Title Understanding links between preharvest conditions and postharvest management in production chains is one of the keys to ensuring fruit quality in commercial networks

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Abstract

FAO and WHO both promote sustainable agriculture and consumption of fruits and vegetables; highlighting the need to prevent shelf loss, improve of fresh product value, quality assurance and food safety. These objectives will be reached only if the "achieved" quality corresponds to the "expected" one. Achieved quality depends on preharvest conditions and postharvest management. Applying this concept to several types of tropical fruit, we studied the association of pre- and postharvest factors on fruit quality traits. For pineapple, we observed that polyphenol content depended on cultivar and on cultural practices. Since polyphenol compounds are one of the ways for fruit to defend itself against biotic and abiotic stress and are of nutritional interest, it was necessary to take preharvest practices into account to predict the sensitivity threshold of fruit to these stresses and to control quality traits. For mango, we demonstrated that stress during fruit development caused by a limited supply of carbohydrates to fruit as a result of controlling the leaf-to-fruit ratio, could be compensated for by increasing the time that fruit remained on the tree. By delaying the harvest of stressed fruit, postharvest changes were quite similar to non- stressed fruit. Therefore, use of a non-destructive technique to estimate the physiological age of fruit, regardless of growing conditions, could be useful to ensure ripe fruit quality. For litchi, we tested different plastic films adapted for packaging. Maturity stage at harvest had a significant effect on fruit quality, mainly aroma content, and the "fruit effect" was higher than the "packaging effect". Therefore, controlling harvest timing is one of the keys to managing the quality of ripe litchi. These examples show that studies must take a "total quality management" (from crop to market) approach into account to achieve an objective view of the quality supplied to the consumer. We thus propose that innovative practices from farm to market must be adopted to ensure this quality.