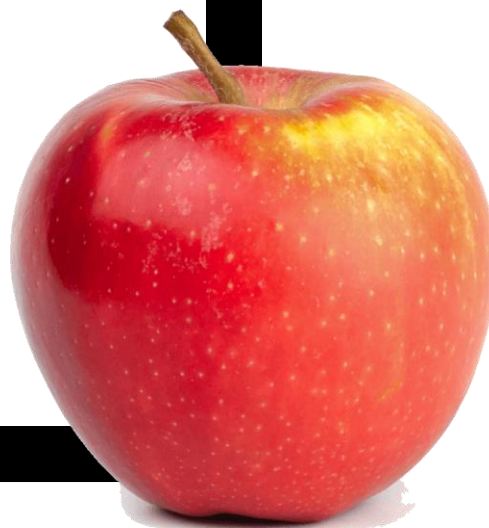


Apple

**Juliet®
(organic)**

2 trials



AIM OF THE STUDY:

WHAT IS THE IMPACT OF THE HDCOLD® TECHNOLOGY ON THE STORAGE QUALITY OF JULIET® APPLES COMPARED TO A STANDARD COLD ROOM WITH CA?

Current practice^{1,2}:

- Recommended maturity at harvest:
 - Starch: 8–10 (CTIFL chart)
 - Flesh firmness: 8.5–9 kg/cm²
- Cold storage (3–4 months):
 - 0.5–1°C
- Storage in controlled atmosphere (up to 8 months):
 - 3% O₂ /1% CO₂
 - 3 weeks after harvest
- Development of a greasy (or waxy) appearance on the skin, as well as browning and internal rot.

HDCold® technology:

- Cold system which maintain natural relative humidity at high levels (>98 %)
 - No addition of liquid water
 - Decrease of water loss, and therefore weight loss of the products
- Low temperature difference between the set point and the refrigerant:
 - Less hydric stress on the products
 - Less to no frost formation

¹ Westeramp P., 2023. Conditions de stockage des différentes variétés de pommes. 3 p.

² Bony P. et Mathieu-Hurtiger V., 2021. Maîtrise du brunissement de l'épiderme en atmosphère contrôlée. Infos CTIFL 374. pp. 40-45.



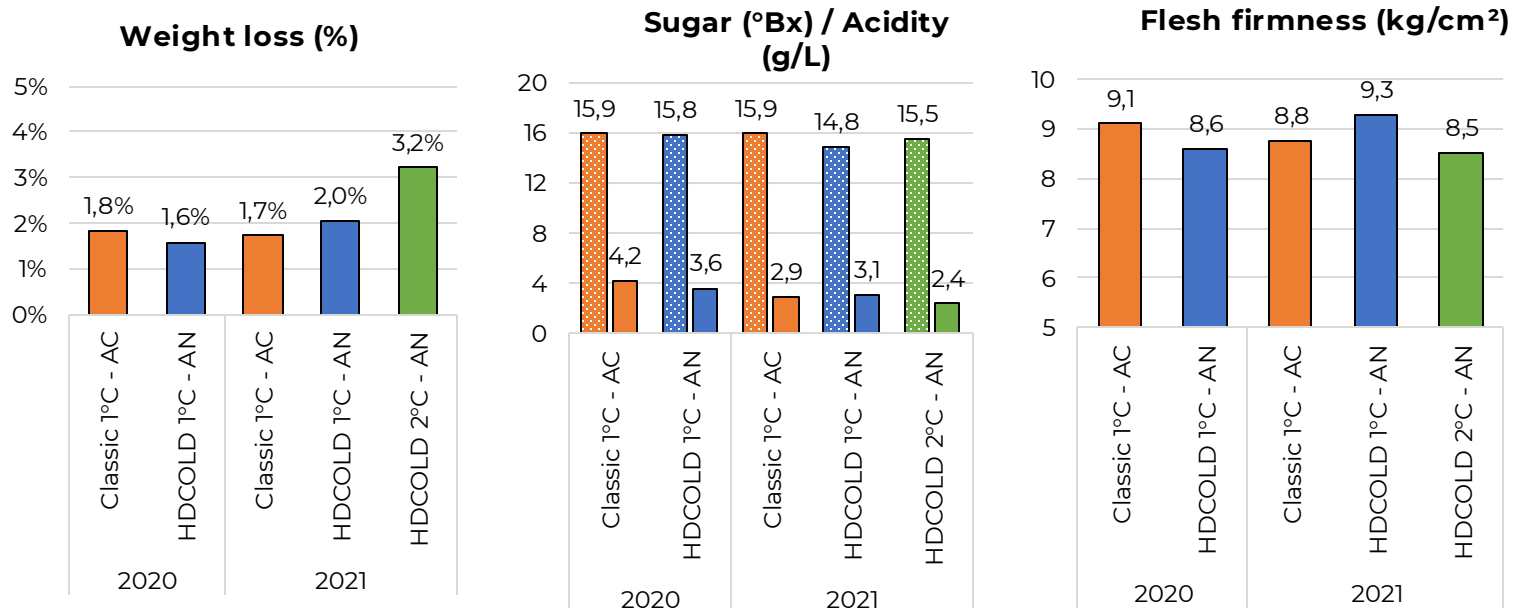
RESULTS

2019 season: Harvested in October (starch = 8.1), South-East France, 5 months' storage

2020 season: Harvested in October (starch = 7.9), South-East France, 5 months' storage

Standard cold + CA (1°C + 2% O₂ / 1.2% CO₂) **NA HDCold®** (1°C, 98% RH)

NA HDCold® (2°C, 98% RH)



After 5 months of storage	# on 30 apples			
	External defects (Sunscald, bitter pit, Gloeosporiosis...)		Internal defects (Mould...)	
	2020	2021	2020	2021
Standard 1°C + AC	1	3	3	7
HDCold 1°C + AN	1	0	2	11
HDCold 2°C + AN		8		13

CONCLUSIONS

Three types of storage were tested two years in a row:

- Normal atmosphere (NA) in HDCold® refrigeration at 1°C and 2°C
- Controlled atmosphere (CA) in a standard cold room at 1°C

After 5 months, the results are as follows:

- At 1°C, equivalent quality criteria between NA HDCold® and CA standard storage (weight loss, firmness, external and internal defects).
- At 2°C, in NA, occurrence of bitter pit, browning of the skin and greater weight loss were noted.
- In all cases, significant internal disorders were accounted



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