



Original Research Article

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Effect of Cultivation Methods and Nitrogen Management Strategies on Growth and Yield of Rice (*Oryza sativa* L.) Grown in Coastal Alluvial Soils of Southern India

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ABSTRACT

A field experiment was conducted to investigate the methods of cultivation and optimization of nitrogen requirement of rice crop in coastal alluvial soils, Karaikal, Pondicherry, India. Experiment was laid out in a split plot design with methods of rice cultivation as main plot treatment consisted of System of Rice Intensification (SRI), Integrated Crop Management (ICM), Line Planting (LP) and Random Planting (RP) and nitrogen managements strategies as subplot treatment consisted of without nitrogen as control, blanket recommendation, LCC 4, LCC 5, SPAD 35 and SPAD 37. The result showed that Plant height and tiller count were improved by cultivation methods. LCC 4 registered higher plant height, productive tillers number, longer and heavier panicles and harvest index. LP registered higher grain yield of 2.53 t ha⁻¹ which was 10.2 and 17.2 % higher than SRI and RP respectively. Among nitrogen managements, LCC 4 recorded highest grain yield of 2.66 t ha⁻¹ which was 11.1, 19.8, 26.4 and 40.7% higher than blanket, SPAD 35, SPAD 37 and control respectively. ICM recorded significantly highest straw yield (5.49 t ha⁻¹) which was the same as with SRI. The straw yield of ICM was 28.4 and 34.6 % higher than LP and RP respectively. Highest straw yield of 5.88 t ha⁻¹ was observed with LCC 5 which was 1.2, 15.4, 30.7, 53.7 and 59.2 % higher than LCC 4, Blanket, SPAD 35, SPAD 37 and control respectively. LP with LCC 4 was the superior combination than other treatment combinations with respect to growth and yield attributes. It was inferred that potential of SRI and ICM could be explored only when the soil quality is good enough to support vigorous tillering.

Keywords

Rice; Nitrogen management, SRI, ICM, grain yield.

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