Tropentag, October 9-11, 2007, Witzenhausen

"Utilisation of diversity in land use systems:
Sustainable and organic approaches to meet human needs"

The Effect of Using Organic Fertiliser on Yield of Rice Produced in System of Rice Intensification

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Abstract

The average rice yield of 1.75 t ha^{-1} in Cambodia is relatively low compared to the other nearby countries. Profoundly the level of applied fertilisers is the major facto involved in this low productivity. The aim of this experiment, therefore, was to evaluate the effects of using different fertilisers on the yield of Phkar Romdoul rice variety.

This experiment was conducted in the rainy season of 2005 (Jul - Nov). The procedure of System of Rice Intensification was applied. The experiment with randomised-completed block design was conducted with 3 different fertilisers and 4 replications. In Treatment 1, 5 t ha^{-1} of compost (1 % N, 1.72 % P, 2.22 % K) and was used solely as basal fertiliser. Rice in Treatment 2 was supplemented with 50 kg ha^{-1} of DAP as basal fertiliser, and 30 kg ha^{-1} of urea and another 30 kg ha^{-1} of urea at 25 days after transplanted and at grain-forming period respectively. The fertilising application in Treatment 3 were 5 t ha^{-1} of compost as basal fertiliser, 15 kg ha^{-1} of urea after transplanting, and 15 kg ha^{-1} of urea during panicle initial period. In each plot, 15 days-old rice seedlings were directly transplanted with 30cm*30 cm tiller space on a 4m*6 m plot space.

There was no significant difference in plant height among treatments (136.16, 139.46, and 141.15 cm in Treatment 1, 2, and 3 respectively). The productive tiller in treatment 1, 2 and 3 were 16, 17, and 16 respectively ($p > 0.05$). The panicle length and the grain numbers in each panicle were 26.01, 26.48, and 26.41 cm, and 187, 178, and 190 grain respectively. The weight of 1000 grains in Treatment 1, 2, and 3 were 28.26, 29.00, and 29.30 g respectively. No significant difference in yield was observed among treatments (4.84, 5.09, and 5.47 t ha^{-1} in Treatment 1, 2, and 3).

In the cultural hydromorphic soil condition, using 5 t ha^{-1} of compost, equivalent to 50, 86, and 111 kg ha^{-1} of N, P, K respectively) provided growth and yield of Phkar Romdul rice similar to those provided by chemical fertiliser. Organic fertiliser can be an alternative option for rice production.

Keywords: Organic fertiliser, rice production, system of rice intensification

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