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## GLOBALIZATION AND WATER MANAGEMENT: THE CHANGING VALUE OF WATER

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### INNOVATIVE PROCESSES IN SMALL SCALE AGRICULTURAL PRODUCTION FOR ECONOMIC AND EFFECTIVE USE OF WATER AND LAND : INDIAN EXPERIENCES

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**ABSTRACT:** Water is the key to development of the agricultural as well as social and economic development of the world. Considering the shortage of water, cost involved in water storage and conveyance to the users end, it is necessary to adopt the innovative methods of conjunctive use of water for agricultural production using water effectively and efficiently. Aquaculture is such an innovative tool in the urban and also in rural agriculture to use and reuse the water as well as waste water. Aquaculture has emerged as one of more promising industries in the world with considerable growth potential and expected to contribute around a quarter a global fishery harvest of year 2000. Availabilities of water is a constraint in non-irrigated agriculture system. The Aquafarming has a multidimensional context in perspective agricultural growth. It is tool for utilizing land and water more economically and optimally for increasing productivity, of both, land and water, through sustainable agriculture. The countries in the Asia-Pacific region have vast and varied Aquafarming resources. Often, these are the main source of irrigation in this region. The overuse of water causes salinity problems in many countries reducing the cultivable area resulting reduction in agricultural production. An attempt has been made in this paper to develop the plan for water management for the agriculture, aquaculture and horticulture using innovative technologies from Indian experience. The paper also evaluates the waste water quality criteria for increasing the agricultural productivity. The paper also discusses the innovative small scale methods and technologies for food production using non conventional source of water for increasing the productivity.

This paper is based on the economics of conjunctive use of irrigation water along with the local runoff, stormwater from urban areas, and gray water for agriculture. The main aim is to utilize the water and land for both, Aquafarming as well as agriculture and to reuse the waste water in irrigated land to increase the productivity of land and water. Series of observations were taken on the various aspects of irrigation and soil salinity and water management for Aquafarming using different methods to maintain the quality of land and water. Also the relative economics of Aquafarming and horticulture system under alternative water conserving methods, irrigation management and using supplementary irrigation techniques / options, has been compared with the resources available. The use of waste water from the aquaculture for the agricultural farm was adopted to assess the environmental impacts of reuse and also to some extent to assess its effect on productivity.

The results obtained demonstrate the implication of increase in yield in agriculture and indicates the necessity of optimal and suitable use of natural resources, water and land, for increasing the agriculture productivity. The results signify that the soil salinity can be managed using water management practices and additional area can be brought down under the agriculture using innovative process such as aquaculture. The results obtained also suggest that significant economic gain can be had from developing/ adopting conjunctive use of water to maintain in the water quality criteria for increased production in agriculture. Apart from reuse of water, it also signifies that the increase in production can be achieved through reuse of water reducing the adverse impacts on environment in agricultural system.

KEY TERMS: Conjunctive use, irrigation, aquafarming,

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