Abstract

Traditionally petroleum-based horticultural oils are applied throughout the growing season to apples (*Malus x domestica* Borkh), although plant based oils, like soybean oil, have shown to be just as effective. However, the influence of oil applications on fruit quality and storage behaviour of apples is not well understood. To study the effect of growing season applied soybean oil on volatile aroma regeneration, one single treatment (21 days before harvest) of soybean oil emulsion (1% food grade oil, 0.1% Latron) was administered. At the time of storage a second treatment was applied to either control fruit or soybean treated fruit, consisting of 1-MCP to pre-climacteric 'Golden Delicious' apples. The fruit were then stored for up to 4 months at 0.5°C under 1% O_2 and 0.2% CO_2 controlled atmosphere storage (CA) conditions. After 4 months the fruit were removed from storage and analyzed after holding at room temperature for 0, 3, 7, 11, and 15 days. The volatile production increased 8x for esters, 6x for alcohols, and 1.4x for aldehydes in CA-control, and CA-soy apples. The increase was largely due to both straight- and branched-chain esters most notably in the CA-soy treatment. The almost of volatiles, particularly esters decreased 9x for the treatments CA-1MCP and CA-1MCP-Soy after day 7. However, the levels of 2-methyl butyl acetate were slightly higher in the CA-1MCP-Soy treatment. This result seemed less apparent by day 11. Evidently soybean oil sprays may provide increased aroma volatile substrates, yet the relationship to ethylene-induced change is obvious.