

Effect of spacing and genotypes on growth and yield of aerobic rice

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ABSTRACT

An experiment was conducted during *Kharif* 2006 at Agronomy Field Unit, University of Agricultural Sciences, G.K.V.K., Bangalore, to study the effect of spacing and genotypes on growth and yield of aerobic rice. The results revealed that sowing of aerobic rice at a spacing of 45 cm x 20 cm has recorded significantly higher number of leaves per plant (187.3), leaf area per plant (4583 cm²), number of tillers per plant (41.1), total dry matter production (79.4 g/plant), panicle length (22.1 cm), number of grains per panicle (195.8) and grain yield (57.3 q ha⁻¹) compared to other spacing. Among different genotypes, KRH-2 hybrid recorded significantly higher number of leaves per plant (172.9), leaf area per plant (3338 cm²), number of tillers per plant (37.4), total dry matter production (83.7 g/plant), panicle length (23.5 cm), number of grains per panicle (207.9) and grain yield (57.6 q ha⁻¹) compared to other genotypes. Interaction between spacing and genotypes was not found significant with respect to growth and yield parameters.

Key words : Spacing, Genotypes, Aerobic rice, Grain and yield

INTRODUCTION

Rice (*Oryza sativa* L.) being the principal food crop to the billions of people around the world and India occupies a pride place among the food crops cultivated in the world. Aerobic rice production system is gaining importance for increased productivity and reduced water usage and is expected to occupy 10 -15 per cent of the total area in India. Higher productivity in any crop can be achieved through a combination of ideal genotypes in a proper environment and by providing suitable agronomic practices. One of the methods for increasing yield is by way of optimizing the plant population per hectare within the reasonable limit to avoid the competition between adjacent plants for light and nutrition. In order to find out the suitable crop geometry and genotype, the plant density studies have been intensified to produce better yield of crop. Greater utilization of radiation is possible when leaf area index attains the peak stage and the land is fully covered by leaves intercepting maximum radiation. Not much information is available on optimum spacing on yield of the cultivars including new genotypes of rice under aerobic method. Further the promising genotypes *viz.*, KRH-2, MTU-1001, THANU, MAS-26, MAS-946, have unique characteristics and to exploit these promising genotypes on commercial scale, hence the agronomic investigation on aerobic rice was under taken.

MATERIALS AND METHODS

A field experiment was conducted during *Kharif* season 2006 on red sandy loam soil at Agronomy Field

Unit, University of Agricultural Sciences, G.K.V.K., Bengaluru. The soil of the experimental site was red sandy loam having a pH of 6.86 and medium in organic carbon (0.62 %). The initial status of available N, P₂O₅ and K₂O of the experimental site was 246.5, 29.2 and 221.3 kg ha⁻¹, respectively. The experiment was laid out in split plot design with three replications. There were totally 15 treatment combinations comprising of five genotypes *viz.*, KRH-2, MTU-1001, THANU, MAS-26 and MAS-946 and three spacing *viz.*, 20 cm x 10 cm, 25 cm x 25 cm and 45 cm x 20 cm. Healthy presoaked seeds were sown during July 2006 as per the spacing. Recommended dose of NPK fertilizer (100:50:50 kg/ha) was applied for all the treatments. Nitrogen was applied 50 per cent at the time of sowing and remaining 50 per cent applied as top dressing (30 DAS). NPK are supplied through urea, single super phosphate and murate of potash, respectively. Irrigation was given as and when required depending on upon soil moisture. The growth and yield parameters were recorded at harvest by following standard procedure.

RESULTS AND DISCUSSION

The results are summarized below according to objectives at the study:

Effect of different spacing on growth and yield of aerobic rice:

Aerobic rice sown at a spacing of 45 cm x 10 cm recorded significantly higher growth parameters *viz.*, number of leaves per plant (187.3), leaf area per plant (4583 cm²), number of tillers per hill (41.1) and total dry

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