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Impact Assessment of Future Development Strategies to Improve Natural Resources Conservation and Living Standards of Farmers in Lake Nasser Region, Egypt

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Abstract

The continuous population increase in Egypt places immense pressure on the limited arable land and water resources. The establishment of new settlements was accepted as the best alternative to extend agricultural land and provide new development opportunities. Lake Nasser region is a potential area for these settlements. To ensure the establishment of sustainable farming community, three strategies were proposed: (i) improvement of irrigation infrastructure; (ii) introduction of low input crops; and (iii) promotion of organic farming. They were suggested based on socio-economic and environmental evaluation of the development activities in the study area to improve the living standard of settling families while alleviating any negative impacts on the environment and natural resources. Linear programming was used to simulate and analyse the future impacts of the suggested strategies on the living standards and resource use of the farming families. The model results showed that the improved irrigation infrastructure could significantly reduce: irrigation costs, hired labour and yield reduction. Accordingly, it could significantly increase the farm income and the family income. It was found that farmers could significantly benefit from their investment in the operational costs of the improved irrigation network as long as it is less than 450 euro/ha of irrigated land. The reduced costs and the high market prices of the low input crops made the cultivation of these crops as the optimum solution for all farmers. It will result in substantial improvement of family income and hence the living standard. This strategy could significantly reduce the negative ecological impacts of using fertilisers and pesticides on Lake Nasser. The organic farming is expected to be successfully adopted in the area because the model replaced all conventional farming practices by organic farming of all crops. Organic farming could also provide higher family income even if farmers were subjected up to 60% decrease in their yields. The successful adoption of the last two strategies requires training courses and other awareness programmes to help the farmers understanding the methods of cultivation and the usefulness of such farming practice.

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