

Turnip

Vauban

2024



AIM OF THE STUDY:

WHAT IS THE IMPACT OF HDCOLD® TECHNOLOGY ON THE STORAGE QUALITY OF TURNIPS COMPARED TO A STANDARD COLD ROOM?

Current practice^{1,2,3,4}:

- Recommended storage at 0–1°C with 95–98% relative humidity (RH)
- Storage from 4 to 6 months
- Best practices:
 - Remove the greens to slow down softening
 - Avoid storing with products that release ethylene, such as apples
 - Use adequate ventilation to prevent condensation and mold

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



¹Hadad, « Cold Storage Chart & Reference Guide »

²University of Saskatchewan, « Cold Storage of Root Crops, Cole Crops, Winter Squash, Onions and Garlic - Gardening at USask - College of Agriculture and Bioresources »

³University of Georgia, « Storage of Fresh Produce »

⁴McCandless, « Storing and Preserving Vegetables ».

RESULTS

Harvest:

- 30th nov. 2024 (machine-harvested, with leaves and roots intact)

- 2nd dec. 2024 (hand-harvested, leaves and roots removed)

Packaging: nets inside wooden crates.

Setpoints: 0.5°C / 98% RH

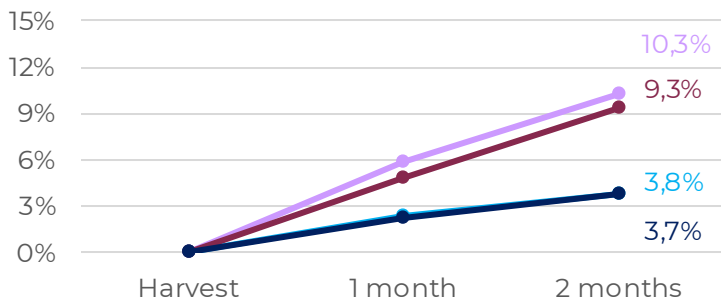
Classical cold room with foliage and roots

HDCold® storage with foliage and roots

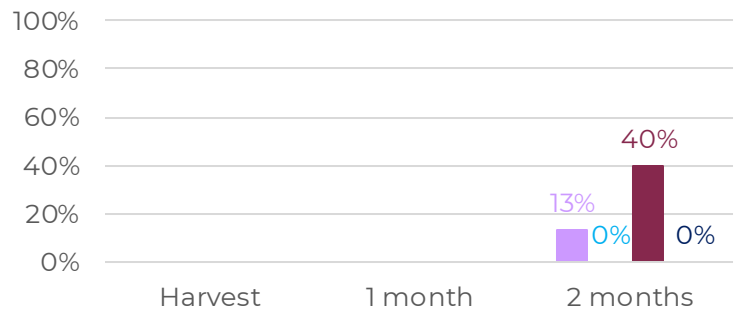
Classical cold room without foliage and roots

HDCold® storage without foliage and roots

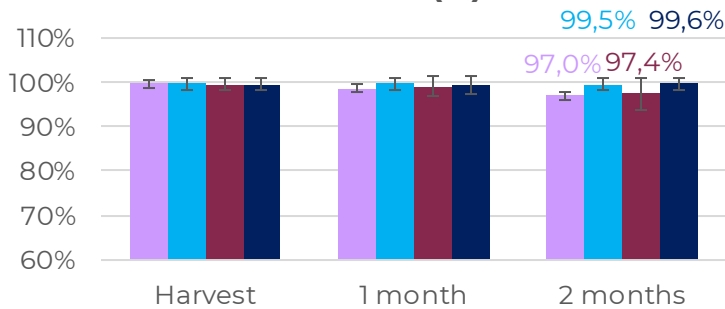
Net weight loss (%)



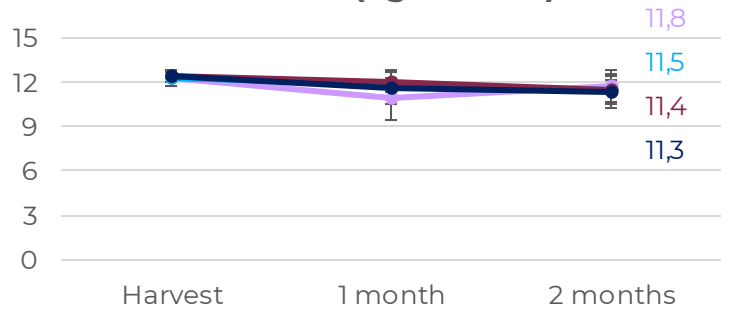
Wilting (%)



Hardness (%)



Firmness (kg/0.5 cm²)



CONCLUSIONS

- According to the results of this trial, **HDCold® technology** on Vauban turnips:
 - **Reduces weight loss** by a factor of 2.5;
 - **Maintains better firmness;**
 - **Inhibits wilting** for at least 2 months in cold storage.
- Storage disorders, color defects, and firmness are equivalent between both types of cooling.
- Most effective packaging: leaves and roots trimmed at harvest.

