Aspects of Agro-Environmental Sustainability in the Perimeter Irrigated Piauí in Lagarto (Sergipe State) Northeastern Brazil

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INTRODUCTION

The relationships established between man and the environment influence the way it operates on natural resources. Family farming marks man’s relationship with his land and exerts as a prime location for the development of sustainable agriculture. The sustainability associated with agriculture stems in identifying attributes that ensure good soil conditions, crop health and balance between production, livelihood and the environment.

Since the 1960’s, under the conditions of Brazilian agriculture, a greater concern for environmental issues has arisen due to the search for viable solutions for sustainability and environmental protection around the world. In this respect, family farming has manifested itself as a favorable system, both socio-economically as well as environmentally, with access to sustainability, rural development, food security and poverty alleviation in the country.

Family farming in Sergipe Stage has as its main characteristic the close relationship between management and labor, with emphasis on productive diversity, sustainability of natural resources, and quality of life (Buainain and Romeiro, 2000). One of the familiar characteristics of agriculture is its openness to diversified production systems, with polycultures or associated with crops and livestock. The diverse crop management is an important element in economic and environmental sustainability (Altieri et al., 2003).

The objective of this research was to evaluate the agro-environmental (AE) sustainability of family farming in the irrigated Piauí fields near the town of Lagarto, State of Sergipe, Brazil. Thus, it relied on the assumption that diversifying crops in agriculture tends to contribute to more sustainable systems related to social, economic and environmental points of view.

MATERIALS AND METHODS

The study was carried out in the irrigated perimeter Piauí fields near the town of Lagarto, State of Sergipe, Brazil, between the geographical coordinates of 10° 55’ 07” S and 37° 40’ 15” W. The study was guided by theoretical frameworks that address family farming, sustainable agriculture and the use of indicators for assessing sustainability in agriculture, from the systemic approach and fieldwork. The indicators were selected and analyzed using the IDEA (Indicateurs de Durabilité des Exploitations Agricoles - Farm Sustainability Indicators) method (Briquel, 2001), with adaptations based on Jesus (2003) and Tavares (2009), that identified and quantified the main factors limiting sustainability in family farm production systems of the study area.

RESULTS

![Graph showing evaluation of agro-environmental sustainability](image)

CONCLUSIONS

1) The diversification criterion showed the greatest influence on the behavior of other criteria. It was noted that the more diverse the production system in the property, the better the soil conditions and fertility;

2) The use of irrigation has crucial importance in diversification. However, the adoption of more efficient irrigation systems that provide better management in irrigation time control are needed as sustainable practices;

3) We found that in general the properties showed a medium level of sustainability and the AE conditions showed minor axis sustainability, for both organic farmers and conventional farmers;

4) The attributes related to the indicators for agricultural practices require primarily efforts to improve the environmental sustainability of their properties;