

Title Sorting Sweet Tamarind Pod by Image Processing Technique
Author Nitipong Jaisin, Bundit Jarimopas
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Abstract

The purposes of this research were to (i) to identify parameters characterizing optical characteristics of sweet tamarind pod and (ii) determine their relationship with variable of shape size and blemish. The sweet tamarind cultivars were Sitong and Srichompoo. The parameters identifying the quality were shape (straight, sword-like, curved), size (small, medium, large), and defect. The variables defining pod shape and size were circumference ratio (C) and length. Defect was attributed to crack.

Experiment comprised measurement of the variables defining shape, size and defect by means of the experimental sweet tamarind pod sorting machine. The machine included CCD camera modified to work compatibly with tv-card, microcontroller, sensor and microcomputer. Analysis was done by the use of image processing technique and statistical analysis of variance upon parameters of shape, size and defect against the variation of control factors of belt speed, pod orientation, and spacing.

The results showed that C of the straight, the sword-like and the curved were 55%, 57-65% and 68%, respectively. The three control factors did not significantly affect the parameters defining shape, size and defect at the significance level of 5%. The experimental sorting machine could well perform separation of the sweet tamarind pod with average sorting efficiency (E_w) of 89.8%, mean contamination ratio C_r of 10.2 and capacity of 1,517 pods/hr with Sitong and E_w of 94.3%, $C_r = 5.7\%$, capacity of 1,491 pods/hr with Srichompoo. The sorting machine could completely detect the pod crack of greater or equal to 0.49 sq.cm.