

CRYOPRESERVATION WG REPORT (2024–2025)

In preparation for the 18th Steering Committee Meeting, Tbilisi, Georgia, 2-4 June 2026

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1. CONTRIBUTION TO ECPGR OBJECTIVES

1.1. Achievements and success stories

- To efficiently conserve and provide access to unique germplasm in Europe through AEGIS and the European Collection
During Phase XI (2024–2025), the Working Group supported the development and deployment of cryopreservation as a long-term safety back-up for vegetatively propagated and recalcitrant-seeded crops. Key outcomes include capacity building through hands-on training schools (dormant bud cryopreservation for woody fruit species; garlic cryopreservation) and the implementation of cryo-related actions within the Garli-CCS Activity, aimed at prioritizing and securing European garlic diversity for long-term conservation.
- To provide passport and phenotypic information of actively conserved European PGRFA diversity *ex situ* and *in situ* through the EURISCO catalogue
Cryopreservation-related activities contributed to improving the availability of standardized information and data flows by collaborating with the Documentation & Information WG in the Garli-CCS Activity. GBS data for 2,434 garlic accessions and phenotypic data for 1,731 accessions have been generated/compiled by partners and will support transparent documentation, prioritization and future access to a European garlic core collection and conservation strategy.
- To improve *in situ* conservation and use of crop wild relatives
Cryopreservation provides a complementary *ex situ* option for crop wild relatives and wild forms that are difficult to conserve as seed (recalcitrant seeds) or require clonal conservation. The WG promotes exchange of expertise and protocol development that can be transferred to CWR-relevant collections and encourages coordination with crop and CWR stakeholders to identify priority taxa requiring cryo back-up.
- To promote on-farm conservation and management of European PGRFA diversity
By safeguarding clonal germplasm and local varieties that are otherwise maintained in field collections, cryopreservation indirectly supports on-farm and community-based conservation through improved safety duplication. The CryoConnect initiative targets local fruit tree and grape accessions in the Western Balkans and the Caucasus, helping secure regionally important diversity that is often linked to traditional farming systems.
- To promote use of PGRFA
The WG promotes use of PGRFA by increasing the availability of healthy, genetically stable and well-documented plant material for research and breeding. Within Garli-CCS, genotyping and phenotyping outputs will facilitate the identification of unique and

valuable garlic genotypes for breeders/producers, while cryopreservation enables their long-term, cost-effective preservation and distribution planning.

1.2. Gaps or constraints identified

- Limited long-term funding and dedicated staff time for routine cryopreservation in many national programmes.
- Uneven infrastructure and capacity across countries (LN2 facilities, clean *in vitro* starting material, trained personnel).
- Need for validated, crop-/genotype-specific protocols and harmonized SOPs, including recovery and health status assessment.
- Logistical and regulatory constraints for cross-border exchange of plant material and for establishing regional safety duplication.
- Need to better integrate cryopreservation status and priorities with documentation systems and with crop Working Groups to ensure uptake.

2. GRANT SCHEME ACTIVITIES, WG MEETINGS AND EVA ACTIVITIES

- **Grant Scheme proposals (including ongoing from Phase X: submitted: 2; approved: 2)**
 - [GARLI-CCS](#) (Genotyping-by-sequencing of the European garlic collection to develop a sustainable ex situ conservation strategy), in collaboration with *Allium* and Documentation & Information WGs
 - [CryoConnect](#) (A Regional Initiative for a Cross-Border Cryobank in the Western Balkans and the Caucasus)
- **Total number of partners involved in Grant Scheme: 27 from 21 countries**
 - ECPGR-funded: 20 from 19 countries
 - Self-funded: 7 from 5 countries
- **Meetings held**

Garli-CCS

- Garli-CCS Final meeting, 20-22 May 2025, IPK Gatersleben, Germany, in conjunction with the ECPGR *Allium* Working Group meeting
- Garli-CCS-Cryopreservation workshop was held on 17-20 September 2024 in Prague, Czech Republic
- Second virtual Garli-CCS meeting, 22 September 2023
- First virtual Garli-CCS meeting, 10 March 2023

CryoConnect

- CryoConnect Training School on Fruit Germplasm Cryopreservation In Vitro, Čačak, Serbia, August/September 2025
- Kick-off meeting, Tirana, Albania, 25 June 2025

- **Reports and related data**
 - [Garli-CCS final report](#)

- [Report of a Working Group on Cryopreservation, First Meeting](#)

Funds mobilized

- **ECPGR granted funds:** €49,974 (CryoConnect: €29,975; Garli-CCS: €19,999 (one-third of the total grant €59,997))
- **Inputs in-kind declared in Grant activities:** €31,207 (CryoConnect: €5,000; Garli-CCS €26,207 (one-third of the total in-kind contribution for Garli-CCS, i.e. €78,620))

3. OTHER ACTIVITIES (CROSS-WORKING GROUP ACTIVITIES, LINKS WITH OTHER NETWORKS, PROJECTS AND INITIATIVES)

- Garli-CCS (with *Allium* and Documentation & Information WGs): joint development of a conservation strategy for European garlic, including cryopreservation-related training and coordination on data generation/management.
- CryoConnect: establishment of a cross-border cryobank concept in the Western Balkans and the Caucasus and delivery of practical training on fruit germplasm cryopreservation; continued networking with participating institutions and the ECPGR Secretariat.
- Organization of the EU COST action “copytree” workshop on cryopreservation (see <https://www.facebook.com/100087999720594/posts/the-4th-copytree-training-school-on-tree-cryopreservation-concludes-with-great-s/644095801867072/>)
- Presentation at the online symposium "Conserving Exceptional Plants: Cryobiotechnologies, Status, and Scale" 8-10 April, 2025 (see <https://cgspace.cgiar.org/items/ebc9e491-8306-46c5-b42e-28a03682cb6e>)
- Collaboration with FAO for the manual “Practical guide for the application of the Genebank Standards for Plant Genetic Resources for Food and Agriculture: Conservation through cryopreservation see <https://cgspace.cgiar.org/items/60764760-eb3a-4225-84e8-314c648f58da>

4. WORKING GROUP DOCUMENTS AND PUBLICATIONS

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- Ma, X. Y., Blystad, D. R., Wang, Q. C., & Hamborg, Z. (2025). Cryopreservation of *Rubus* viruses in raspberry shoot tips via droplet-vitrification: assessment of viral preservation, localization, and post-thaw transmission capacity. *Plant Methods*, 21(1), 137.
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5. EXPECTED ADDITIONAL ACHIEVEMENTS AND FUTURE ACTIVITIES

- Implement CryoConnect workplan (2025–2028): kick-off follow-up actions, regional cryobank collaboration and additional training events.
- Advance the concept of a Network of European Centres for dormant bud cryopreservation of fruit species and agree on common procedures.
- Continue outreach to crop Working Groups and the Genebank Managers Network to identify priority collections for cryo safety duplication.
- Promote new Grant Scheme proposals focused on protocol development/optimization for priority crops and on harmonized best practices, including documentation of cryo status and minimum quality standards.