

Recovery of fruits affected by postharvest disorders for the production of crispy air-dried pear rings

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During long-term storage in air (NA) and in controlled atmosphere (CA), Abate Fetel pears can develop physiological disorders, especially superficial scald. Fruit affected by this disorder are unmarketable but could be used to produce dried rings, as this defect affects mainly the fruit peel.

The objective of this research was to evaluate the quality of air-dried pear rings obtained from defected pears.

120 pears were classified in less-, medium- and more-mature, by time resolved reflectance spectroscopy and stored for 6 months at 1°C in NA and in CA (8-14% O₂ + 1% CO₂). At the end of the storage, pears were examined for physiological disorders and defected fruit were processed. Three 4 mm thick rings/fruit were air-dried at 80°C up to a constant weight using a pilot air circulated drier. Moisture content (mc), water activity (aw), mechanical and acoustic properties of dried rings were measured.

About 73% of NA-fruit and 81% of CA-fruit were affected by superficial scald; this disorder was shown by 95% of the less-mature pears and 68% of the more-mature ones.

Dried rings were characterized by an extremely low mc (1-1,2 %) coupled with a very low aw (0,07-0,10). Mc and aw were higher in dried rings produced from CA pears, especially from more-mature ones.

Air-dried rings, submitted to a breaking test, showed low hardness values, while they always produced sounds events, though with varying number and average pressure levels (SPL), indicating a crisp product.

Dried rings showed low hardness (4,4-4,8 N) without differences between atmosphere and maturity, and a gradient range of 3,94-5,67 N/mm, higher in NA and in less-mature rings.

The number of sound events was lower in NA (3,7-5) dried rings but with higher average SPL (74-76,5 dB) than in CA ones (n=6,2-8,7; SPL=69-71,8 dB). Highest sound events were found in more- mature CA dried rings, while highest SPL were observed in less-mature NA ones.

Our research showed that pears affected by superficial scald can be processed to produce a crispy snack, a healthy product with good marketing perspectives and economically advantageous for producers.

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