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Title:	Effect of integrated weed management practices on productivity and economics of upland direct-seeded rice (Oriza sativa L.) in Eastern India
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Abstract:	Direct-seeded rice (DSR) is a low input, ecologically friendly and sustainable production system, resulted in increased interest for improving weed management strategies, because of the emergence of diverse and complex weed-flora associated with DSR. Therefore, a field experiment, laid out in a randomized block design with eleven weed control treatments including two brown manuring (BM) was carried out with four replications during kharif season of 2017, at Shankarpura Farm, Central Rainfed Upland Rice Research Station (CRURRS), Hazaribagh, District, Jharkhand, India. The study was conducted with the objective to evaluate the effect of integrated weed management (IWM) practices on weed interference in direct-seeded rice; to evaluate the effect of integrated weed management (IWM) practices on growth and yield of direct-seeded rice and to determine the economics of herbicide treatments in direct seeded rice. The experimental soil was silty loam with pH 5.4, organic carbon content 0.5%, bulk density 1.7 Mg/m3, available N, P and K 145, 12.8 and 385 kg/ha, respectively. The results showed that application of pendimethalin (1 kg/ha) as preemergence (PE) followed by bispyribac sodium @ 20 g/ha as post-emergence (POE) followed by finger weeder (45 DAS) exhibited significant reductions in weed growth (population and dry weight) and caused a considerable increase in weed control efficiency and weed control index in DSR (82.5% and 79.8%, respectively). This combination increased crop productivity (2.4 t/ha) by 4 times as compared to unweeded control. This also recorded the highest net returns (₹21148/ha) and B: C ratio (1.06) and proved to be the best management option for effective weed control. Amongst the variouss herbicides treatments studied, this treatment also performed better in recording highest dry biomass accumulation, number of tillers/m2, CGR, RGR, NAR and various yield contributing characters like effective tillers, panicle length, number of grains per panicle and 1000-grain weight etc. and the lowest being recorded in unweeded control. In terms of yield (2.4 t/ha) this treatment recorded 40% higher yield as compared to UWC. The integrated application of bispyribac sodium @ 20 g/ha at 25 DAS followed by finger weeder (45 DAS) also resulted in 30% higher grain yield of DSR and could be the second alternative for efficient weed 8 9 management. The remaining treatment combinations did not performed well in managing weeds as later flushes of weeds escapes from herbicide application. Therefore, appropriate combinations of pre and post-emergence herbicides along with other weed management options like mechanical weeding and BM can be employed for obtaining higher efficacy of herbicides, better weed control and for higher productivity and profitability of DSR. Keywords: Integrated Weed Mangement, Upland Direct Seeded Rice, Yeild, Herrbicide, Economics, Eastren India
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