



# Impact of postharvest ethylene treatment on apricots



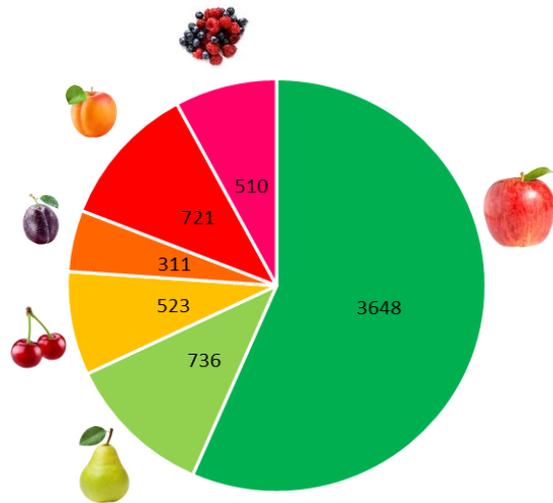
**Séverine Gabioud Rebeaud *et al.***

ISHS Plum Apricot 2024



# Apricot production in Switzerland

- 721 hectares, ~6000 tons / year
- 96 % produced in the region of Valais
- Multi-varietal production from June to August



Lowland production



Hillside production

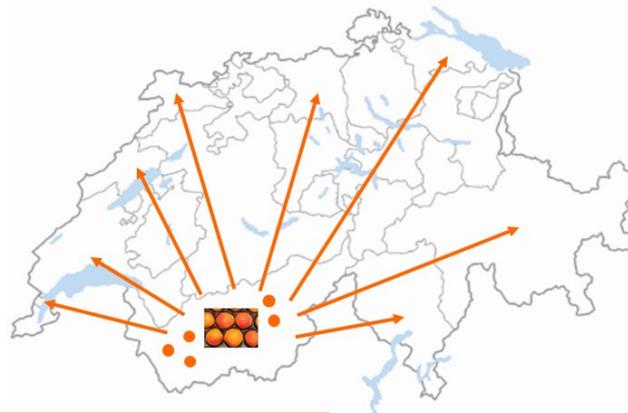


Agroscope Conthey





# Apricots are commercialized locally and throughout the country



## Local markets:

- Harvest at **optimal maturity stage**.
- Short postharvest life, susceptible to mechanical damages and decay.
- Commercialized shortly after harvest.

## Longer market distances:

- Harvest at an **early maturity stage**.
- Longer postharvest life, better resistance to postharvest handlings.
- Commercialized by retailers in the whole country.

➤ Generally, **highly appreciated by consumers** for their sensorial quality (taste, flavour, sweetness).

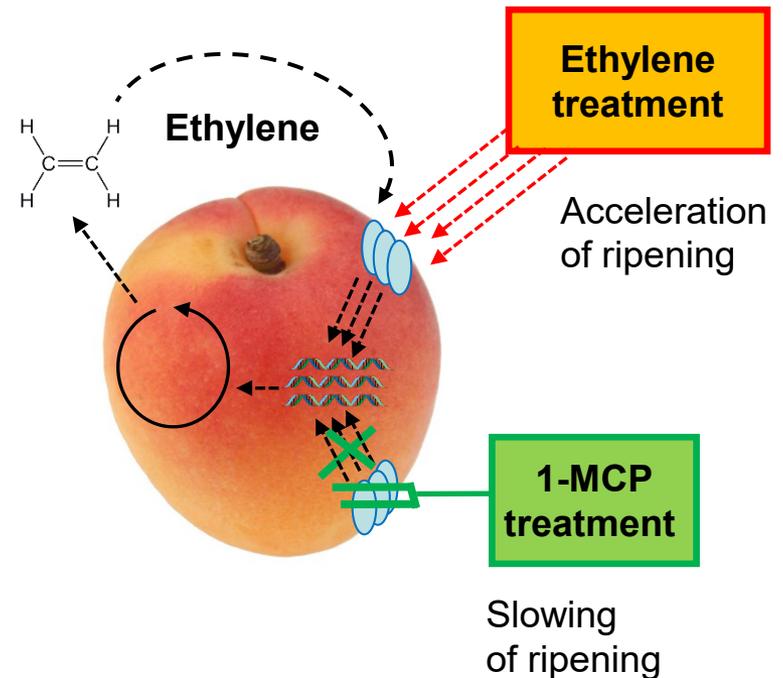
➤ **Quality often does not meet consumers expectation** (too firm, low sweetness, low flavour...).

# **Key questions:** how improving quality at the point of sale without increasing losses along the supply chain?

Can postharvest ethylene management be part of the solution?

- Abricots are climacteric fruits
- Quality evolves after harvest:
  - Firmness loss (softening)
  - Change in background colour (green → orange)
  - Decrease of acidity
  - Development of decay
  - ...

➤ All these changes are accelerated by **ethylene**



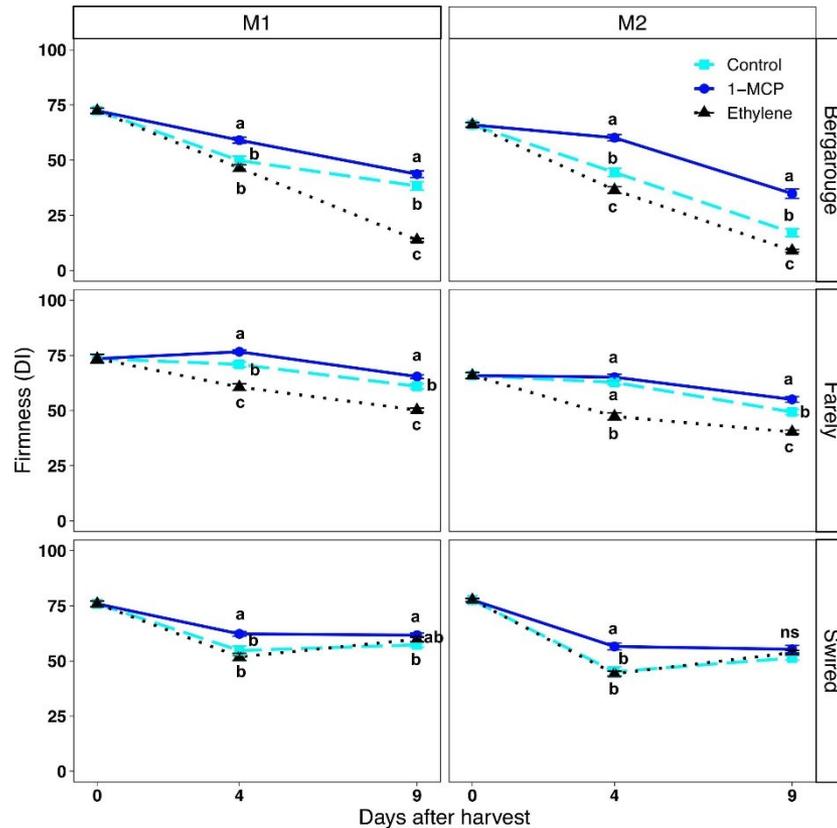


# In a first study, we showed that both ethylene and 1-MCP influence softening of apricots

M1



M2



- Storage at 8 °C for 2 and 7 days + 2 days at 20 °C
- Ethylene accelerated softening
- 1- MCP reduced softening
- Effects were cultivar-dependant



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Cultivar, maturity at harvest and postharvest treatments influence softening of apricots

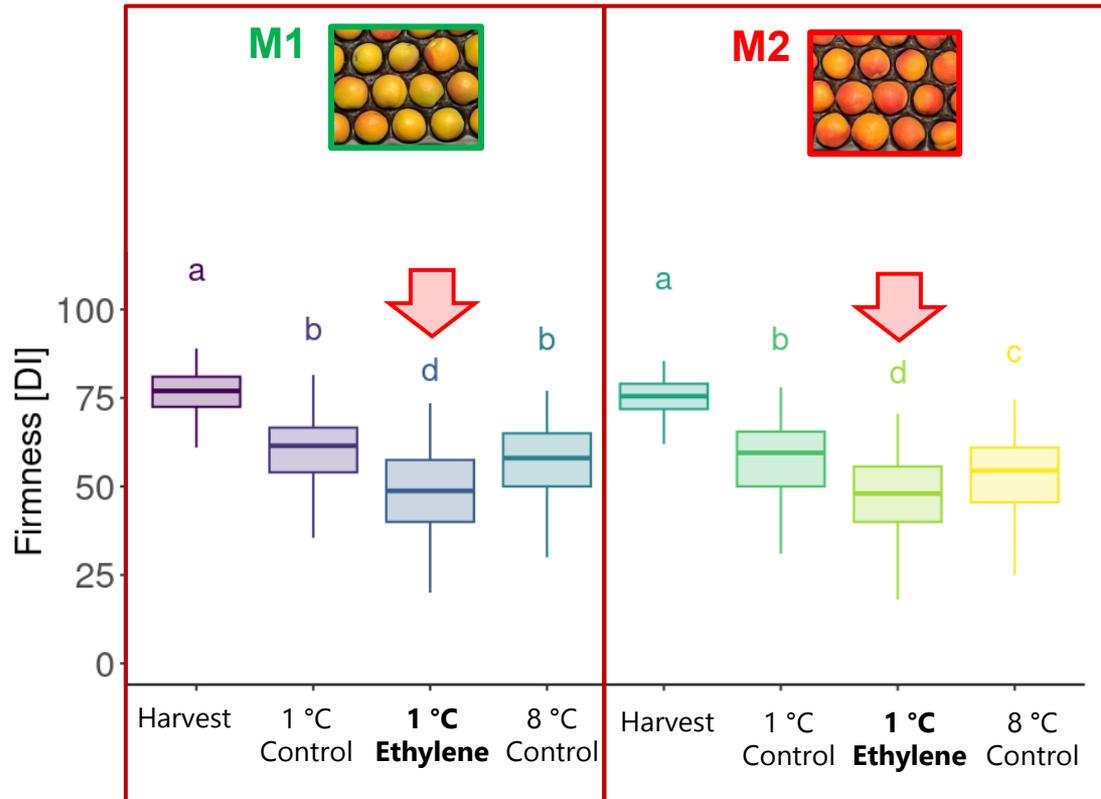
S  verine Gabioud Rebeaud, Laura Cioli, Pierre-Yves Cotter, Danilo Christen

 In the present study, we compared a storage at 1 °C with ethylene treatment to a storage at 8 °C (no ethylene) on 10 cultivars

10 cultivars	2 maturity stages	3 postharvest itineraries	Quality parameters
<ul style="list-style-type: none"><li>• ACW4558</li><li>• Anegat</li><li>• Aprireve</li><li>• Aprisweet</li><li>• Bergarouge</li><li>• Harval</li><li>• Lido</li><li>• Royal de Roussillon</li><li>• Sandicot</li><li>• Swired</li></ul>	<p>Based on DA-Index values</p> <p><b>M1</b></p>  <p>(0.8-1.2)</p> <p><b>M2</b></p>  <p>(&lt;0.8)</p>	<ul style="list-style-type: none"><li>• 7 days at 8 °C + 2 days at 20 °C <b>Control</b></li><li>• 7 days at 1 °C + 2 days at 20 °C <b>Control</b></li><li>• 7 days at 1 °C + 2 days at 20 °C with <b>ethylene treatment</b> (1000 µL L<sup>-1</sup>)</li></ul>	<ul style="list-style-type: none"><li>• Firmness</li><li>• Total soluble solids (TSS)</li><li>• Acidity</li><li>• Colour</li><li>• Weight loss</li><li>• Decay</li></ul>

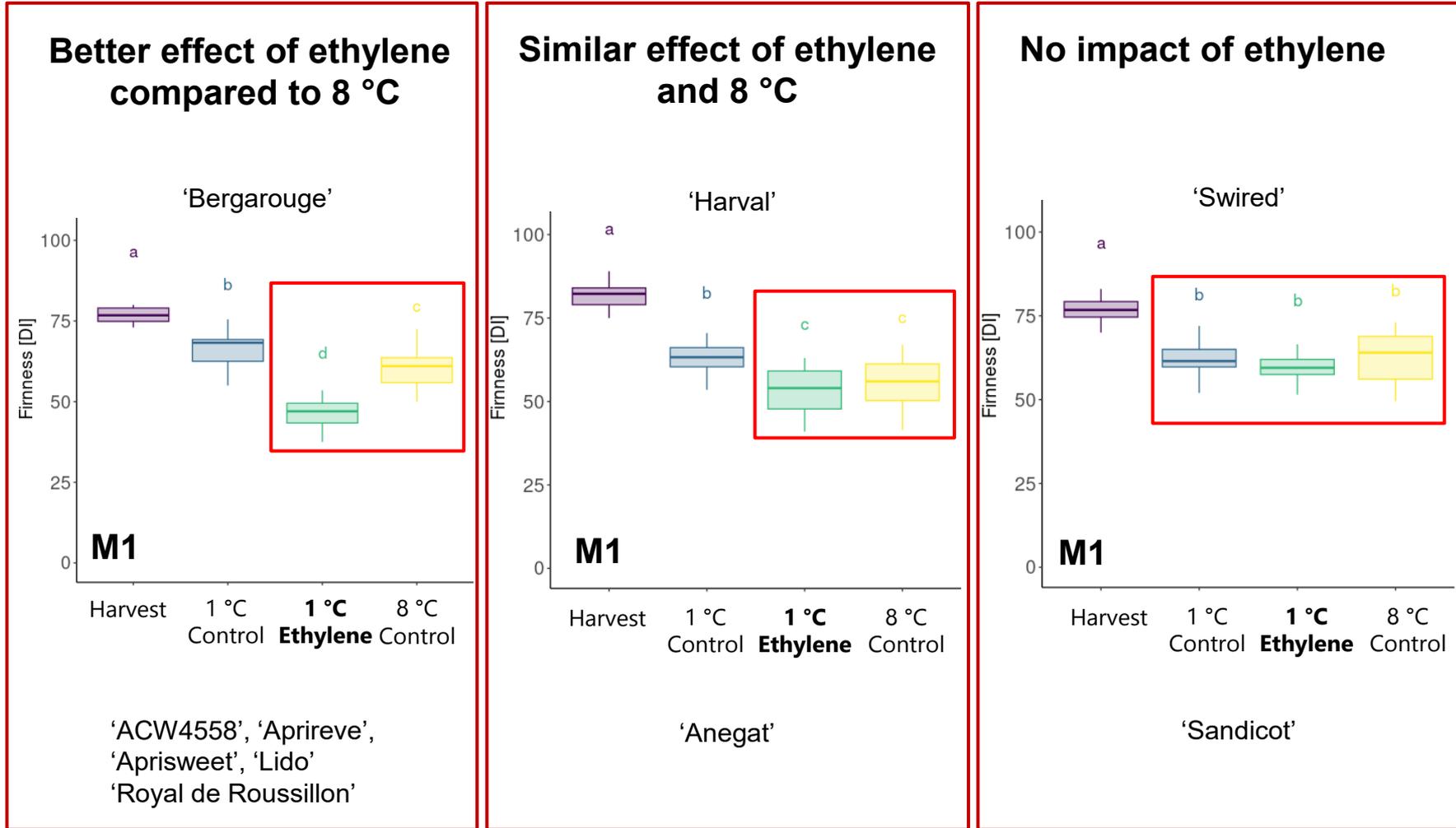


# Ethylene increased apricots softening in both maturity groups (all cultivars pooled here)

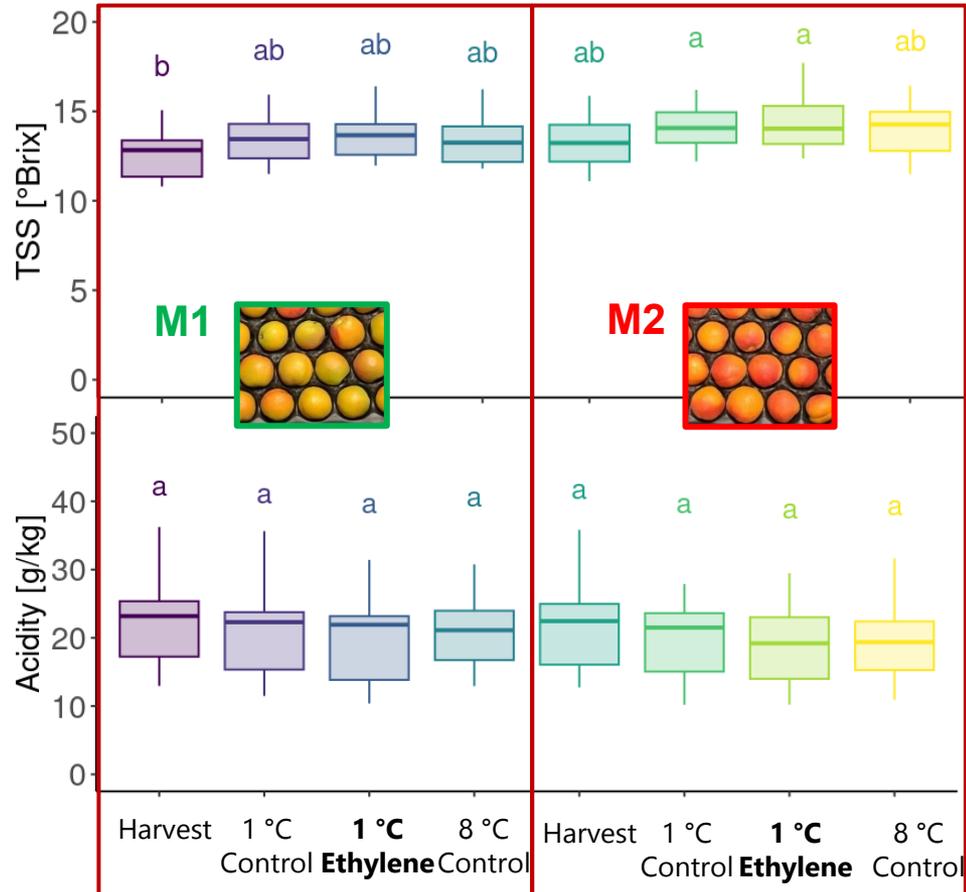




# The effect was indeed cultivar-dependent

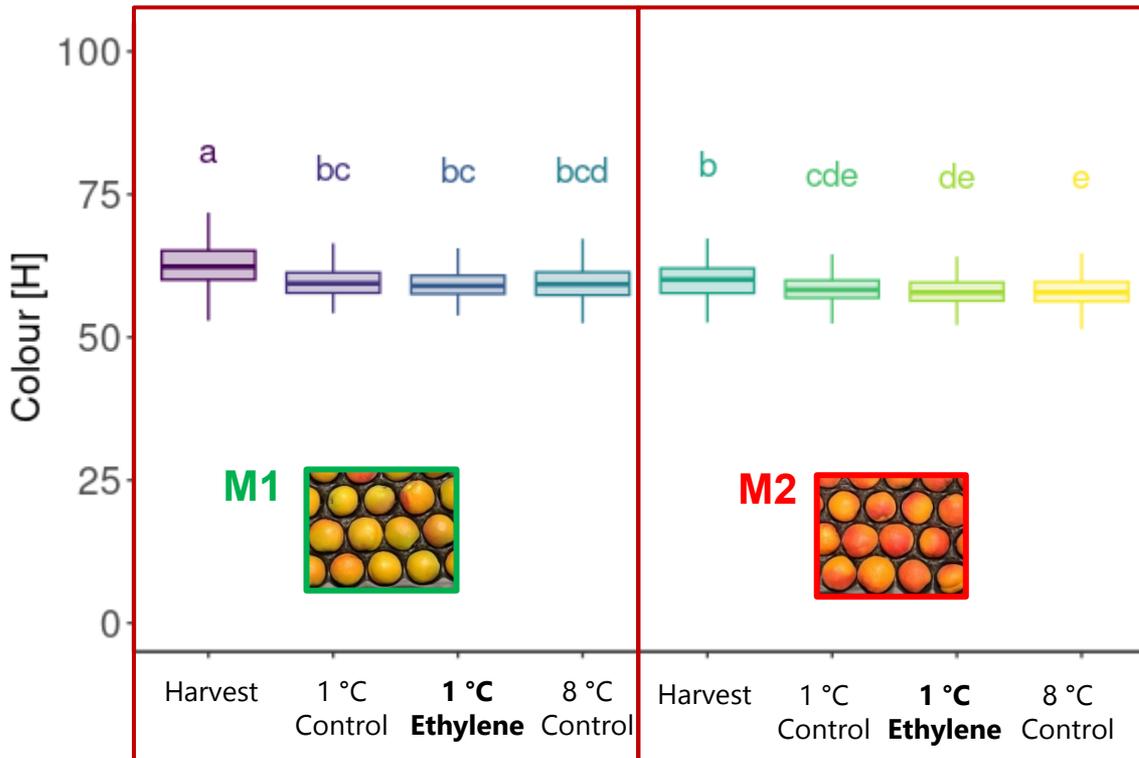


 **TSS and acidity were, on average, not impacted by ethylene treatment nor by storage temperature**

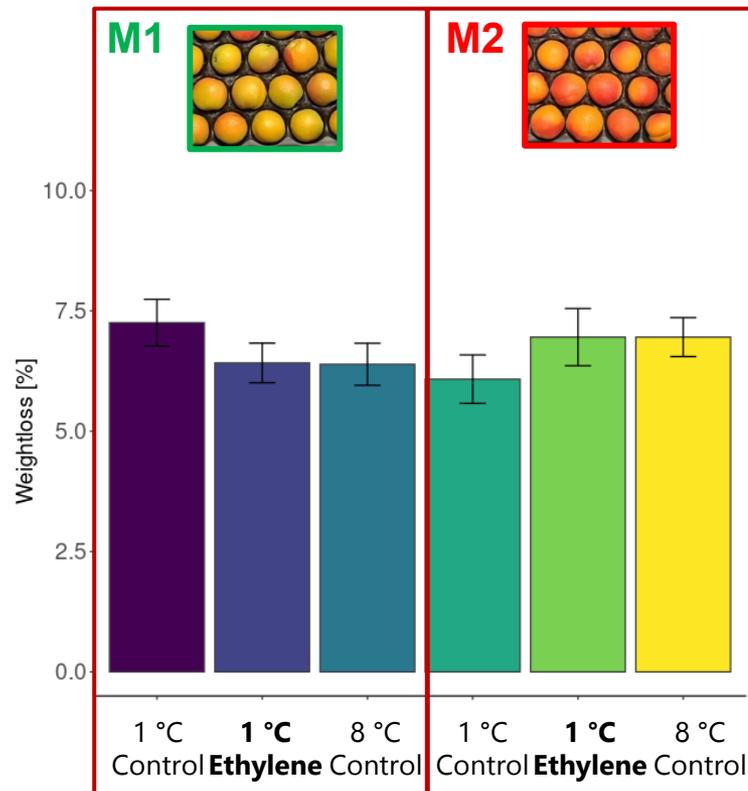


- Both parameters remained relatively stable during storage

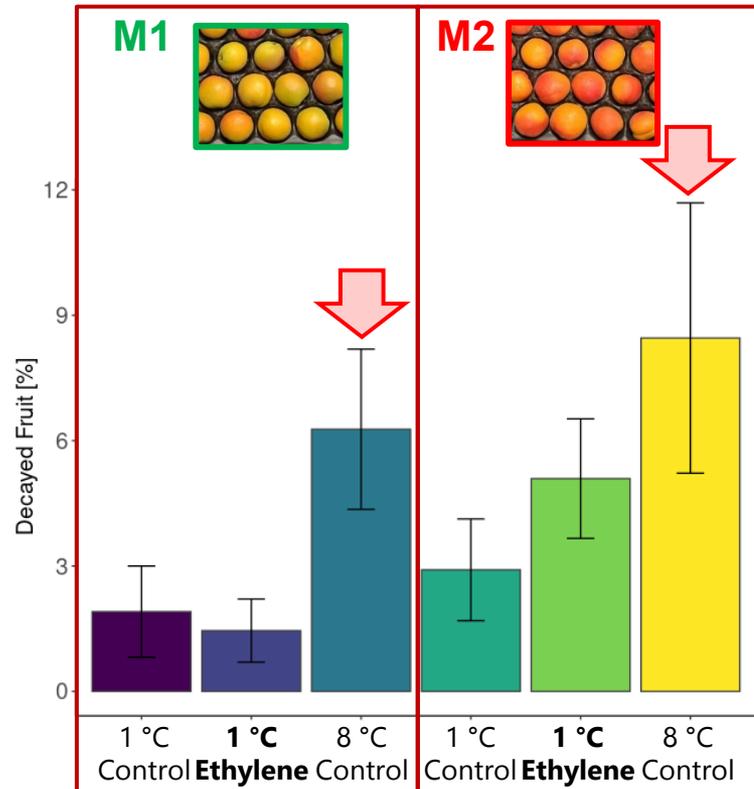
 **Skin colour was influenced by maturity and changed during storage, but was not impacted by an ethylene treatment**



 **Weightloss was, on average, similar for both maturity stages and all tested postharvest conditions**



 A tendentially lower decay incidence was observed on apricots treated with ethylene compared to a storage at 8 °C





# Conclusions

- Ethylene treatment was **effective in enhancing apricots softening** previously stored at 1 °C for one week and **harvested at a pre-commercial maturity stage**.
- Ethylene had **no impact on acidity and total soluble solids**, crucial factors for the sensory quality.
- **Decay** incidence tended to be **higher at 8 °C** than at 1 °C with ethylene.
- Treating apricots with ethylene after a storage at 1 °C could be an **interesting strategy for retailers** to enhance apricot acceptance without increasing losses.
- However, additional tests are necessary so that **cultivar-specific recommendations** can be provided to the packers and retailers.



**Thank you for your attention**

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