

RESEARCH PAPER

Management of seedling and fertility level for higher productivity of hybrid rice (*Oryza sativa*)

SUSHIL K. SINGH, R.K. OJHA* AND R.R. UPASANI

Department of Agricultural Physics and Meteorology, Ranchi Agricultural College, Birsa Agricultural University, RANCHI (JHARKHAND) INDIA (Email : rajanojha@gmail.com)

ABSTRACT

A field experiment was conducted at during *Kharif* seasons of 2005 and 2006 to find out the effect of seedling age, number of seedlings/hill and nutrient levels on growth and yield of hybrid rice (*Oryza sativa* L.). 10 days old seedlings recorded significantly higher crop growth rate during 25-50 DAT, and 100- maturity period (11.2 and 6.66 g/m², respectively), effective tillers (239/m²) grain and straw yield (6628 and 9024 kg/ha). Number of seedlings did not influence growth and yield parameters. 125 per cent recommended nutrient level (150: 75: 60 kg/ha of N: P₂O₅ and K₂O) recorded significantly higher CGR (11.89, 27.49, 19.40 and 6.36 g/m²/day), effective tillers (250/m²), filled grains/panicle (158.07), panicle weight (5.00 g) and 1000 grain weight (24.32 g) compared to 75 and 50 per cent recommended level of nutrient thereby producing significantly higher grain and straw yield (7384 and 9965 kg/ha).

Key Words : Age of seedling, Number of seedling, Hybrid rice

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Rice is life for more than half of population in the world. More than 90 per cent of the world's rice is grown and consumed in Asia. It is grain that has shaped the cultures, diets and economies of billions of people in Asia. For them, life without rice is simply unthinkable. Between now and 2020, about 1.2 billion new rice consumers will be added in Asia. Feeding these people will require the greatest effort especially rice production. In Asia, rice is grown in 135 million ha with an annual production of 516 million tons (Roy and Misra, 2002). Transplanting of healthy seedlings of optimum age ensures better rice yield. When seedling is transplanted at right time, tillering and growth proceed normally. If the age of seedlings is less than optimum, tender seedlings may die in greater number due to high temperature and ultimately the plant population is reduced. On the other hand, if the age of seedlings is more than optimum, the seedlings produce less tillers due to reduce vegetative period and thereby results in

poor yield (Ahmad *et al.*, 2002). The practice of transplanting one or two seedlings per hill has a potential to increase rice yield through reducing transplanting stress or injury and increasing tiller and root number on lower nodes. It is generally accepted that growth of rice roots are supported by substrate supply from lower leaves. Since shading of lower leaves by upper leaves was less severe at 1 plant per hill than that at 3 plants per hill for a prolonged period, more substrate could be supplied to developing roots (San-oh *et al.*, 2004).

RESEARCH METHODOLOGY

A field experiment was conducted at Agronomical Research Farm of Birsa Agricultural University, Ranchi during *Kharif* 2005 and 2006 to evaluate the efficacy of age and number of seedlings and nutrient level on productivity of rice. The soil of the experimental field was sandy loam in texture, low in

* Author for correspondence

Sushil K. Singh and R.R. Upasani, Department of Agronomy, Birsa Agricultural University, RANCHI (JHARKHAND) INDIA