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Design and development of a multistage root crop harvester for power tiller

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Harvesting includes cutting or digging, gathering and handling of crops up to their final removal from the field. Crops growing in the soil, like potatoes sweet potato, Ground nut and similar tuber crops are lifted with digging tools or implements. Most types of tools engage the use of some of the hand muscles and require a pressure which is quite high for continuous work over long periods. The effort required of the muscles can be reduced considerably by using appropriate mechanization.

Use of manpower for the root crop harvesting is uneconomical due to high labor cost. Therefore a power tiller operated Tuber crop Harvester was design and constructed. This machine was not only useful to lifting the tubers in the ground but also to separating them from the soil. The designed harvester consists of a strong frame with rear wheel, front disc colters, digging shovel with lifting plate and horizontally oscillation type cleaning grille. Harvesting operation of this machine is carried out in three harvesting stages such as leaf stripping, soil separating and loading.

The results show that the Effective field capacity and Effective working width of designed harvester were 0.1ha/hr, and 0.5 m respectively. These results are significantly different with manual method. Travel reduction, and average operating speed of designed harvester were 15% and 2.0km/hr respectively. The total cost of production of designed harvester was Rs 35000.

A new harvesting technique, can however be employed successfully. It was observed that the soil and weather conditions at the time of harvest play a decisive role regarding the quality of the harvested tubers.

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