

## EVALUATION OF RICE DESTONER FOR DRIED BLACK PEPPER

R.M.G.V. Rathnayake<sup>1</sup>, T.M.R. Dissanayake<sup>2</sup> and G.V.T.V. Weerasooriya<sup>1</sup>

<sup>1</sup>Dept. of Agricultural Systems, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka.

<sup>2</sup>Institute of Postharvest Technology, Jayanthi Mawatha, Anuradhapura, Sri Lanka.

Pepper (*Piper nigrum* L.) is an important commercial spice since early times in Sri Lanka and is widely used spice in the world. Producing good quality pepper is one of the requirements in the country due to increased export potential. A major problem faced by the pepper exporting industry in Sri Lanka is high percentage of inert matter contamination especially sand and stones. Destoner is used to remove heavy foreign contaminants like stones from grains and seeds of other crops. It works on the principle of gravity separations with stratification by positive pressure fan.

A study was conducted to test and evaluate suitability of rice destoning machine currently used in rice milling industry in Sri Lanka for dried pepper destoning. The machine was evaluated for its performance with the intension of recommending for the Sri Lankan spice processing industry. The performances were evaluated in terms of capacity, power consumption, percentage of broken berries, percentage of stone removed and cost of destoning. In this study, air flow, inclination of deck and thrust to deck (speed of motor) was changed with suitable combinations for selecting the proper adjustments.

The rice destoning machine performed best for dried pepper after changing only the deck inclination by 7 degrees. The capacity of destoner was 355.5 kg/hr. The power consumption per kilogram of dried pepper was  $82.8 \times 10^3$  kWh. The percentage of broken berries and the percentage of stone removed are 0.5 and 99.99 percent respectively. The cost of destoning per kilogram of dried pepper by this machine is LKR 0.64. Maximum machine efficiency and high quality black pepper can be achieved by a single pass. Further, it is suggested this would be suitable for commercial scale destoning.

**Keywords:** Destoning, Dried black pepper, *Pepper nigrum* L.