

# Effect of harvest maturity on volatile compounds profiling and eating quality of hawthorn (*Crataegus azarolus* L.) fruit

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Scientia Horticulturae 288: 110398. (2021)

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## Abstract

The effect of maturity stage on fruit quality characteristics, sensory attributes and volatile composition was investigated in the most important hawthorn cultivar (Sultan). The fruit skin color was used as the maturity index for the classification of hawthorn considering their maturity stages as immature (green), mature (green-yellow) and over mature (yellow). The volatile organic compounds (VOCs) of hawthorn fruit at each maturity stage were analyzed by solid-phase micro-extraction (SPME) and gas chromatography-mass spectrometry (GC-MS). The results indicated that the quality traits of the Sultan cultivar were affected by the maturity stage. From immature to over mature stages, firmness and titratable acidity decreased whereas fruit size (weight, diameter and length), edible fruit ratio, pH and esters (butyl and hexyl hexanoates, hexyl and *cis*-3-hexenyl acetates) increased in Sultan cultivar. The highest amount of esters along with the occurrence of butyl butanoate was observed in over mature fruit in comparison with immature and mature ones. PCA analysis of volatile organic compounds separated successfully hawthorn fruit according to the maturity stages. The results showed that mature and over mature fruit were more preferred by panelists. Those fruit had the highest level of esters being responsible for strong fruit flavor, along with low pH and low fruit firmness compared to immature ones.