

Title Genomic approaches - innovative tools to improve quality of fresh cut produce

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Abstract

Genomic technologies are becoming ready for use in a range of crops that are important for the fresh cut produce market. Genomic technologies are currently being used in combination with other technologies such as genetic marker development and breeding lines to increase the quality of fruits and vegetables. In combination with preharvest and postharvest technologies, genomic tools and technologies may assist in the design of processes for fresh cut produce which maintains its quality throughout the production chain. Genomic technologies are being developed to study different aspects of fruit quality in tomato, peach and citrus fruits. In tomato, a state-of-the-art oligoarray in combination with proteomic and metabolomic approaches is being used to identify gene regions/QTLs relevant to tomato fruit quality. In citrus and peach (ChillpeachDB), in-house microarrays have been developed to identify candidates for fruit quality genes and study the impact of genetic background and environment on gene expression. In this latter case, the focus is on genes relevant to postharvest disorders such as chilling injury. In *Citrus*, existence of differential preformed mechanisms as well as inducible responses to cold temperature storage is suggested from microarray analysis. These tools and analysis are providing valuable information to design postharvest protocols and to introduce those candidate genes in the plant breeding programs.