

Title Non-destructive impact test for assessment of tomato maturity
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Abstract

A non-destructive method for assessing the maturity of tomatoes was developed using the mechanical properties of the fruit under the falling impact test. The levels of maturity were classified with cluster and discriminant analyses on the primitive impact measurements and their derivatives. The accuracy of classification was improved with linear discriminant analysis and the number of indices being processed was reduced with stepwise regression analysis. The accuracy of classification is 82.3% by the use of all nine indices and 79.2% by the three most dominant indices. The performance shows that falling impact together with linear discriminant analysis provides a promising non-destructive approach in assessing the maturity of tomatoes. The developed falling impact apparatus could be used in the realization of an on-line quality sorter for tomatoes and the developed methodology can be used to improve the accuracy of classification for a similar problem.