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Research Paper :

Development and field evaluation of tractor operated onion transplanter

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ABSTRACT

The onion (*Alilum cepa* L.) is one of the important commercial vegetable crops grown on a large area in India and abroad for local consumption as well as export purpose. Onion growers are facing lot of problems in transplanting of onion seedlings with the shortage of farm labourers during transplanting seasons. Therefore, efforts were made to develop tractor operated semi automatic onion transplanter. Engineering physical properties like height, weight, diameter, moisture content and compressive strength etc. were determined for VIth, VIIth, and VIIIth week age of onion seedlings. Two metering mechanism *i.e.* Fingure type and Plug type were studied in laboratory with three different travel speed of 0.75 km/h, 1.00 km/h and 1.25 km/h for different age group of onion seedlings. It was observed that plug type metering mechanism at speed of 0.75 km/h with VIIth week age seedling were more suitable for transplanting. The field trials of semi - automatic transplanter revealed that with the plug type metering mechanism the row to row spacing of 20.4 -21.20, plant to plant spacing of 11.00 – 11.6 and depth of placement was observed 2.8 -4.00 cm. The missing percentage was 9.00 -10.9. The capacity of the machine was 0.1088 – 0.1174 ha/hr with field efficiency of 70.49 -71.60 per cent. The draft of machine was in the range of 450.00 – 469.80 kgf. The saving in cost of operation over manual transplanting was 40.17 per cent.

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