

**Title** Pineapple production for quality and postharvest handling  
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### **Abstract**

The development of pineapple cultivars for fresh fruit consumption has been a recent major focus of breeding and selection programs. New hybrids developed for the fresh fruit market have been introduced in Hawaii, Australia, Malaysia and Taiwan. These low acid types have become the preferred types and have expanded rapidly to supply the fresh fruit markets of the USA, Japan and Europe. The newer cultivars present new challenges in production and maintenance of quality. In Hawaii, natural flowering which can significantly increase harvest costs and production losses, translucency and too low acid levels are quality issues all tied to production practices. Postharvest chilling injury appears to be less of a problem, though shell scuffing is an issue with some clones. Translucency is correlated with susceptibility to mechanical injury and non-pathogenic fungal growth on the broken peduncle and both are of concern with marketers and consumers. Our fruit quality research focus has been on translucency and inconsistent fruit quality throughout the year due to variation in the sugar to acid balance, the major fruit flavor component. In the warm season there are fruits with too low acids and high sugars, and a more desirable balance of acids and sugars occurs in the cool season. Flesh translucency is possible due to photosynthetate competition between the crown and the fruit during the initial period of crown growth. Alternatively, insufficient calcium uptake during the fruit growth makes the fruit flesh more "leaky". The low acid hybrids during fruit growth accumulate high levels of titratable acidity. This acidity peaks at a higher level than the canning variety and declines rapidly as the fruit approaches maturity. The decline in acidity is associated with two acid metabolism enzymes. Sugars are rapidly accumulated about six weeks before harvest just before the acid levels decline. The sugar accumulation appears to be via an apoplastic pathway utilizing neutral and cell-wall invertases. For this non-climacteric fruit, eating quality is determined before harvest. Cultivar and field management, such as fertilization and irrigation practices, developed for canning may not be the most appropriate for the production of low acid hybrids used for fresh fruit.