

Title Development and performance evaluation of a medium-scale system for processing bitter leaf
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Abstract

A medium-scale system was designed and fabricated for the processing of bitter leaf (*Vernonia* spp.) and similar vegetables. Processed bitter leaf is a widely consumed vegetable in the tropics. The machine powered by a 3 kW electric motor is made of three compartments: the chopping section, the washing section and the spinning section. Tests were carried out to evaluate the capacity and the efficiency of each section of the machine. The chopping section has a capacity of 300 kg of leaves per hour, reducing vernonia leaves to 2.64 mm mean size. The washing section has a capacity of 60 kg of leaves per hour. In the spinning section, 20 kg of processed leaves are processed in 8 min giving a capacity of 150 kg/h. At the spinning section, the moisture content of chopped and washed leaves decreased from 74.32% to 67.56%. Investigations on the nutritive quality of the processed vegetable indicated that there was a slight decrease and a slight increase in some nutritional parameters after mechanical processing. Compared with the manual method of processing vernonia, the machine reduced processing time by a factor of about 60.