COLiBRI Co-Creation Workshop on Leafy Vegetables: Summary Report

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Contents

COLiBRI Co-Creation Workshop on Leafy Vegetables: Summary Report 1
1. Summary 3
2. About the workshop and the data 3
3. Exercise 1: Priorities and innovation needs 4
4. Exercise 2: Funding and opportunities 5
5. Exercise 3: Roadmap proposals and votes 6
6. What the results suggest 8
7. Next steps 9
Appendix A: Roadmap proposals as submitted 10

1. Summary

At the joint meeting of the ECPGR Leafy Vegetables Working Group and the EVA Lettuce Network in Skierniewice, Poland, 7-8 October 2026, a 2-hour interactive workshop introduced the COLiBRI project and invited 20 participants from the genebank, research and breeding communities to act as stakeholders in a co-creation exercise for leafy vegetables. Four groups worked through three exercises: priorities and innovation needs, funding and opportunity mapping, and roadmap input cards. Participants then cast 96 votes on the proposed roadmap activities.

Main findings

- **Making collections more usable is the dominant theme.** The three most-voted themes (characterization and evaluation, access and a coordinated European system, and funding for conservation) concern information, availability and sustained support for existing collections, more than new breeding targets.
- **Characterization and evaluation (C&E) ranked first.** The proposal to close knowledge gaps on leafy vegetable collections through C&E of traits important to breeders, via a consortium of all actors (e.g. through Nordic PPP and EVA networks), received 18 votes, the most of any single proposal. Together with the two related stress-resilience evaluation proposals, the C&E theme draws 27 of 96 votes.
- **Five themes account for 81% of the votes (78 of 96):** C&E (18), access to PGR diversity and a European coordination system (17, two proposals combined), funding for conservation (16), technology and data access (14, two proposals combined) and new leafy vegetable crops (13). These five are closely spaced, followed by a clear drop to 9 votes and below.
- **Funding is seen as concentrated on national conservation and regeneration.** Participants reported little EU funding specific to leafy vegetables, mostly in-kind private contributions, and limited access to project results. Nordic instruments were cited as examples supporting C&E and pre-breeding.
- Research and infrastructure priority ideas converged on **stress tolerance, nutritional value, shelf life, regeneration and documentation gaps** (C&E, passport and searchable data).
- **Genebanks** were named as needing to be involved in 10 of 11 proposals, but **breeders** in only 5 and **public authorities** in 4**.** Delivering the proposed actions will depend on engaging beyond the genebank community.

2. About the workshop and the data

COLiBRI is a Horizon Europe Coordination and Support Action (June 2026–November 2028) that aims to strengthen European plant breeding research and innovation by engaging stakeholders, analyzing priorities, infrastructure and funding, and building a European collaboration network alongside a roadmap and implementation plan. The workshop, conducted during an in-person meeting of the ECPGR Leafy Vegetables Working Group and

EVA Lettuce Network gave the leafy vegetables community a first opportunity to feed crop-specific input into that process.

How the session worked. After an introduction to COLiBRI, participants worked in four groups on printed worksheets. Exercise 1 collected priorities and innovation needs, Exercise 2 mapped funding at national, European and private level, and in Exercise 3 each group formulated roadmap proposals (problem, proposed action, who needs to be involved, timeframe) which participants then voted on.

Points to keep in mind when reading the results

- Results were transcribed from handwritten worksheets. Some entries could not be read, so not every field is filled for these. Group 4's Exercise 2 sheet was only partly filled.
- Spelling was corrected; wording is otherwise as recorded. Entries that look misplaced or unclear are flagged in the text.
- 96 votes were recorded across 11 proposals; each participant had five votes. Where similar proposals are combined, the totals add up votes, not voters. All original roadmap proposals are listed in Appendix A.
- The worksheets used the general prompts (traits, technology, access, value chain) and had no dedicated fields on breeders' practical access to collections, the quality and usefulness of material and data, or shared infrastructure. Points on these topics appear in the results but arose spontaneously.

3. Exercise 1: Priorities and innovation needs

Three groups recorded 63 ideas (Group 1: 9, Group 2: 22, Group 3: 21, Group 4: 11). Table 1 separates themes raised independently by two or more tables from those raised by one.

Table 1. Summary of priority and innovation ideas recorded by workshop participants.

Area	Raised by two or more groups	Raised by one group
Breeding targets & traits	Biotic and abiotic stress tolerance, including heat and water stress and emerging pests and pathogens (Groups 1, 2, 3, 4); shelf life and post-harvest quality (Groups 2, 3); nutritional value and biofortification (Groups 2, 3)	Yield (3); harvestability (2); adaptation of landraces to regions and seasons (1); anthocyanin/leaf colour (4)
Technology & tools	Phenotyping, automatic and high-throughput (Groups 2, 3); genotyping, sequencing, molecular markers and new breeding techniques (Groups 2, 3); growing infrastructure such as greenhouses, growth chambers and vertical farming (Groups 1, 2, 3)	AI (3); farming systems and packaging (2); climate change effects on growing seasons and production facilities (3); isolation chambers for controlled crosses (4).

Area	Raised by two or more groups	Raised by one group
Genetic resources access	Regeneration and storage (Groups 1, 2, 3); documentation and data on accessions: C&E data, searchability, missing passport data (Groups 1, 2, 3, 4); CWR and landrace collection and back-up system (1,4);	Legal perspective on access to diversity and availability from *ex situ* collections (2); lack of a European central system, germplasm fragmentation and duplicated accessions (3); involving breeders to learn their interests (1); PGR open day (2);
Value chain & market	New leafy vegetable crops and products, with local, direct and niche marketing (Groups 1, 2, 3); retailer, processor and consumer needs, including long shelf life versus flavour (Groups 2, 3); plant-based nutrition as a market proposition (Groups 1, 2, 3)	Promotion and communication of product quality and history (2); different needs of local markets and supermarkets (3); short value chain (4)

Stress resilience, nutrition, shelf life and regeneration were the most consistently raised topics. The genetic resources column focused largely on the practical conditions for use: documentation (C&E, passport and searchable data), fragmentation and duplication of accessions, and regeneration. These determine whether a breeder can find, identify and obtain viable material. Two entries refer to breeders directly: involving breeders to learn their interests (Group 1) and regenerating with breeders while including C&E (Group 1). On the market side, the tension between long shelf life and flavour, and the differing needs of local markets and supermarkets, suggest that breeding goals depend on the market segment.

4. Exercise 2: Funding and opportunities

Table 2 synthesizes what the four groups recorded for each level.

Table 2: Summary of current funding landscape and opportunities recorded by workshop participants.

Level	Reported as supported	Reported gaps or difficulties	Named examples (as recorded)
National	Conservation and regeneration through national budgets: dedicated PGR funds from ministries (IT, GR, TR, PL); ministry of agriculture funding and a statutory research task (NL); tax credit (FR)	Support is partial, especially for regeneration; more funds needed for C&E; not sufficient in some countries (SI named); limited because of competing priorities; low access to project results	Swedish Board of Agriculture; Plantefonden (DK); Agri-gen-Re (GR); RGV-FAO (IT); TaGEM (TR)

Level	Reported as supported	Reported gaps or difficulties	Named examples (as recorded)
European	C&E and cryoconservation; Horizon and German-funded projects; CAP 2024–2027; AEGIS Plus and New AEGIS projects	Funding lacking for leafy vegetables; seen as less important in the EU context; low level of cooperation	Nordic Council of Ministers and NordForsk (funding only for Nordic and Baltic countries); Horizon projects Ecobreed; BRESOV; Liveseeding;
Private sector	In-kind contributions to regeneration (UK, FR, NL); collaboration with Elsom (UK)	Lack of funds, resources and time; in most countries there are no companies to drive collaboration, although there is space for it	Novo Nordisk Foundation; Elsom (UK)
Partnerships	Pre-breeding partnership; genebank-to-genebank partnership; including all stakeholders rated high priority	None recorded	Nordic PPP for pre-breeding; Liveseeding; ECPGR WG; EVA Lettuce network
Other	None recorded	The FAO international benefit-sharing fund described as not working well; involving citizens raised and described as complicated	International benefit-sharing fund (FAO); Liveseeding

Public funding was described as strongest for conservation and regeneration. C&E and pre-breeding currently rely on fewer instruments, notably Nordic ones, with the Nordic PPP, NordForsk and the Nordic Council of Ministers cited as good examples of how to effectively fund projects carried out by broad consortia of public and private partners. More funds for C&E were identified as a need, especially for leafy vegetables. The EU funding that was named is project-based and not specific to leafy vegetables, and one table noted that leafy vegetables are seen as less important in the EU context. Private contributions listed were largely in kind (mainly regeneration), and no actor was identified to drive collaboration. This is consistent with the consortium proposal that gathered the most votes in Exercise 3. Low access to project results (Group 4) points to a related visibility problem, alongside the information gaps on collections raised in Exercise 1.

5. Exercise 3: Roadmap proposals and votes

The four groups proposed 11 activities (Group 1: 1, Group 2: 4, Group 3: 3, Group 4: 3), which received 96 votes in total. Because several proposals overlap, Table 3 below groups close matches into eight themes. Original proposals and their individual votes are in Appendix A (numbers in brackets refer to that list).

Table 3: Ranked priority actions proposed for a European plant-breeding roadmap.

Rank	Theme	Proposed action	Who needs to be involved	Timeframe	Votes
1	Characterization, evaluation and information on leafy vegetable collections	Create a consortium with all actors (Nordic PPP and EVA) and apply for EU and other funds	Genebanks, breeders, scientists	Medium/long	18 (#2)
2	Access to PGR diversity and a coordinated European germplasm and network system	Better quality management and international cooperation; political discussion among countries	Genebank managers, ECPGR, Crop Trust, FAO, national competent authorities, all countries and ministries	Short/medium (#8); long (#9)	17 (#8: 10, #9: 7)
3	Funding for PGR conservation	Lobbying at EU and national level	Genebanks, breeders, competent authorities, ministries, ECPGR	Short	16 (#1)
4	Access to technology, data and bioinformatics	Build partnerships to share access to technology and infrastructure; participate in EU projects	Researchers, genebanks, private companies, universities, research institutes, infrastructures	Medium (#5); short to long (#6)	14 (#5: 12, #6: 2)
5	New leafy vegetable crops for plant-based nutrition and local marketing (e.g. *Atriplex*, *Chenopodium*, *Blitum*)	Survey genebank collections, fill gaps by collecting, evaluate agronomic and nutritional traits in multiple environments	Genebanks, producers with direct marketing, consumer associations, chefs	Long	13 (#4)
6	Biotic and abiotic stress resilience	Evaluate PGR using new technologies (phenotyping, genotyping); participate in EU projects	Genebanks, research institutes, breeding companies, breeders, infrastructures, national institutions	Medium to long	9 (#11: 8, #10: 1)
7	Crop wild relatives	Collecting, *ex situ* backups in genebanks, genotyping and phenotyping	Ministries, genebanks, research institutes	Medium/long	7 (#7)
8	Involving value chain actors in breeding	Cooperation of stakeholders, participatory breeding, wide range of partnerships and funding options	Genebank, breeders, farmers, researchers, consumers, the whole value chain	Medium	2 (#3)

How similar proposals were grouped. Only close overlaps were combined: access to PGR diversity (#8) with the lack of a central germplasm and network system (#9); technology and data access (#5) with bioinformatics tools and European data servers (#6); and the two stress-resilience proposals (#10, #11). Two related pairs were kept apart. C&E of collections (#2) is thematically linked to stress-resilience evaluation, but its action (a consortium and joint funding) differs; if a reader prefers to combine them, the C&E theme totals 27 votes. New crops (#4) and crop wild relatives (#7) both involve collecting but have different rationales. These groupings are a proposal and can be adjusted with participants.

Observations

- The top five themes are closely spaced (13–18 votes) ahead of a clear drop to 9 votes and below.
- Timeframes suggest a possible sequence: conservation funding is the only proposal rated short-term alone, likely reflecting relative urgency; access, coordination and technology partnerships mix short and medium term; new crops, crop wild relatives and system-level coordination are long term goals.
- Genebanks are named in 10 of 11 proposals, research institutes or scientists in 7, breeders or breeding companies in 5, ministries or competent authorities in 4, and farmers, consumers, producers or chefs in 2. This likely reflects the composition of the workshop participants, which primarily included ECPGR Working group members and genebank staff.
- Value chain topics appeared in Exercise 1 in all groups, yet only the new-crops proposal attracted many votes, and participatory breeding received 2. Again, this may reflect the composition of the room, with genebank and research participants voting for actions within their own remit, but the data cannot confirm that.

6. What the results suggest

- **From available to usable.** Exercise 1 (documentation, passport and C&E data, searchability, duplicates, regeneration) and the top Exercise 3 proposals (C&E consortium, access and coordination) point to the same gap: collections exist, but information and viable material that would let breeders find and use them are limited. This speaks directly to the question raised ahead of the meeting on how conservation and availability can translate into practical value for breeders.
- **Funding appears strongest for conservation and weakest for use.** C&E, pre-breeding and leafy-vegetable-specific activity were described as under-supported, and the most-voted proposal combines C&E with a joint funding application.
- **Shared technology and data infrastructure is a recurring need.** Phenotyping, genotyping, AI, bioinformatics, European data servers and growing facilities appear in Exercise 1, and the fourth-ranked proposal is built around partnerships to share access to technology and infrastructure. This is useful landscape input for COLiBRI's analysis of research infrastructures.

- **Breeders' own view remains the open question.** Whether smaller breeding companies can navigate European collections without dedicated staff or research networks was not directly addressed in the worksheets. The closest entries are the calls to involve breeders in regeneration and C&E.

7. Next steps

1. **Submit to COLIBRI.** Provide the consolidated results as leafy vegetables stakeholder input for the analysis of priorities, infrastructure and funding and for the European roadmap.
2. **Discuss ownership within the community.** Explore whether the ECPGR Leafy Vegetables Working Group and the EVA Lettuce Network could take forward the C&E consortium and the access and coordination discussions.
3. **Gather breeders' perspectives.** Run a short follow-up with breeders, including smaller companies, on accessibility, quality and usefulness of genetic resources, and invite participants to register through COLiBRI's Get Involved page.

Appendix A: Roadmap proposals as submitted

#	Table	Problem	Proposed action	Who needs to be involved	Timeframe	Votes
1	2	Not enough funds for PGR conservation (national and EU level)	Lobbying at EU and national level	Genebanks, breeders, competent authorities, ministries, ECPGR	Short	16
2	1	Lack of knowledge/information on leafy vegetable collections; need for C&E for traits important to breeders	Create consortium with all actors (Nordic PPP and EVA) and apply for funds from the EU and elsewhere	Genebanks, breeders, scientists	Medium/long	18
3	3	Including different value chain actors and their needs in the breeding process	Cooperation of stakeholders, participatory breeding; wide range of partnerships and funding options	Genebank, breeders, farmers, researchers, consumers, the whole value chain	Medium	2
4	2	In the frame of plant-based nutrition, identify new leafy vegetable crops and fine-tune their use and adaptation for decentral/local marketing (e.g. Atriplex, Chenopodium or Blitum species)	Survey genebank collections, fill gaps by collecting, evaluate agronomic and nutritional traits in multiple environments	Genebanks, producers with direct marketing, consumer associations, chefs	Long	13
5	3	Access to new technologies and data availability, e.g. genotyping or phenotyping platforms, AI, molecular tools (NGT)	Build partnerships to share access to technology and infrastructure	Researchers, genebank, private companies, universities, research institutes and infrastructures	Medium	12
6	4	Bioinformatics tools and backups, data servers in Europe,	Participate in EU projects	Genebank, research institute	Short, medium, long	2

#	Table	Problem	Proposed action	Who needs to be involved	Timeframe	Votes
		NGT and other molecular techniques				
7	4	Crop wild relatives	Collecting, *ex situ* backups in genebanks, genotyping and phenotyping	Ministries, genebanks, research institutes	Medium, long	7
8	2	Access to PGR diversity; availability of material from *ex situ* and *in situ*	Improved, better quality management and international cooperation	Genebank managers, international organisations (ECPGR, Crop Trust, FAO), national competent authorities	Short/medium	10
9	3	Lack of central germplasm and network system	Political discussion among countries	All countries and ministries	Long	7
10	4	Missing knowledge on biotic and abiotic stress resilience	Phenotyping, genotyping, participating in EU projects	Genebanks, research institutes, breeders, national institutions	Long	1
11	2	Increased tolerance to biotic/abiotic stress	Evaluation of PGR using new technologies	Genebanks, research institutes, breeding companies, infrastructures	Medium, long	8

Total votes recorded: 96.