

## Response of rice cultivars to organic and inorganic nutrient sources under transplanted condition

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### ABSTRACT

A field experiment carried out during two consequent rainy seasons for the year 2002 and 2003 on Lateritic basalt soil of Radhanagari to study the comparative performance of Phule Radha, a short slender, medium duration rice cultivar with KJT-4 and Zinia 63 under various nutrients sources and their effect on productivity under lowland conditions. The nutrient sources were inorganic and combination of inorganic and green leaf manuring. The inorganic source comprised of recommended dose of fertilizers (100:50:50 kg N:P:K ha<sup>-1</sup>), fertilizer in the form of briquettes (56:30 kg N:P ha<sup>-1</sup>), 50% of briquettes (28:15 kg N:P ha<sup>-1</sup>) and the organic source was green leaf manuring (Gliricidia @ 5 ton ha<sup>-1</sup>). The results revealed that Phule Radha was found to be superior in respect of yield contributing characters like panicle length, number of spikelets panicle<sup>-1</sup> resulting into significantly higher grain yield than KJT-4 and Zinia 63. However, amongst the different sources of nutrients under study, application of fertilizer in form of briquettes (56:30 N:P kg ha<sup>-1</sup>) and combination of 50% of briquettes (28:15 kg N:P ha<sup>-1</sup>) + green leaf manuring (Gliricidia @ 5 ton ha<sup>-1</sup>) being at par, have shown significantly higher grain yield over other treatments indicating the possibility of substituting the inorganic fertilizers by the combination of inorganic fertilizers + green leaf manuring. The other yield contributing characters also showed similar trend.

**Key words :** Rice, Briquettes, Gliricidia.

### INTRODUCTION

The paddy is the principal crop grown under transplanted conditions during Kharif season in Western Ghat Zone of Maharashtra owing to assured and fairly high rainfall (3000 to 4000 mm per annum). The high yielding rice cultivars need heavy doses of chemical fertilizers to realize the yield potential of the cultivars. This has resulted into increased demand for chemical fertilizers. However, the high cost of chemical fertilizers and low recovery of applied fertilizers especially in low land paddy due to leaching and other losses necessitates the use of alternative sources of nutrients.

In this context, the recent trend in fertilizer is to develop more efficient fertilizers i.e. fertilizers in briquette form or super granular form for minimizing the nutrient losses (Prasad and Powar 1995). Similarly, green manures offer greater potential as a feasible and cheap substitute for chemical fertilizers and it also helps to modify the soil environment favourably for puddled paddy.

The present study was undertaken to study the performance of high yielding paddy cultivars having test weight between 10 to 14 g under various sources of nutrients i.e. chemical fertilizers, briquettes and green leaf manuring.

### MATERIALS AND METHODS

The present field experiment was carried out at ARS, Radhanagari, Dist. Kolhapur (M.S.) during *Kharif* 2002 (rainfall 3135 mm) and 2003 (rainfall 2829 mm) on slightly acidic lateritic soils having pH 6.43, E.C. 0.14 dS m<sup>-1</sup>, organic carbon 1.55%, N (243 kg ha<sup>-1</sup>), P<sub>2</sub>O<sub>5</sub> (9.1 kg ha<sup>-1</sup>) and K<sub>2</sub>O (298 kg ha<sup>-1</sup>). Treatments *viz.* three short slender rice cultivars having test weight between 10 to 14 g (Phule Radha, KJT-4 and Zinia 63) and four sources of nutrients *viz.* F<sub>1</sub> : RDF (100:50:50 kg N:P:K ha<sup>-1</sup>), F<sub>2</sub> : Urea-DAP briquettes (56:30 kg N:P ha<sup>-1</sup>), F<sub>3</sub> : 50% of F<sub>2</sub> in briquette form (28:15 kg N:P ha<sup>-1</sup>) and F<sub>4</sub> : F<sub>3</sub> + gliricidia @ 5 t ha<sup>-1</sup> (12 combinations) were laid out in factorial RBD with 3 replications. Seedlings were transplanted after 25 days at 15x25 cm X 15x25 cm. Surface application of basal RDF (50% N and entire dose of P and K) was done at the time of transplanting and remaining 50% of N was applied 30 days after transplanting (25%) and 60 days after transplanting (25%). Fertilizer in briquette form was applied immediately after transplanting and gliricidia @ 5 tons ha<sup>-1</sup> was incorporated in soil at the time of puddling (before transplanting).

### RESULTS AND DISCUSSION

#### *Effect of rice cultivars*

The short slender rice cultivar Phule Radha produced

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