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WEED MANAGEMENT IN DIRECT SEEDED RICE (ORYZA SATIVA) + BRAHMI (BACOPA MONNIERI) INTERCROPPING IN TERAI AREA OF UTTRAKHAND

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Rice (*Oryza sativa L.*) is a member of *graminae* family and is relished as staple food by majority of world's population. In India, rice occupied 43.94 mha area with a production of 106.54 million tonnes. Direct-seeded rice offers the advantage of faster and easier planting, reduce labour and hence less drudgery and more efficient water use. The risk of yield loss from weeds in direct-seeded rice is greater than transplanted rice (Rao et al., 2007). Nowadays, intercropping has become one of the popular methods in agricultural system due to the more efficient use of resources and its role in reduction in weeds interference and other pests. An investigation was carried out to evaluate the effect of rice + brahmi intercropping on yield, yield attributes and economics of the intercropping system during rainy seasons of 2015 and 2016. The experiment was carried out in randomized block design by taking 10 treatments with three replications i.e. two ratios 1:1 i.e. rice + brahmi in additive series (where brahmi crop was sown at the spacing of 40 cm and one row of rice was sandwitched between two rows of brahmi at 20 cm) and 2:1 i.e. rice + brahmi in replacement series (where brahmi crop was sown at the spacing of 20 cm after two rows of rice at 20 cm) and in both ratios, four different weed management practices are taken (pendimethalin 1 kg/ha + 2 hand weedings (H W), pendimethalin 1 kg/ha and pendimethalin 1 kg/ha + cyhalofop-butyl 20 g/ha + 1 hand weeding) and one treatment of sole rice and sole brahmi. The rice variety '*Pant-18*' and brahmi variety '*CIM Jagriti*' was sown using a seed rate of 17 kg/ha and 3.3 t/ha in additive series and 21 kg/ha and 2.5 t/ha in replacement series, respectively. The recommended fertilizer doses of rice (120:60:40) were applied. Weed population and weed dry weight were recorded at 30 days after sowing. Lowest weed density, dry weight and highest weed control efficiency were recorded in pendimethalin followed by (*fb*) cyhalofop-butyl *fb* one hand weeding at 45 days after sowing in 2:1 row ratios. Results also indicated that intercropping of rice with brahmi, exhibited greater potentiality and resulted in higher values of most of studied criteria of both rice and brahmi *viz*. plant height, dry matter accumulation, number of nodes, number of branches, number of panicles/m^2 and 1000 grain weight. Dry herbage yield of brahmi and grain yield were highest in sole crop of rice and brahmi. Furthermore, the value of land equivalent ratio (LER) and area time equivalent ratio (ATER) was found highest in treatment pendimethalin *fb* cyhalofop-butyl *fb* one hand weeding at 45 days after sowing in 1:1 ratio of direct seeded rice and brahmi during both years. The highest net returns and benefit cost ratio was found in the treatment pendimethalin *fb* cyhalofop-butyl *fb* one hand weeding at 45 DAS in 1:1 ratio of rice and brahmi during both the years of experimentation.

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