Agri-2014
OMICS Group Conferences
Accelerating Scientific Discovery
2nd International Conference on
Agricultural & Horticultural Sciences
February 03-05, 2014 Hyderabad, India

Analysis of options for saving water in rice-based farms in Tamil Nadu, south India

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Abstract

The looming water crisis led the search for alternative water management methods in rice cultivation in south India. Experiments were conducted under on-station and on-farm conditions which confirmed the possibilities for saving water up to 40% with a yield advantage of 1.5 t ha^{-1} by using Modified Rice Cultivation (MRC) methods. However, adoption of MRC by farmers remained limited due to social and biophysical constraints. Four rice-based farm types were identified based on biophysical and socio-economic characteristics of the farms and opportunities were identified to adopt one or more components of MRC, but change in government policies are needed to improve adoption such as rules and regulations, pricing, institution building and infrastructure development, as well as training and education to farmers. A multi objective linear programming (MGLP) model was developed to explore quantitatively the impact of government policies introducing water pricing and water quota on adoption of MRC including water-saving irrigation and related impact on farm profit. The combination of modifying rice cultivation and water pricing was effective in achieving both the objectives of farmers and the society at large. The required degree of water pricing has to be kept low since higher prices lead to decrease in farm profit. Impact differed across farm types and affected poor resource endowed farmers most. Providing water quota can be an option to protect the livelihoods of poor resource endowed farmers. Apart from government water pricing and quota, policy instruments such as training and education in MRC practices, development of irrigation infrastructure and organised cooperative management of commonly available water resources could have impact on the adoption of MRC.

Key words: Water-saving, Farm typology, Technology adoption, Policy intervention, Farmers livelihoods and modelling.

Biography

Kalimuthu Senthilkumar has completed PhD in Agronomy in 2008 with C.T. de Wit Postgraduate School for Production Ecology and Resource Conservation, Wageningen University, Plant Research International (PRI), The Netherlands. As a post-doctoral researcher, he worked on 'global food security studies' at PRI, Wageningen, Netherlands. He worked on 'Phosphorus cycles at national and regional scales for France' in INRA-Bordeaux sciences agro, Bordeaux, France. He also worked on 'Modelling maize agronomic adaptation to climate change in south-western France' at INRA, Toulouse, France. Currently, he is working as a Systems Agronomist at Africa Rice Center (AfricaRice), which is one of 15 CGIAR center focusing rice research in Africa and he is based in Dar es Salaam, Tanzania. He published more than 10 research papers in high impact, international journals and also more than 20 papers in international conference and seminar proceedings.