

Title Postharvest quality evaluation of “Fuyu” and “Taishuu” persimmons using a nondestructive vibrational method and an acoustic vibration technique

Author Mitsuru Taniwaki, Takanori Hanada and Naoki Sakurai

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Abstract

We investigated time-course changes in the elasticity index (EI) and texture index (TI) of two persimmon (*Diospyros kaki* Thunb.) cultivars (“Fuyu” and “Taishuu”) during the postharvest period. EI was determined using the formula $EI = f_2^2 m^{2/3}$, where f_2 is the second resonance frequency of a sample, and m is the mass of the sample. A nondestructive vibrational method employing a laser Doppler vibrometer (LDV) was used for measuring the second resonance frequency (f_2) of the persimmon samples. The changes in the EI of both cultivars showed quasi-exponential decays. An improved texture measurement device was used for measuring the TI of the cultivars. The TI was defined by $(1/T)\sum |V_i|$, where T (s) is the sampling period and V_i (V), the amplitude of each data point. The pattern of time-course changes in TI differed between “Taishuu” and “Fuyu” persimmons; a sharp decline was observed in the TI of “Fuyu.” Along with the sensory test, we determined the optimum eating ripeness of persimmons in terms of their EI to be $2.9\text{--}6.0 \times 10^4 \text{ kg}^{2/3} \text{ Hz}^2$ (“Taishuu”) and $4.8\text{--}6.4 \times 10^4 \text{ kg}^{2/3} \text{ Hz}^2$ (“Fuyu”).