

Effect of fertilizer management through urea - DAP briquettes on low land rice

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ABSTRACT

A field experiment was conducted during 2003-2005 in *kharif* season at Zonal Agricultural Research Station, (Western Ghat Zone) Igatpuri (M.S.) on a Typic Haplustepts soil to study the effect of NPK briquette on yield of rice. NP (56: 30: 00) briquette added with 30 kg ha⁻¹ potassium (56: 30: 30 NPK briquette) applied in modified spacing 15-25 x 15-25 cm is recommended on Inceptisol soils for increasing the yield of lowland rice and maintaining the fertility of soil in Western Ghat Zone of Maharashtra.

Key words : NPK, Briquettes, Lowland rice.

High and unpredictable rainfall during the rainy season in Igatpuri leads to rice (*Oryza sativa*) as the popular crop in the region. The current cultivation practices by small farmers are causing nutrient depletion and fertilizer losses due to inefficient fertilizer application practices. There is urgent need to improve farmers skills through effective transfer of technology, judicious use of inputs, and thereby reversing declining productivity trends.

Several reports studies indicated that deep point placement of urea super granules (USG) or pilow shaped USG so called briquettes is more efficient than conventionally applied nutrients, (Westellar, 1985; Katyal *et al.*, 1985; De Datta and Buresh, 1989; Savant and Stangel, 1995; Awasthe and Mishra, 1987 and More and Shinde, 2002). Efficient management of fertilizer through briquettes containing nitrogen and phosphorus further enhanced the efficiency of fertilizers in lowland transplanted rice (Bulbule *et al.*, 2003). Potassium has a key role in rice for resistance development against pest and diseases, for better stand under adverse climatic condition and to improve quality parameters in rice crop. Hence, present investigation was undertaken to study the efficient use of NP briquette with different levels of potassium on lowland rice.

MATERIALS AND METHODS

A field experiment was conducted at Zonal Agricultural Research Station (Western Ghat Zone), Igatpuri, Maharashtra during 2003-2005. The location of farm represents the Western Ghat Zone of Maharashtra, which is characterized by heavy rains (average South-West monsoon rainfall in the region was 2750 mm in 110 rainy days) during June to September. The mean

temperature ranged from 18°C (minimum) to 33°C (maximum) and relative humidity was 79.0 per cent throughout the wet seasons. The experimental soil was silty loam (Kankauli soil series) Typic Haplustepts. The soils were analyzed by following standard analytical procedure as outlined by Jackson (1973). The soil pH was 6.7; EC 0.16 dSm⁻¹, available nitrogen 232 kg ha⁻¹, available phosphorus 25.3 kg ha⁻¹ and available potassium 216 kg ha⁻¹. Four week old rice seedlings (cv. INDRAYANI) grown on raised beds were transplanted to experimental plots at 15 x 25 cm conventional planting in RD treatment and 15-25 x 15-25 cm modified spacing in rest of the briquettes treatments. The experiment was laid out in randomized block design comprising of seven treatments with three replications. The gross plot size was 4.0 x 5.6 m.

Treatment details:

- T₁ - Control (no fertilizer).
- T₂ - Recommended dose for rice 100: 50: 50 NPK kg ha⁻¹ (N applied in three splits of 40 per cent dose at transplanting stage, 40 per cent dose after one month and 20 per cent dose applied at 50 per cent flowering stage). Rice seedlings transplanted at 15 x 20 cm spacing.
- T₃ - NP- 56-30 kg ha⁻¹ applied through briquettes in modified spacing (15-25 cm x 15-25 cm).
- T₄ - NPK- 56-30-15 kg ha⁻¹ applied through briquette in modified spacing (15-25 cm x 15-25 cm).
- T₅ - NPK- 56-30-30 kg ha⁻¹ applied through briquette in modified spacing (15-25 cm x 15-25 cm).
- T₆ - NPK- 56-30-45 kg ha⁻¹ applied through briquette in modified spacing (15-25 cm x 15-25 cm).
- T₇ - NPK- 56-30-60 kg ha⁻¹ applied through briquette in modified spacing (15-25 cm x 15-25 cm).