

Title Kiwifruit firmness by near infrared light scattering
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Abstract

Kiwifruit firmness was estimated by scattering 864 nm laser light through the fruit to exiting angles at 20 to 55° around the circumference of the fruit the incident beam. The intensity of scattered light emitted from the fruit increased with decreasing firmness, especially at larger angles. The intensity changes were modeled using an inverse power law relationship between the intensity and a distance factor $D = \sin(\vartheta / 2)$, where ϑ is the exiting angle. With increasing firmness the proportionality constant S increases and the power coefficient of D , $-n$, decreases. The logarithm of S gave the best linear regression results against stiffness and rupture force; two standard measures of fruit firmness, with R^2 value of 83% and 79%, respectively.