

Abstract:

Fruit quality is essential for consumer acceptance. The definition of quality at harvest is dependent on a precise harvesting date that in turn has a marked influence on storage strategy as well as edible fruit quality. The traditional techniques of assessing fruit quality and harvest date (refractometer and penetrometer readings) are carried out by sampling a limited number of fruits, which often may not be representative of the totality of harvested fruits. Indeed, fruits off a single vine are marked by very high variability in maturity and quality. Recently, non-destructive techniques have been developed to assess fruit quality in several countries (Japan, New Zealand, Australia, USA and Italy). These techniques make it possible: to assess fruit quality non-destructively on a large number of fruits, or even on all the harvested fruits; to increase the number and representativeness of the selected samples; to repeat analysis on the same samples and to follow their physiological development (i.e. ripening in pre-harvest or during storage); to select the sample most representative of the variability of the studied population, to determine different attributes from the same measurement and, hence, to increase the amount of useful information. The methods used commercially, or which are still under research, employ electromagnetic (NIRS, near infrared spectroscopy, and NMR, nuclear magnetic resonance), electrochemical (e-nose, electronic nose) and electromechanical (impact) principles. The present paper reports examples of determining quality and ripening stage of kiwifruit in pre- and post-harvest situations with these non-destructive techniques.