

Abstract:

Genomics technologies can be applied for unravelling the biological processes that are important for pre- and post-harvest quality. Such knowledge will allow precise monitoring of physiological condition and can be used as a tool for optimising production chains. A combination with quality change models will allow prediction of future product quality with much more precision and certainty than is currently possible. To demonstrate the validity of this approach we set up a project to identify, via cDNA microarray analysis, gene expression patterns that are correlated to the development of mealiness during storage of Cox apples (*Malus x domestica* 'Cox's Orange Pippin'). The experimental set-up encompassed, next to mRNA profiling, both instrumental and sensory analyses of apples at various time points before and during storage. We were able to select a subset of genes the expression of which is indicative of reduced sensory quality (mealiness and off-flavour). Moreover we detected batch differences in initial profiles that could be related to storage quality. Such indicators can be used as decision support tools for growers and traders.