

## DESIGN, DEVELOPMENT AND TESTING OF A MANUALLY OPERATED PINEAPPLE HARVESTER

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Pineapple (*Ananas comosus* (L.)) is a major fruit crop with four to eight years economical lifespan. It maintains as a ratoon crop to yield 4000 to 16,500 fruits per acre. There is no efficient method to harvest pineapple in Sri Lanka. The adoption of manual method is complex and labor intensive technique, increases injuries to laborers due to spines and the tips of the leaves. This study was aimed to develop a manually operated pineapple harvester. It was designed after investigating the possible maximum weight, dimensions of fruit and field conditions of pineapple. Major components of the pineapple harvester were handle, cutter and collector. The power was transmitted from handle to cutter by a lever with flat iron strips. The pineapple harvester was safe since the cutting blades are oriented to opposite side of the operator and it kept the pineapple spines away. The harvester was easy to operate because its light weight of 2.1 kg. The pineapple harvester was tested for the first, second and third ratoon stages to compare mechanical and manual methods, and received satisfactory results. The effective field capacities of the pineapple harvester for three consecutive harvesting stages were 0.03 hah<sup>-1</sup>, 0.03 hah<sup>-1</sup> and 0.03 hah<sup>-1</sup>. In sequence the field efficiencies were 80.51%, 69.03% and 75.38%. Damages to plant, leaves, fruit and operator were negligible. There was no significant difference ( $p > 0.05$ ) between performances of newly designed pineapple harvester and prevailing manual method, but the pineapple harvester was more safe in harvesting pineapple.

**Keywords:** *pineapple cultivation, pineapple harvester, fruit harvester*

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