

Tanarat Srirungruang 2007: Mechanical Bruising of a Young Coconut Fruit.
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Associate Professor Bundit Jarimopas, D.Sc. 123 pages.

This research was aimed to (a) assess the postharvest damage of the coconut fruit at markets and (b) determine young coconut fruit bruising mechanism subjected to quasi-static compression and impact. Methodology comprised slow compression on young coconut fruit by means of varying spherical plunger (12, 24, 48 and 96 gm) mounted to the Universal Testing Machine at the loading rate of 15 mm/min. The sample young coconut included three different maturity stages (immature, mature, overmature). The other fruit samples were applied to impact test using the same set of plungers. Bruising response (below and beyond bruise threshold) to dynamic contact energy was measured and analyzed. Tensile test of young coconut husk was carried out and the husk response was evaluated. Results showed that bruising of the young coconut fruit of the wholesalers and the retailers varied from 50 to 100%. Number of bruise per fruit ranged from 1 to 16 bruises per fruit. Bruise area ranged from 1 to 19 cm². Good linear correlation between the bruise volume V and the dynamic compression energy E beyond threshold and that between bruise occurrence probability P and the dynamic compression energy below threshold were found ($R^2 > 0.9$). Mature young coconut, exhibiting the least bruise susceptibility under slow compression, was characterized by the bruise volume of 1823.434 ± 480 mm³ and compression energy of 1.66 ± 0.11 J at the bruise threshold. Besides, the mature young coconut, similarly behaving the least bruise susceptibility under impact, was attributed by the bruise volume of 10.67 ± 0.76 mm³ and impact energy of 0.0245 J at the bruise threshold.

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