

White garlic

3 trials



AIM OF THE STUDY:

WHAT IS THE IMPACT OF THE HDCOLD[®] TECHNOLOGY ON STORAGE QUALITY OF WHITE GARLIC?

Current practice^{1,2}:

- Drying stage of garlic before storage (required: minimum 25% weight loss)
- Recommended storage: -1°C (in practice, more like -3°C/-1°C)
- Recommended humidity: 70%
Fungal growth in the presence of liquid water, and ice formation
- Storage for 6 to 7 months in a cold room

- Main disorders:
Fusarium, Waxy breakdown,
Penicillium

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 Fuscien A.-L., 2019. *Produire de l'ail en Occitanie. Chambre d'Agriculture Occitanie*, 38 p.

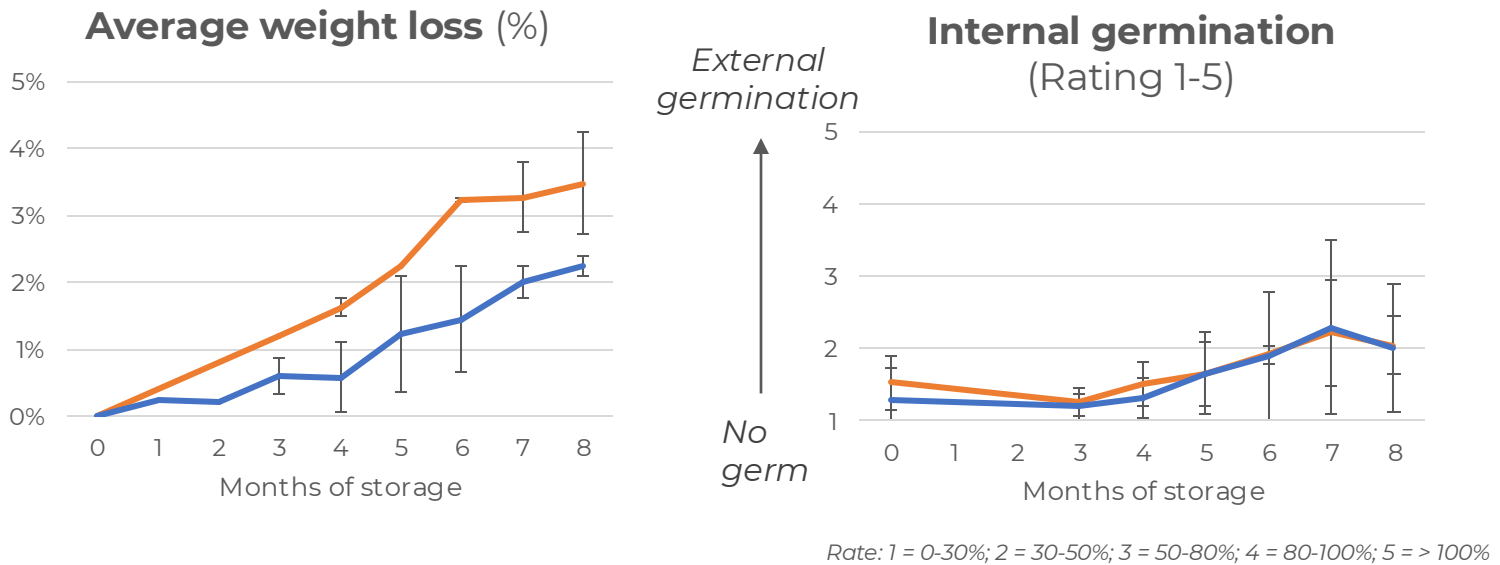
² Cantwell M., 2000. *Product Fact Sheet Garlic (accessed in 2020)*
<https://postharvest.ucdavis.edu/produce-facts-sheets/garlic>



RESULTS

Averages from trials conducted in 2020 (1 batch) and 2021 (2 batches)

Classic cold storage (-2.5°C; unregulated RH) **HDCold cold storage®** (-2.5°C; 98% RH)



Main disorders encountered



Fusarium
Bulb desiccation



Shock



Waxy breakdown
Waxy with strong odor

CONCLUSIONS

The HDCold technology® has made it possible to:

- Reduce bulbs weight loss during storage
- No significant effect on the internal germination or cloves' sanitary quality

It should be noted that all batches suffered from a high incidence of *fusarium* disease, present from the start of storage, in both storage conditions. The CTIFL, the french reference in applied research for the fruit and vegetable sector, is attempting to study this disorder in greater details, as well as waxy breakdown and bruising, which are increasingly common during storage^{3,4}.

³ Fournier et al, 2021. Un pathogène de l'ail à double face mal connu. CTIFL Info 375, 12 pp.

⁴ Pellat and Annibal, 2025. Ail et itinéraires post-récolte, quel rôle dans l'apparition du waxybreakdown et de la fusariose. Infos CTIFL 404, 5 pp..



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