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Title: EFFECT OF SRI AND CONVENTIONAL METHODS ON THE PRODUCTIVITY OF RICE CULTIVARS

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Abstract: In Jharkhand rice is grown in about 1.62 million ha with production of 2.96 m tonnes and productivity of 1832 kg/ha and larger area comes under medium land situations. In this situation, farmers grow rice either by broadcasting seed in dry soil or broadcasting seed in puddled field. Both the methods are lower in production as it faces problems of weeds, water, labour and high expenditure. Under these situation, alternative cultivation method like system of rice intensification which has the potential to enhance yield and economize the water use can be adopted to increase the productivity of crops. Hence, a field experiment was conducted on "Effect of SRI and conventional methods on the productivity of rice cultivars" at Birsa Agricultural University farm during Kharif season of 2007 on clay loam soil, slightly acidic in nature (pH 5.9) having organic carbon (0.43%), available nitrogen (116 kg/ha), phosphorus (26.5 kg/ha) and potassium (168.9 kg/ha). Treatment consisted of (a) two method of crop establishment i.e. System of rice intensification and Conventional method and (b) four cultivars i.e. Lalat, IR-64, BPT-5204 (Samba Mahsuri) and MTU-7029 (Swarna) laid out in Randomized block design and replicated four times. Results revealed that rice crop grown under system of rice intensification recorded higher plant height (95.11 cm), total tillers/m² (364), leaf area index, dry matter accumulation/m² (1277 g/m²), crop growth rate, relative growth rate, net assimilation rate, effective tillers (322), panicle weight (2.6 g), panicle length (24 cm), filled grains/ panicle (92), 1000 grain weight (25.14 g), grain yield (5032 kg/ha), straw yield (7474 kg/ha), harvest index (40.17), biomass production rate (0.94 q/ha/day), gross return (Rs 34202/ha), net return (Rs. 18249/ha), benefit: cost ratio (1.14) energy output (167398 MJ/ha) and net energy use efficiency (14.98) than the conventional method of rice cultivation. While, unfilled grains/panicle (11.4), cost of cultivation (Rs.15953/ha), specific energy (2245 MJ/t) and input energy (11177 MJ/ha) is comparatively lower under system of rice intensification. Among cultivars Swarna was found superior over rest of the cultivars having higher growth and yield attributes and grain yield (5356 kg/ha), straw yield (7838 kg/ha), gross return (Rs 36383/ha), net return (Rs. 19046/ha), benefit: cost ratio (1.12) energy output (176706 MJ/ha) and net energy use efficiency (15.75) followed by BPT 5204, IR 64 and Lalat. Hence, it can be concluded that long duration cultivar „Swarna“ grown under system of Rice Intensification (SRI) was more productive, economically feasible and sustainable in medium land situation in Jharkhand.

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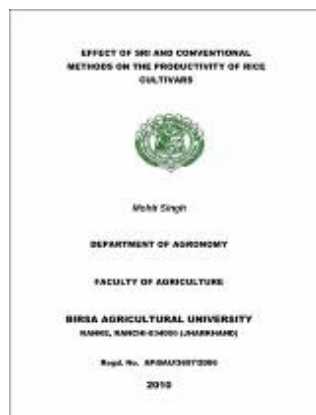
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