequent escalation of the trade embargo of the United States of America (USA). Between 1997 and 2010, a third of the peasant families in Cuba participated in the “Movimiento Campesino a Campesino”

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