

Title Effect of pear production system on volatile aroma constituents of fruits
Authors F. Rapparini, E. Gatti, S. Predieri, L. Cavicchi
Citation ISHS Acta Horticulturae 800:1061-1068 . 2008.
Keywords *Pyrus communis*; GC-olfactometry; Abate Fetel; quality; flavor

Abstract

The effects of different production systems on volatile aroma compound production in pear (*Pyrus communis* L.) fruits were studied. A dynamic headspace method and pre-concentration system was used to collect volatiles, which were subsequently analyzed by gas chromatography/mass spectrometry (GC-MS). By using GC-olfactometry (GCO), a preliminary characterization of the volatiles responsible of aroma of 'Abate Fetel' fruits was also carried out. Fruits obtained from three production systems (A, B and C) having different training system, tree density, rootstock, cropping efficiency were analyzed. Esters dominated, both qualitatively and quantitatively, the headspace of this cultivar in all the treatments, comprising more than 90% of the total volatiles. The major esters in the 'Abate Fetel' aroma complex were acetates, represented mainly by butyl acetate (44–50%) and hexyl acetate (27–32%). However, other esters, such as straight-chain butanoates, hexanoates and octanoates were detected even at lower percentages (<5%). From GCO analysis we can suggest that some of the identified compounds could account for the aroma of 'Abate Fetel'. The different production systems affected the aroma profile of 'Abate Fetel' fruits. Despite slight differences in ester qualitative and quantitative composition, quantitative differences were found for alcohol and aldehyde amount, depending on the production system. Pear fruits obtained from production system A had a considerably higher emission rate of these two classes of volatiles compared to C-produced fruits. Among alcohols, differences were mainly observed for the volatile compounds 1-butanol e 1-hexanol. The lower amount of aldehydes in pear fruits obtained by micropropagated self-rooted trees were mainly due to the lower concentration of (E)-2-hexenal. These results suggest that the production system could be important for pear fruit quality in terms of aromatic volatile profile.