



Research Article

Influence of different water regimes and nutrient management practice for rice production

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Summary

Field experiments were conducted in the Eastern farm of Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal, during *Kharif* season of 2008-2009 with an objective to assess the effect of different water regimes and nutrient management practices on yield, yield attributes and uptake of nutrients. Among the different rice eco systems, crop grown under saturated water condition had recorded the highest grain, straw yield and panicle weight whereas rice transplanted under continuous submergence condition had recorded the highest N uptake but rice transplanted under saturated water regimes had recorded highest phosphorus and K uptake. The rice sown under aerobic condition under dry ploughed soil had recorded the lowest grain and straw yield. The higher grain yield was recorded by application NPK @ 120:60:40 kg ha⁻¹ and lowest yields were reported by absolute control.

Key words : Nutrient levels, Submergence, Saturation and aerobic rice eco system

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Introduction

Rice is life for major populations of the world and it is deeply embedded in the cultural heritage of societies. Rice is the staple food for more than half of the world populations. India is the one among the countries to develop and commercialize the rice production technology. Scarcity of fresh water resources has threatened the production of the flood-irrigated rice crop. By 2025, 15 out of 75 million hectare of Asia's flood-irrigated rice crop will experience water shortage (Tuong and Bouman, 2003). To reduce water use of irrigated rice, water saving regimes can be introduced, that aim to reduce non-beneficial water flows from rice field during crop growth namely seepage, percolation and evaporation by alternate wetting and drying (AWD) irrigation and aerobic rice system (Bouman *et al.*, 2005). Nearly 50 per cent gain in food grain productivity seen in recent times has come through adoption of fertilization practices alone. Although the performance of rice was studied under submerged conditions for yield, minimal efforts have been made to study its performance in different soil ecosystems *viz.*, submerged, saturated and aerobic

conditions. Therefore, the present investigation was undertaken to study the effect of different nutrient levels on rice production under various rice soil eco-systems.

Resources and Research Methods

The study was carried out in the Eastern farm of Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal, Union Territory of Puducherry during the *Kharif* season 2008-2009 to study the influence of different water regimes and nutrient management practice on yield and yield attributes and uptakes of nutrients.

The properties of the experimental soil are presented in Table A The field experiment was laid out in a split plot design with three replications. The main plot treatments comprised of the different rice ecosystems *viz.*, transplanting rice under continuous flooded condition and maintaining the standing water of 5 cm through out the crop growth period (M1), transplanting rice under saturated soil moisture condition and maintaining it through out the crop growth period (M2) and aerobic rice condition where in rice seeds were sown