

Effect of Different Crop Establishment Methods on Growth and Yield Response of Lowland Irrigated Rice in the Northern Region of Sri Lanka

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Inappropriate method of crop establishment is one of the reasons for low yields in rice (*Oryza sativa* L.) cultivation. Therefore, a field experiment was conducted to evaluate the effect of crop establishment methods such as manual transplanting at 30 cm row spacing, broadcasting (check), dry seeder method, mechanized transplanting, random transplanting by hand and parachute method on growth and yield of rice variety, Bg 300. Treatments were arranged in randomized complete block design with three replicates in each treatment. Data on number of plant/m², plant height, number of tillers/m², panicles per plant and paddy yield were recorded. Economics and cost-benefit ratio of each planting method were also calculated. The results indicated that paddy yield and cost-benefit ratio were significantly high in mechanized transplanting (5.57 t ha⁻¹ and 1.58, respectively) and parachute method with the values of 4.84 t ha⁻¹ and 1.94, respectively, for the same parameters. Broadcasting method produced a lower yield and cost-benefit ratio (4.11 t ha⁻¹ and 1.22, respectively) compared to mechanized transplanting and parachute method. However, broadcasting showed a higher yield due to the presence of high number of plant per area than the transplanting by hand. It was further revealed that plant height, tiller density and panicles per plant were significantly high in mechanized transplanting method and par with parachute method. Therefore, both mechanized transplanting and parachute method can be considered as economical methods of crop establishment to increase the crop productivity in rice.

Keywords: Cost-benefit ratio, crop establishing methods, planting method, rice, transplanting