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Growth and yield attributes and grain yield as influenced by varying seed rates and spacing of rice under upland irrigated condition

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ABSTRACT: A field experiment was conducted at Upland Paddy Research Scheme farm, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani during *Kharif* 2012. The soil was low in available nitrogen, medium in phosphorus, high in potassium and low in ferrous sulfate. The experiment was laid out in split plot design with fifteen (15) treatment combinations and three replications, with five seed rates in main plot *i.e.* 25 kg/ha, 30 kg/ha, 35 kg/ha, 40 kg/ha and 60 kg/ha and three spacing in sub plot *i.e.* 20 cm, 25 cm, 30 cm. The rice variety 'Avishkar' was sown in first week of July, 2012. Among the different seed rates, higher seed rate of 60 kg/ha showed significantly taller plants than rest of the lower seed rates. The seed rate of 35 kg/ha recorded the higher mean number of functional leaves/plant and mean number of tillers/m² over the rest of the seed rates. However, it was at par with seed rate 30 kg/ha for number of functional leaves per plant. The maximum leaf area per plant was at the seed rate of 30 kg/ha at all growth stages and was followed by the seed rate of 35, 40 and 60 kg/ha. Significantly maximum panicle weight, filled grains/panicle and least number of unfilled grains/panicle were observed in the lower seed rate of 25 kg/ha, except for panicle weight with 30 kg/ha and 35 kg/ha of seed rates and number of filled grains with 30 kg/ha of seed rate. However, mean number of panicles/m² were maximum under 35 kg/ha and was at par with 40 and 60 kg/ha of seed rates. The maximum grain yield (3145 kg/ha) and NMR (Rs. 30232) was obtained with 35 kg/ha of seed rate. However, it was at par with seed rates 30, 40 and 25 kg/ha for grain yield and with 30 kg/ha seed rate for NMR. The highest B:C ratio obtained from the seed rate of 35 kg/ha (3.02) and was closely follow by 30 kg/ha (2.97). Wider spacing (30 cm) produced significantly more plant height, leaf area/m² and number of tillers/m² than rest of the closer spacing under study. Similarly the spacing of 30 cm gave significantly more panicle weight, number of panicle/m² at harvest than both the closer spacing of 25 cm and 20 cm. This ultimately resulted into higher grain (3065 kg/ha), straw (4045 kg/ha) and biological yield (7110 kg/ha) under the wider spacing (30 cm) than both the closer spacings (25 cm and 20 cm). The highest net monetary returns of Rs. 27139 and B:C ratio (2.91) was observed with the spacing of 30 cm followed by 25 cm (Rs. 2371 and 2.59) and 20 cm (Rs. 18469 and 2.22), respectively.

Key Words : Direct seeded rice, Seed rate, Spacing

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