



RESEARCH PAPER

Optimization of variables of a digger for digging of carrot crops

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Abstract : In India, most of root crop is harvested manually and it consumes high labour and time for harvesting. The optimization of a tractor operated digger was evaluated at farmer's field for the carrot crop. The digger was optimized for forward speeds of 2.2, 2.7 and 3.2 km h⁻¹ and the rake angles of blade as 17^o, 20^o and 23^o. The parameters viz., digging efficiency, undug, cut, bruised and exposed percentage was optimized as per the experiment. The performance of the digger was found to be best at a speed of 2.2 km/hr and blade angle of 23 degree with a The digging efficiency, cut percentage, exposed percentage and bruised percentage of carrot crop was found to be 100 , 46.2, 92.12 and 28 %, respectively. The capacity of the machine was 0.18 ha/h. The break-even point for digger was 35.14 hour per year. The payback period of digger was 0.24 year.

Key Words : Variable, Carrot, Digger, Angles

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