Title Distribution of sugar and organic acid components within the KOB heritage apple cultivar collection

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Abstract

Sugar and organic acid contents of heritage apple cultivars were studied at-harvest and after six months of cool storage. Sugars (glucose, fructose, sucrose and sorbitol) and organic acids (malic, succinic and fumaric acid) were measured by HPLC. Fructose and sucrose were the major sugars and malic acid the predominant acid. 62 heritage apple cultivars were separated into 3 groups: cultivars for 'fresh eat', for 'industry use' and for 'contract industry use'. At harvest, the fruit juice content of fructose ranged from 31.8 to 85.7 g L^{-1}, glucose from 9.9 to 44.2 g L^{-1}, sucrose from 23.1 to 76.9 g L^{-1}, and sorbitol from 0.8 to 15.3 g L^{-1}. The malic acid content ranged from 5.6 to 21.7 g L^{-1}, succinic acid from 0.8 to 9.7 g L^{-1} and fumaric acid was less than 0.1 mg L^{-1}. After storage, the content of acids and sugars decreased with the exception of fructose. The distribution pattern of individual sugars and organic acids, and total sugar/total acid ratio can be used in the development of commercial, industry and contract industry apple cultivars that would target specific consumer requirements and consumer health.