DESIGN, DEVELOPMENT AND TESTING OF SMALL SCALE PEPPER HARVESTER

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Pepper *(Piper nigrum)* is the whole dried fruit of a perennial climber that has a pungent taste distinguished as 'king of spices'. Pepper is harvested twice a year and it is mostly harvested manually using bamboo ladders. Manual harvesting of pepper is labour consuming, course damages to the plant and harmful to the vine. Harvesting labourers require skills to climb up the ladder with conquering the fear of heights; avoid ant bites and anxious birds. Thereby, manual harvesting method seems to have many disadvantages. Thus the study was aimed to design, develop and test a small scale pepper harvester for Sri Lanka in order to improve the efficiency of harvesting. After investigating pepper plantations and studying manual pepper harvesting method, a small scale pepper harvester was developed. Major components of the equipment were cutter, collector, delivering tube, height adjuster, telescopic pole and stand. The tool was developed to cut the pepper spikes using a blade which was operated by hand and to deliver them down through the delivering tube. The height of the harvester can be adjusted according to the height of the vine. The harvester was tested at selected sites, and received satisfactory results. There was no significant difference ($p<0.05$) of field efficiencies and field capacities between manual and mechanical method. Field capacity of the pepper harvester was 5.522 kg h^{-1} and field efficiency was 68.25%. Field capacity of the manual method was 6.292 kg h^{-1} while field efficiency was 61%. Damages to the vine and spikes were negligible. Thus, it is possible to improve the efficiency of this pepper harvester through further modifications.

Key words : Harvesting, Pepper harvester , Pepper