

Single seedling nursery tray: an innovative breakthrough to quality seedling raising technique for SRI transplanting machine

ABSTRACT

The main problem of adapting the SRI techniques is high labor requirements for manual and lacking of mechanized system for planting single seedling in the field. The existing seedling preparation methods remain challenging among SRI practitioners due to traumatic condition. This study was intended to create modern techniques for increasing the quality and transplanting potentials to improve seedling preparation and reduce transplanting shock. It involved development of rectangular tray having 924 square growing cavities with sliding base to facilitate seedling transfer. Seed selection was conducted and 100% germination was obtained from the sunken MR219 seeds collected in 80 g/L of NaCl solution. SRI-tray seeding was 100% placed into cavities with SRI-seed picker at 150 g/L of tapioca solution. Two different media (Soil + Burnt husk (1:1) as M1 and Soil + Compost (1:1) as M2) were used to evaluate the growth performances for 10 days. The measured parameters (Seedling Height (SH), Leaf Length (LL), Leaf Number (LN), Root Length (RL) and Loosening Index (LI)) were compared between SRI-tray and conventional ones. The SAS revealed that M2 on SRI-tray had the highest significant values for SH, LL, RL and LI with the mean values of 155.6, 109.3, 89.3 and 75 sec when compared with conventional tray which had 125, 91 and 52 mm with no LI, respectively. The seed rate, nursery area and seedling age to support one hectare of planting area were found as 5.34 kg, 36 m² and 8-10 days on SRI-tray against 15-50 kg, 250-500 m² and 12-30 days on conventional practices.

Keyword: Compost; Germination; Growing cavities; Loosening index; Seedling height; Vigor