SRI single seedling transplanting implement: an innovative technique to challenges on SRI planting and spacing techniques

ABSTRACT

In rice production, seedling quality and transplanting potentials stand as a prerequisite for proper completion of rice production for optimum yield. The overall objective of this research was to develop a transplanting implement capable of placing rice seedling singly into the field by dropping with respect to SRI planting conditions. It is aimed at using seedlings established from SRI-tray designed with adjustable spacing options of within and between rows of 25 cm, 30 cm and 40 cm leading to nine SRI spacing options to suite SRI practitioners' preference. Performance evaluation was based on suitable growing media, planting speed, percentages of single, missing and multiple planting as well as field capacity and field efficiency. The data revealed that the speed of operation at 0.18 m/s reported the highest significance percentage of single planting when subjected to spacing patterns of 25 × 35 cm (84%), 25 × 25 cm (81%), 30 × 30 cm (73%) and 40 × 40 cm (83%). But, a decreasing trend was recorded when the speed increased to 0.45 m/s. The performance recorded were 53%, 56% and 72% on 25 x 35 cm, 25 x 25 cm and 30 x 30 cm spacing patterns respectively with a surprising performance stability of 83% on the 40 × 40 cm. The results on growing media indicated that clay with compost had the highest significance with respect to the weight of seedling (25.3 g) giving the loosening index of 66 seconds and the planting depth of 16 mm. At the speed of 0.18 m/s, the field capacity was 1.29 ha/hr and, the field efficiency was 79.5% but, changed to 1.55 ha/hr and 75% respectively, at the speed of 0.45m/s.

Keyword: System of rice intensification; Conventional transplanters; Spacing patterns; Missing hills; Loosening Index