A European Genebank Integrated System

THE AVAILABILITY OF AEGIS ACCESSIONS

Short report of a desk study based on self-reporting of AEGIS Associate Members

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Summary

This desk study assessed the availability and use of AEGIS accessions based on self-reporting by participating genebanks. Responses from 97% of contact points confirmed the conservation of over 119,000 AEGIS accessions, of which 96% were reported as available. Administrative inconsistencies were identified, largely due to infrequent updates to EURISCO and fragmented reporting systems. Distribution rates varied considerably among genebanks, and AEGIS designation appeared to have little influence on user demand or material utilization. While the framework has contributed to establishing common quality standards and fostering cooperation across European genebanks, its practical impact on accessibility and operational quality remains limited. Nevertheless, AEGIS provides a useful mechanism for identifying capacity-building needs and promoting continuous improvement.

Introduction

In 2004, the European Cooperative Programme for Plant Genetic Resources initiated the establishment of a European Collection, conceived as a decentralized virtual genebank. This system comprises multiple genebanks distributed across Europe, operating in accordance with the European Genebank Integrated System (AEGIS) framework and its guiding principles. These principles emphasize the proper management of genetic resources in line with the FAO Genebank Standards, as well as the unrestricted availability of material to *bona fide* users under a Standard Material Transfer Agreement (SMTA). After 22 years of implementation, on 2 December 2025, AEGIS reported 119,509 accessions contributed by 47 participating genebanks (as defined by their different FAO institute codes), covered by 28 Associate Member Agreements (AMA). An additional 305 accessions were designated by three institutes (BEL094, CZE112 and ITA 331) without a signed AMA, bringing the total to 119,814. Contributions are highly uneven: the largest contributor (DEU146) accounts for 60.9% of all accessions, while the six largest contributors together account for 82.9%. In contrast, the smallest half of contributors collectively represent only 0.8% of the total.

The functioning of AEGIS has been discussed, and several aspects of its objectives are only slowly taking shape (van Hintum *et al*, 2021). Given that AEGIS was intended to enhance operational quality, including the accessibility and utilization of genetic resources, this study aimed to evaluate these assumptions through a self-reporting exercise among participating genebanks.

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Approach and results

On 2 December 2025, a questionnaire (Annex 1) was distributed to all 30 contact points representing the 47 AEGIS Associate Member genebanks, to assess the use and availability of their collections. In some cases, the contact point represents multiple genebanks under the same AMA (e.g. in Italy, one contact point serves 12 CREA institutes); in other cases, different genebanks covered by the same AMA have different contact points (e.g. three genebanks of the Czech Agrifood Research Centre have three distinct contact points but only one AMA). The questionnaire was not sent to the three genebanks that have flagged AEGIS accessions in EURISCO without prior signature of an AMA. These cases are somewhat irregular and, in any event, have not been able to designate a contact point. The first reminder was sent to non-respondents on 16 January 2026, and a second reminder, where necessary, on 2 February 2026. Follow-up correspondence was conducted to clarify responses as needed. The last response was received on 14 May 2026.

Only one out of 30 contact points – representing MNE001, which contributes 31 accessions – did not respond despite repeated reminders. The level of response was very high (97%) for this type of exercise.

Among the respondents, all genebanks provided figures for their AEGIS accessions; however, discrepancies with EURISCO data were common. In eight cases, reported numbers were lower than those in EURISCO (affecting 460 accessions), while in six other cases they were higher (affecting 407 accessions). These inconsistencies are likely caused by unreported changes in designations reflecting infrequent data updates to EURISCO, but also prompt and dynamic updates of designations occurring after the threshold date (2 December) used for data analysis. Additionally, instances of double reporting were identified. For example, CZE122 reported to EURISCO all AEGIS accessions from its country, including those already reported individually by five other genebanks. This indicates that the responsibility for reporting could be streamlined to avoid unnecessary duplication. After one or two rounds of clarifications and the necessary corrections, a total of 119,112 distinct accessions were confirmed to be conserved by the respondents as part of AEGIS at the time of their reply.

Regarding availability, most Associate Members indicated that their AEGIS material was fully or largely accessible, typically exceeding 90%. Exceptions were ITA399, which reported unavailability of all 16 accessions, and LTU001, which reported only 17 out of 45 accessions (37.8%) as available, with the remainder temporarily unavailable due to seed shortages. Larger contributors also noted temporary unavailability of certain accessions due to routine logistical constraints, including the need for regeneration because of low germination rates and insufficient seed quantities. Furthermore, POL003 reported that 12 accessions existed only as database records without corresponding physical samples. Overall, 114,344 accessions (96.0%) were reported as available.

In response to the question on distribution, 12 out of 35 genebanks responding to this question indicated that they had not distributed any AEGIS accessions in the past five years, often citing a lack of requests. Across all respondents, ca. 77,000 samples from 119,112 AEGIS accessions were distributed, corresponding to an average of 0.64 samples per accession. Among the five largest contributors, distribution rates varied considerably, ranging from 0.95 samples per accession (NLD037) to 0.06 (ITA004) and 0.11 (CZE122).

Most genebanks did not observe higher demand for AEGIS material compared to non-AEGIS material. In a few cases, higher demand was reported. For example, NLD037 indicated that 30.2% of samples distributed were AEGIS accessions, while such material constituted 25.5% of its collection. However, this difference may be attributable to covariables such as the characteristics of the material rather than its AEGIS designation.
When asked about their ability to fulfil requests, several genebanks noted that they do not systematically record unmet requests. Reported reasons for failure to supply material included logistical constraints (e.g. seed unavailability), phytosanitary restrictions, and administrative barriers. For instance, NLD037 reported 71 unfulfilled requests over the 5-year period (out of 868 fulfilled) for all its material regardless of AEGIS status, citing phytosanitary issues (31 cases, many involving India), customs-related problems (11 cases in Belarus, China and Turkey), excessive request sizes (12 cases, often followed by a new smaller request that could be answered), and requests from private individuals deemed ineligible based on NLD037's policy (10 cases).
Finally, regarding future expansion, only a limited number of genebanks indicated plans to increase their AEGIS holdings, and the expected number of new AEGIS accessions was low. Notably, POL003 projected a substantial addition of approximately 2,500 accessions in the coming years.

Discussion and conclusions

The findings suggest that AEGIS status has limited practical impact on the management and use of accessions within European genebanks. Administrative inconsistencies persist, partly due to the low frequency of reporting to EURISCO and partly due to less rigorous reporting mechanisms in countries with widely dispersed conservation systems.
The self-reported availability levels are very high. Reported unavailability is primarily attributed to logistical factors such as low seed quantities and reduced germination rates. However, these issues could arguably be mitigated through timely regeneration if higher priority were assigned, as would be expected for AEGIS material. While low germination necessitates regeneration, it does not inherently justify restricting distribution.
Demand does not appear to be significantly influenced by AEGIS designation. Apparently, requestors do not recognize AEGIS as a quality label, since they see no difference between requests for AEGIS versus non-AEGIS material, and because the AEGIS Quality System has not managed to exert sufficient impact to make a difference. For genebanks already operating at high quality standards, the AEGIS framework evidently offers no clear added value. For smaller genebanks, AEGIS participation may enhance attention to collection management and potentially improve practices, although this process has proven rather slow.
Recent research by Wijnker and van Hintum (2025) indicates that less than half of requested EURISCO-documented material was ultimately supplied. In the 100 accessions they selected from EURISCO, nine AEGIS accessions were included, of which six appeared available. Although the resulting percentage of available accessions (66.7%) is higher than the average (40–50% depending on the definition of availability), the finding is not significant given the small sample size. However, comparing the self-reported 96.0% availability with the observed 6 available out of 9 requests (66.7%) yields a one-sided probability of 0.03 of them being equal,

suggesting that self-reporting is not the best way to determine availability, and the true availability is lower.
In addition to logistical constraints, unfulfilled requests were also linked to genebank policies (e.g. limits on request size or eligibility criteria) and phytosanitary regulations.
Overall, the findings of this self-reporting survey suggest that the practical impact of the AEGIS status is limited in terms of improved availability. However, AEGIS promotes the availability of non-Annex I material under the same terms and conditions. Overcoming this difference is already a generalized practice in several large genebanks and should become a firmly recognized attitude across all of Europe.
This study indicates that AEGIS's impact on operational quality is limited. Nevertheless, designation as an AEGIS Associate Member reflects a genebanks commitment to achieving and maintaining high operational standards, thereby identifying it as a suitable candidate for capacity-building initiatives and related forms of support.
The study confirms that AEGIS has not significantly increased user demand, recognition, or accessibility compared to non-AEGIS material. Designations have grown slowly, requestors do not consistently treat AEGIS as a quality label, and logistical difficulties in providing material persist.
At the same time, the framework has established a common quality baseline across 47 genebanks and growing, fostering trust and interoperability across Europe. The administrative inconsistencies identified are largely correctable, and AEGIS offers a practical mechanism for identifying capacity needs, such as regeneration shortfalls, that might otherwise remain hidden.
Continued implementation, with focused improvements to the quality system and better communication to users, is likely to consolidate these gains while gradually addressing the shortcomings.

References

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ANNEX 1

Questions sent to the AEGIS contributors in the context of the AEGIS-Plus desk study regarding availability of AEGIS accessions:

1. How many AEGIS accessions are managed by your genebank?
2. How many of these accessions are currently available for distribution under an SMTA?
3. If not all accessions are available, what are the reasons?
4. Has your genebank distributed AEGIS accessions to users under an SMTA during the past five years?
5. If so, could you provide statistics, such as the number of requests answered and accessions distributed per year and their countries of destination?
6. Do you observe higher demand or use of AEGIS material compared to non-AEGIS material in your genebank?
7. Have you been able to respond to all requests for AEGIS material in the last five years?
8. If not, what were the reasons, and how frequently did this occur?
9. Are you planning to increase the number of AEGIS accessions in your genebank?
10. If yes, how many and by when? If not, why?