

Sarika Sarakan, Acting Sub.Lt. 2006: Mechanical Properties of Thai Rose Apple Fruit.
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This research was to investigate physical and mechanical properties of five Thai rose apple of cultivars (ie. Tubtimjan, Toonklao, Pechsampran Pechsairung and Tongsamsi. Methodology comprised determination of physical characteristic and mechanical properties of full mature rose apple, 480 fruit per cultivar, by the use of Universal Testing Machine INSTRON 5569 and Impact Tester. Experiment al design was of factorial in CRD with two control factors, ie. cultivar and size of the fruit.

Result showed that the cultivar and size significantly influenced parameters of physical characteristic and mechanical properties at the significance level of 1%. The longest and the shortest fruit was tubtimjan (88-74 mm) and Pechsampran (69-62 mm) respectively. The widest and the narrowest fruit was Toonklao (78-67 mm) and Tubtimjan (63-54 mm) respectively. Average moisture and specifird gravity of the fresh rose apples was 67 to 70% and 0.81 to 0.96, respectively. Pechsairung had the highest total soluble solid (averagely 11.75% brix). Small Pechsairung showed the maximum rupture force of 3.57 N. Average rupture deformation and force of the rose apple ranged from 0.40 to 0.45 mm and from 2.85 to 3.57 N, respectively. Medium Pechsampran and small Toonklao featured the greatest (1.36 N-mm) and the smallest (0.6 N-mm) toughness, respectively. Small Tubtimjan and small Toonklao showed the highest (7.88 N/mm) and the lowest (6.47 N/mm) average firmness, respectively. Small Pechsairung and small Tooklao exhibited the highest (2.36 N) and the lowest (1.8 N) penetrating force, respectively. Small Tubtimjan and small and medium Toonklao showed the maximum (9.86 N-mm) and the minimum (7.36 N-mm) penetrating energy, respectively. The highest modulus of elasticity by plunger compression was with small Tubtimjan (222 KPa). The greatest modulus of elasticity using prepared cylindrical sample was with small Pechsairung (245 KPa). The maximum and the minimum modulus of elasticity by impact test happened with small Pechsairung (298 KPa) and big Pechsampran (238 KPa). Results of the sensory panel test complied with the previous mechanical properties study for the following aspects : a) the sweetness of 4 cultivars (excluding Pechsairung), b) the smallest firmness of Toonklao, c) the greatest touchness and the smallest crunchiness of Pechsampran. Application of total soluble solids and specific gravity to sort the fresh rose apple fruit is likely.

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