

Yield attributes and yield of hybrid rice as affected by placement of urea-DAP briquettes and zinc levels

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ABSTRACT

A field experiment was conducted during *khari* season of 2006 at Agronomy Farm, College of Agriculture, Dapoli, on clay loam, lateritic soil. Results of the experiment revealed that the deep placement of urea-DAP briquettes (@ 114 kg N + 25.4 kg P) + 50 kg K₂O ha⁻¹ recorded significantly higher yield attributes *i.e.* number of panicles hill⁻¹, length panicle⁻¹, weight panicle⁻¹, weight of grains panicle⁻¹, number of filled grains panicle⁻¹ and thousand grain weight which resulted in significantly higher grain yield of rice as compared to RDF (150:75:50 kg NPK ha⁻¹), deep placement of Urea-DAP briquettes (57 kg N + 12.7kg P) + 50 Kg K₂O ha⁻¹ and control. Zinc levels also recorded significant effect in enhancing all these yield attributes and yield of rice. Soil application of ZnSO₄ @ 25 kg ha⁻¹ produced significantly higher yield attributes and yield of rice. Data also revealed that different levels of macronutrients and zinc levels interacted significantly in enhancing the grain yield of rice. Application of urea-DAP briquettes (@ 114 kg N + 25.4 kg P) + 50 kg K₂O ha⁻¹ alongwith ZnSO₄ @ 25 kg ha⁻¹ (F₃Z₂) recorded significantly higher grain yield as compared to all other combinations except F₃Z₄ which was at par with F₃Z₂.

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INTRODUCTION

Rice (*Oryza sativa* L.) is the most important food crop of India. Nearly three fourth of the people in the country subsist on it (Anonymous, 2000). The adoption of suitable fertilizer management within the reach of an ordinary farmer could be exploited to boost the yield. The important agronomic factor affecting the yield of paddy is fertilizer management practice. Nitrogen is major nutrient required for rice. Low recovery of applied nitrogen by rice has been attributed due to denitrification, ammonia volatilization, runoff and immobilization. Thus, it is necessary to increase N-use efficiency. Urea-DAP briquettes dissolve slowly and maintain higher level of NO₃ in soil upto the maximum period of crop growth and hence, were found beneficial in transplanted rice under anaerobic condition (Reddy and Reddy, 1986). Deep placement of briquettes is more efficient than conventionally applied prilled urea (Savant and Stangel, 1995). Now, it has been recognized that growing high yielding varieties of rice with repeated use of fertilizers, containing only major nutrients may necessitate the application of micronutrients for sustained crop production (Subbaiah and Mitra, 1997). Zinc, being third most important plant nutrient assumes significance in modern agriculture after N and P, limiting the growth and yield of rice. Zinc is essential for several enzymes that regulate

various metabolic activities (Tandon, 1995). Therefore, present investigation was planned to study the yield attributes and yield of hybrid rice as affected by placement of Urea-DAP briquettes and zinc levels.

METHODOLOGY

A field experiment was carried out during *khari* season of 2006 at agronomy farm, College of Agriculture, Dapoli, Dist. Ratanagiri (M.S.). Rice variety '*sahyadri-2*' was grown in clay loam soil with pH 6.10. The experiment was conducted in split plot design with three replications. The treatments included four levels of fertilizers (macronutrients) *i.e.*, F₁- RDF (150:75:50 kg NPK ha⁻¹), F₂- deep placement of Urea-DAP briquettes (57 kg N + 12.7kg P) + 50 Kg K₂O ha⁻¹, F₃- deep placement of Urea-DAP briquettes (114 kg N + 25.4kg P) + 50 Kg K₂O ha⁻¹ and F₄- control in main plot and Z₁-control, Z₂- soil application of 25 kg ZnSO₄ ha⁻¹, Z₃-spraying of 0.5 per cent ZnSO₄ solution at flag leaf stage, and Z₄-dipping of rice seedling roots in 2 per cent ZnSO₄ solution at the time of transplanting in sub plots. The gross plot size was 4.0 × 3.0 m. The values of available nitrogen, phosphorus, potassium and zinc were 356.96, 15.78, 253.35 and 2.08 kg ha⁻¹, respectively. Fertilizers were applied as per the treatments. In case of F₁ first dose of 50 per cent nitrogen and full dose

Key words :

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