

# Influence of temperature, 1-MCP, MA and CA on quality and aroma profiles of 'Goldrich' apricots

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## Introduction

Apricots are climacteric fruit characterized by a fast ripening process after harvest. To avoid fruit quality losses during storage, transport and distribution, postharvest techniques are used. In the present work, the influence of temperature (1°C and 8°C), 1-MCP treatment, MA- and CA-storage conditions was evaluated on the quality and aroma profiles of 'Goldrich' apricots.

## Material and methods

'Goldrich' apricots were harvested at commercial maturity and stored at 1°C and 8°C for 16 and 29 days under the following conditions: normal atmosphere (NA), normal atmosphere and 1-MCP [625 ppb] (NA+1-MCP), modified atmosphere (MA) using Xtend® packaging and controlled atmosphere (CA) performed in small containers with 2.5 %O<sub>2</sub>, 2.5 %CO<sub>2</sub> and 92 %r.h.

Firmness, total soluble solids, acidity, skin color and percentage of decay were analyzed as quality parameters and the aroma profiles were measured using an electronic nose (SmartNose®).

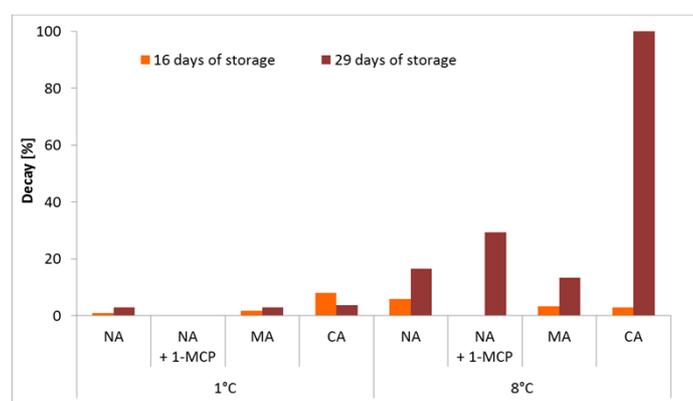
## Results

### Quality parameters

Fruit quality losses were higher at 8°C than at 1°C, in particular regarding acidity, firmness and percentage of decay and especially during long storage period (tab. 1 and fig. 1). When fruit were stored at 1°C, decay was completely inhibited with 1-MCP, while MA and CA better delayed softening.

Storage conditions	Firmness [ID10]		TSS [°Brix]		Acidity [meq/100g]		Skin color [*a]	
	16 days	29 days	16 days	29 days	16 days	29 days	16 days	29 days
Harvest	63.4 a	63.4 a	10.4 cd	10.4 bc	42.2 a	42.2 a	17.9 ab	17.9 bc
1°C NA	49.6 c	38.2 de	11.5 a	11.7 a	37.9 b	37.4 b	18.4 a	19.9 ab
NA + 1-MCP	55.6 b	44.4 cd	11.2 ab	12.0 a	37.5 bc	36.7 b	18.9 a	20.3 a
MA	62.8 a	49.6 bc	10.1 d	10.2 bc	36.5 cd	33.6 c	18.2 a	17.9 bc
CA	nd	52.55 b	10.2 cd	9.9 c	38.6 b	35.9 b	17.7 ab	17.4 cd
8°C NA	nd	32.6 e	10.4 cd	10.7 b	35.8 d	29.7 d	18.6 a	19.9 ab
NA + 1-MCP	61.6 a	38.8 de	10.7 bc	11.8 a	35.7 d	30.3 d	19.4 a	21.6 a
MA	60.7 ab	38.9 de	9.3 e	10.3 bc	35.4 d	30.8 d	16.3 b	15.7 d
CA	nd	nd	10.4 cd	nd	35.8 d	nd	18.4 ab	nd

**Tab 1.** Firmness, total soluble solids (TSS), acidity and skin colour of 'Goldrich' apricots stored under NA- (treated and non treated with 1-MCP), MA- and CA-conditions at 1°C and 8°C for 16 and 29 days respectively.



**Fig 1.** Effect of storage conditions and 1-MCP treatment on percentage of decay (%) after 16 and 29 days of storage.

### Aroma profiles



**Fig 2.** DFA plot based on SmartNose® measurements of 'Goldrich' apricots at harvest and stored under NA- (treated and non treated with 1-MCP), MA and CA-conditions at 1°C and 8°C for 16 days.



**Fig 3.** Internal browning disorder.

SmartNose® measurements allowed to clearly discriminate harvested fruit from stored fruit, indicating an evolution of aroma profiles during storage (fig. 2). Moreover, apricots stored under MA and CA at 8°C were separated from other storage conditions. Interestingly, these fruit were affected by internal browning (fig. 3).

## Conclusions

- Fruit quality of 'Goldrich' apricots was better maintained at 1°C than at 8°C.
- MA, CA and 1-MCP reduced loss of firmness but 1-MCP better prevented fruit decay.
- Aroma profiles of stored apricots were clearly different from aroma measured at harvest.
- CA and MA conditions at 8°C influenced aroma profiles and the incidence of internal browning.