GLOBAL CROP CONSERVATION AND USE METRICS

# FABA BEAN
## (*Vicia* L.)

CROP TRUST

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# Global crop conservation and use metrics

# FABA BEAN
## (*Vicia* L.)

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# Description

This report provides an up-to-date overview of the global status of *ex situ* conservation of genetic resources of faba bean and its wild relatives, including key metrics on:

- the identity and composition of genebank collections;
- the Multilateral System (MLS) status of accessions in these collections;
- storage, regeneration, and safety duplication status;
- documentation, information systems, and research resources;
- germplasm distribution; and
- varietal registrations and releases.

The report also includes global statistics on crop production, trade, and availability in food supplies, as well as information about crop networks and partnerships. It is meant to provide an update to some of the information presented in the Global Conservation Strategy for faba bean (Crop Trust, 2009), but is primarily based on publicly available datasets, rather than a new survey of genetic resource collections and expert consultations.

# Introduction and background on faba bean

Faba bean (*Vicia faba* L., Fabaceae), also called broad bean, fava bean, horse bean, and field bean, is one of the oldest cultivated crops, with the earliest archaeological evidence for domestication dating to over 10,000 years BP in the Fertile Crescent of the Near East (Caracuta *et al.*, 2015). This versatile legume serves multiple critical functions: as pulse and vegetable for humans, fodder for livestock, and to enhance soil fertility and health. It is rich in protein, carbohydrates, vitamins and minerals, dietary fibre, levodopa, flavonoids, and polyphenols (Raina and Khan, 2015).

Based on the most recently available production statistics from FAOSTAT, reporting for the year 2023, faba beans are cultivated in at least 80 countries – mainly outside of its region of origin – on a total of over 3 million hectares worldwide, producing over 7.5 million tonnes of dry or green grain at a value of over USD 3 billion (FAO, 2025a). The largest producers include China, Ethiopia, UK, Australia, Algeria, Egypt, France, Lithuania, Sudan, Germany, Tunisia, Peru, Italy, Poland, and Morocco – each producing over 100,000 tonnes per annum. Global production continues to expand, as demonstrated by the difference between the most current (2023) reported values and those reported in 2015 to 2018 (Table 1), as well as those noted in the 2009 Strategy (Crop Trust, 2009), although less rapidly than other major grain legumes. Global average yield (per hectare) of the crop is among the highest of grain legumes, trailing common beans, but at least four times higher than soybeans, lentils, chickpeas, and pigeonpeas (FAO, 2025a).

There is considerable international trade in the crop (over 1.7 million tonnes per annum), with 13 countries reporting exporting over 10,000 tonnes each year. The vast majority is exported from Australia, Lithuania, UK, Latvia, France, and Denmark (FAO, 2025a). Among the 171 countries reporting importing faba beans, the major recipients include Norway, the Netherlands, Saudi Arabia, Denmark, France, Morocco, Italy, and Latvia.

Global consumption statistics are imprecise, with FAOSTAT reporting the grain legume

**Table 1.** Global status of faba bean production, trade, availability in food supplies, and public interest. Production, trade, and food supply statistics from FAOSTAT (2015 to 2018 average). Production and trade metrics are reported directly for the crop in FAOSTAT; for food supply the crop is placed within "Pulses, Other" and the estimates presented here were derived by disaggregating the generalized food supply statistic using a weighted average based on crop production statistics (Khoury *et al*., 2023). Number of countries refers to the count of countries where the crop is reported as within the top 95 percent of crops in terms of contribution to production, trade, or food supply. The evenness metric quantifies evenness of production, trade, or availability in food supplies across world regions, where 0 equals highly uneven and 1 equals completely even. The international interdependence metric quantifies degree of production, trade, or availability in food supplies outside of the primary region of diversity of the crop, where 0 equals low estimated international interdependence and 1 equals high estimated international interdependence. Wikipedia metric is public pageviews over one year (2019) of the taxon name of the crop. All values from Khoury *et al*. (2023).

| Metric | Global value | Number of countries where significant contributor | Evenness of contribution across world regions | Estimated international interdependence |
|---|---|---|---|---|
| Harvested area (ha) | 2,572,854 | 21.25 | 0.20 | 0.99 |
| Total production (tonnes) | 5,134,435 | 6.25 | 0.19 | 0.99 |
| Gross production value (current thousand USD) | 1,605,707 | 7.50 | 0.23 | 0.99 |
| Export quantity (tonnes) | 1,023,787 | 7.75 | 0.19 | 0.99 |
| Export value (current thousand USD) | 391,526 | 7.00 | 0.24 | 0.98 |
| Import quantity (tonnes) | 785,331 | 5.50 | 0.19 | 0.89 |
| Import value (current thousand USD) | 476,511 | 6.75 | 0.17 | 0.90 |
| Contribution to calories in food supplies (kcal/capita/day) | 4.17 | 29.50 | 0.50 | 0.98 |
| Contribution to protein in food supplies (g/capita/day) | 0.26 | 70.00 | 0.51 | 0.98 |
| Contribution to fat in food supplies (g/capita/day) | 0.03 | 4.50 | 0.47 | 0.98 |
| Contribution to food weight in food supplies (g/capita/day) | 0.44 | 22.75 | 0.50 | 0.98 |
| Number of public pageviews on Wikipedia over one year | 378,327 | | | |

under its "Pulses, Other" category (Khoury *et al.*, 2023). Estimates derived from these data for the years 2015-2018 indicate that the global per capita dietary contribution of the crop – as measured in terms of both calories and protein – is considerable, but lower than that of common beans, soybeans, chickpeas, peas, cowpeas, and lentils. This said, the crop is a significant contributor to protein in the food supplies of over 70 countries. Production, trade, and food supply metrics all indicate that the crop is widely utilized outside of its region of origin, implying significant international interdependence with regard to genetic resources (Table 1).

# Identity and composition of *ex situ* collections

Based on the latest data in global genetic resource databases, germplasm collections of faba bean and wild relatives (i.e., genus *Vicia* L.) are present in at least 146 institutions worldwide, collectively maintaining 66,555 accessions (Table 2, Table 3; Supplementary Table 1). The institutions are well distributed globally, including large collections in Asia, Australia, the Americas, Europe, and Africa. The International Centre for Agricultural Research in Dry Areas (ICARDA), the Australian Grain Genebank, the N.I. Vavilov All-Russian Research Institute of Plant Industry (VIR), the Leibniz Institute of Plant Genetics and Crop Plant Research (Germany), and the Centro Nacional de Recursos Fitogenéticos (Spain) collectively maintain over half of documented accessions. Reported information on the status of accessions under the Multilateral System of Access and Benefit Sharing (MLS) of the International Treaty on Plant Genetic Resources for Food and Agriculture (Plant Treaty), as recorded in the Global Information System (GLIS) and in pertinent fields in Genesys and FAO WIEWS (Table 2; Table 4), likely underestimate the full degree to which accessions are currently included in the MLS, as several of the faba bean collections without information on MLS status are in countries that are contracting parties to the Plant Treaty (such as USA, Bulgaria, and UK) and distribute samples using the Standard Material Transfer Agreement (SMTA).

Based on a genebank stakeholder survey process, the 2009 Strategy identified 37,984 faba bean and wild relative accessions maintained worldwide (Crop Trust, 2009). Several collections listed in the 2009 Strategy are not currently reported in the global genetic resource databases, including: the Institute of Crop Germplasm Resources (CAAS) (China, 5,229 accessions); the Istituto di GeneticaVegetale (IGV), CNR, Bari (Italy, 1,875 accessions); the Instituto de Ciencias Naturales Universidad Central del Ecuador (ICN) (Ecuador, 1,650 accessions); and the Station d'Amelioration des Plantes (INRA) (France, 1,057 accessions), among others.

During the 2009 Strategy stakeholder meeting, participants categorized ICARDA, CAAS, USDA, IPK, and INRA in the A group due to the quantity of faba bean accessions and uniqueness of their collections, high maintenance standards, and availability for distribution. Other collections were grouped in B or C categories with recommendations for further support to improve their standards, or for further safety duplication to ensure against loss.

*Vicia* is a large genus of around 250 species. Species description has continued over the past few decades, for example with the 2009 Strategy reporting 140-190 species described at that time (Crop Trust, 2009). Native distributions include Asia, Europe, and North America, extending to temperate South America and East Africa (Crop Trust, 2009). Diversity for the genus is centered in West Asia, with a large percentage of the species occurring in the Irano-Tauranian floristic region. Along with faba bean, the genus also contains around 75 taxa from over 30 species that are used for agricultural or horticultural purposes, primarily as forage or grain legumes for livestock or for soil improvement.

The wild progenitor and the exact origin of faba bean are not known. Genepool assignments for faba bean include one species (*Vicia cappadocica* Boiss. & Balansa) in the secondary genepool, and seven species (*Vicia bithynica* (L.) L., *Vicia cuspidata* Boiss., *Vicia johannis* Tamamsch., *Vicia lathyroides* L., *Vicia melanops* Sm., *Vicia narbonensis* L., and *Vicia oroboides* Wulfen) in the tertiary genepool, with the

remaining members of the genus considered more distantly related (USDA, 2025).

Data compilation for this report on faba bean genetic resources included all species in *Vicia*. Along with faba bean, 167 taxa as well as accessions only recognized to the genus level are present in germplasm collections (Supplementary Table 2). These include large collections of *Vicia sativa* L., *Vicia ervilia* (L.) Willd., *Vicia villosa* Roth, and *V. narbonensis*, all major forage or green manure species with over 1000 accessions conserved worldwide each. Landraces make up the largest proportion of collections (30.9%), followed by wild relatives (14.6%), breeding materials (14.1%), and improved varieties (6.3%) (Table 3); these percentages are estimates based on available data, noting that 33% of accessions do not have biological status data.

*Vicia* germplasm has been collected from at least 97 countries, with approximately 0.3% of accessions originating from the primary region of diversity of faba bean (i.e. West Asia) and 10.6% from primary and secondary (i.e. East Africa, East and Southeast Asia, and Southeastern Europe) regions; these statistics are also estimates, as 5.3% of faba bean landrace accessions and 6% of wild relative accessions do not contain information even of the country where the accession was collected. Information on botanic garden collections from BGCI PlantSearch indicate that 166 botanic gardens collectively conserve 154 *Vicia* taxa; comparing these to genebank collections, 23 are only present in botanic gardens.

Aside from the taxa that appear to be entirely missing from, or with very small representation in, germplasm collections, the global genetic resources databases do not offer insights on diversity gaps, but published research has indicated specific priority species and geographic regions for further collecting for conservation. Gaps for wild *Vicia* were noted in the 2009 Strategy, drawing from stakeholder meetings and citing several previous studies, including *Vicia galilaea* Plitmann & Zohary (in Northern Israel and Western Turkey), *Vicia sativa* L. subsp. *devia* J. G. Costa (Brazil), and *Vicia pyrenaica* Pourr. (French and Spanish alpine regions) as priorities (Crop Trust, 2009). In a global *ex situ* conservation gap analysis of wild relatives of major crops, Castañeda-Álvarez *et al.* (2016) listed one assessed faba bean wild relative - *Vicia faba* L. *subsp. paucijuga* Muratova (syn. *V. faba*) – as of high priority for further collecting. Some progress has been made recently in filling these gaps, including via the Adapting Agriculture to Climate Change: Collecting, Protecting and Preparing Crop Wild Relatives project (Crop Trust, 2025), which resulted in the collecting of 92 seed samples of seven *Vicia* taxa from eight countries as well as the development of new varieties with introgressions from wild germplasm (Eastwood *et al.*, 2022).

The 2009 Strategy stakeholder meeting identified farmer varieties (landraces) in North Africa (especially Sudan), Egypt, South America, China, Afghanistan, Pakistan, and India as underrepresented in germplasm collections, as well as traits for heat tolerance, early flowering, and resistance to chocolate spot, necrotic yellow virus, mosaic virus, *Orobanche*, *Ascochyta,* and leaf miner (Crop Trust, 2009). Ramirez-Villegas *et al.* (2022) identified geographic gaps for faba bean landrace groups in specific regions worldwide, including in the Mediterranean, across Asia, in North and East Africa, and in Mesoamerica and South America.

**Table 2.** Major *ex situ* collections of faba bean genetic resources. Top 20 institutions listed in descending order by total number of accessions. Number of accessions and storage condition information from Genesys and FAO WIEWS (2024), with supplementary information as noted. Multilateral System (MLS) status from Plant Treaty GLIS (2025) and from Genesys and FAO WIEWS (2024).

| Institution Code | Institution name | Number of accessions | Percent of total | Cumulative percent | Number of accessions in long term storage (-18-20°C) | Number of accessions included in MLS (from Plant Treaty GLIS) | Number of accessions included in MLS (from genebank collections databases) |
|---|---|---|---|---|---|---|---|
| LBN002 | International Centre for Agricultural Research in Dry Areas (ICARDA) | 16,111 | 24.2% | 24.2% | Not listed* | 15,990 | 15,992 |
| AUS165 | Australian Grains Genebank, Agriculture Victoria | 5,985 | 9.0% | 33.2% | 4,240 | 4,842 | 5,816 |
| RUS001 | N.I. Vavilov All-Russian Research Institute of Plant Industry (VIR) | 5,398 | 8.1% | 41.3% | 5,398 | 0 | 0 |
| DEU146 | Genebank, Leibniz Institute of Plant Genetics and Crop Plant Research | 4,894 | 7.4% | 48.7% | 4,833 | 4,895 | 4,894 |
| ESP004 | Centro Nacional de Recursos Fitogenéticos | 3,021 | 4.5% | 53.2% | 2,286 | 0 | 1,973 |
| USA022 | Western Regional Plant Introduction Station, USDA-ARS, Washington State University (USDA) | 2,640 | 4.0% | 57.2% | 2,471 | 0 | 0 |
| ETH085 | Ethiopian Biodiversity Institute | 2,242 | 3.4% | 60.6% | 563 | 0 | 2,129 |
| BGR001 | Institute for Plant Genetic Resources 'K.Malkov' | 2,159 | 3.2% | 63.8% | 1,549 | 0 | 0 |
| GBR004 | Millennium Seed Bank - Royal Botanic Gardens Kew | 2,111 | 3.2% | 67.0% | Not listed | 0 | 402 |
| POL003 | Plant Breeding and Acclimatization Institute | 1,941 | 2.9% | 69.9% | 1,936 | 0 | 1,232 |
| GBR016 | Genetic Resources Unit, Institute of Biological, Environmental & Rural Sciences, Aberystwyth University | 1,562 | 2.4% | 72.2% | Not listed | 0 | 4 |
| TUR001 | Plant Genetic Resources Department | 1,192 | 1.8% | 74.0% | 1,192 | 0 | 0 |

**Table 3.** Composition of *ex situ* collections of faba bean genetic resources. Main *ex situ* collections data from Genesys and FAO WIEWS (2024). Primary and secondary regions information from Khoury *et al*. (2023) and subsequent research for this summary. Botanic gardens data from BGCI PlantSearch (2024).

| Metric | Number | Percentage |
|---|---|---|
| Total number of accessions in genebank collections | 66,555 | |
| Number of institutions holding genebank collections | 146 | |
| Number of distinct taxonomic names in genebank collections | 169 | |
| Number of accessions of crop wild relatives (CWR) in genebank collections | 9,717 | 14.6% |
| Number of accessions of weedy materials in genebank collections | 776 | 1.2% |
| Number of accessions of landraces in genebank collections | 20,561 | 30.9% |
| Number of accessions of breeding materials in genebank collections | 9,374 | 14.1% |
| Number of accessions of improved varieties in genebank collections | 4,162 | 6.3% |
| Number of accessions of other materials in genebank collections | 1 | 0% |
| Number of accessions not marked with an improvement type in genebank collections | 21,964 | 33.0% |
| Number of countries where germplasm has been collected for genebank collections | 97 | |
| Number of accessions in genebank collections from the primary region(s) of diversity | 218 | 0.3% |
| Number of accessions in genebank collections from the primary and secondary region(s) of diversity | 7,088 | 10.6% |
| Number of taxa in botanic garden collections | 154 | |
| Number of botanic gardens holding collections of crop or its wild relatives | 166 | |

# Multilateral System status of accessions in *ex situ* collections

The genus *Vicia* is listed in Annex I of the International Treaty on Plant Genetic Resources for Food and Agriculture (Plant Treaty) and is thus included in its Multilateral System of Access and Benefit Sharing (MLS). Of the 66,555 accessions conserved globally, approximately 25.2% are held in international institutions (i.e., ICARDA), and included in the MLS under Article 15 of the Plant Treaty, with the remainder maintained in national and other collections (Table 4).

As of 2025, 27,525 accessions are formally included in the MLS according to the Plant Treaty's GLIS database, and 28,980 accessions have been assigned Digital Object Identifiers (DOIs). Per the relevant fields in the global genetic resources databases, 39,208 accessions (58.9% of world total) are listed as included in the MLS; this is likely an underestimate, noting that 30.1% of accessions do not have MLS status data. The discrepancies between the GLIS data and the global genetic resources data indicates that several institutions have not registered or recently updated their registrations in the GLIS portal.

**Table 4.** Representation of faba bean accessions in international and national institutions, number of accessions with DOIs, and representation of accessions in the Multilateral System of Access and Benefit Sharing of the International Treaty on Plant Genetic Resources for Food and Agriculture. Main *ex situ* collections data from Genesys and FAO WIEWS (2024). DOI and MLS data from Plant Treaty GLIS (2025).

| Metric | Number | Percentage |
|---|---|---|
| Number of accessions in genebank collections in international institutions | 16,788 | 25.2% |
| Number of accessions in genebank collections in national or other institutions | 49,767 | 74.8% |
| Number of accessions in genebank collections in Annex I | 66,555 | 100% |
| Number of accessions with DOI (Plant Treaty GLIS 2025) | 28,980 | |
| Number of accessions included in the Multilateral System (MLS) (Plant Treaty GLIS 2025) | 27,525 | |
| Number of accessions included in the Multilateral System (MLS) (genebank collections databases) | 39,208 | 58.9% |
| Number of accessions included in the Multilateral System (MLS) that are in international collections (genebank collections databases) | 16,338 | 24.5% |
| Number of accessions not included in the Multilateral System (MLS) (genebank collections databases) | 7,286 | 10.9% |
| Number of accessions without information regarding inclusion in the Multilateral System (MLS) (genebank collections databases) | 20,061 | 30.1% |

# Storage conditions, regeneration status, and safety duplication

As expected for an orthodox seed crop, almost the entirety (at least 95.5%) of faba bean accessions are conserved as seed, with over half (52.8%) of these accessions listed as conserved under long-term cold-storage conditions (Table 5). Information on storage in general is missing for 4.4% of all accessions, and information on seed storage type (i.e., long, medium, or short term) is missing for 26% of seed accessions.

Current regeneration status and needs cannot be directly derived from the global germplasm databases. The 2009 Strategy listed proportions of collections in need of regeneration per institute. Regeneration status varied substantially across institutions. However, for many, over 50% of accessions would be in need of regeneration within five years (Crop Trust, 2009). Regeneration is particularly challenging for faba bean compared to many other grain legumes, as accessions must be kept isolated during grow-outs (for example, with cages). The 2009 Strategy noted the need for the development of better regeneration protocols for faba bean, including standards for minimum sample size for regeneration. FAO WIEWS reporting for the *Third State of the World's Plant Genetic Resources for Food and Agriculture* (FAO, 2025b) ffor the years 2014 to 2019, documented 2,369 accessions regenerated during this time by reporting institutions, with 7,753 accessions identified as needing regeneration and 7,283 of these lacking funds to conduct the regeneration.

Analysis of the location of safety duplication sites of faba bean germplasm, as listed in Genesys, indicates that at least a quarter of accessions listed are safety duplicated in an active collection (i.e., apart from potentially being duplicated at the Svalbard Global Seed Vault [SGSV]) outside of the country of the main collection (Table 5). The actual extent of safety duplication of faba bean accessions worldwide, when also considering safety duplication within the same country, may be higher than this estimate, given that ICARDA's collections conserved in the Lebanon site and duplicated at the site in Morocco are not included in this estimate (because they have the same INSTCODE), and a number

of national genebanks (such as the USA and Russian Federation) typically provide safety backup their collections in a different location within the country. Information from the SGSV database from 2024 indicated that approximately 18.8% of total accessions worldwide were duplicated in Svalbard.

The 2009 Strategy listed proportions of collections safety duplicated per institute for some of the surveyed institutes, as well as the total number of faba bean accessions duplicated by that time at the recently opened SGSV. The data indicated that many important collections were inadequately duplicated, including collections in Australia, Germany, Italy, Ethiopia, France, Romania, Bulgaria, USA, India, Türkiye, among others. The stakeholder meeting process included further planning for safety duplication of unique accessions both in other institutions outside of the country as well as in the SGSV. This included aiming to fully duplicate ICARDA's faba bean collection in Svalbard. The total number of faba bean accessions in SGSV has increased from 3,358 in 2009 to 12,478 in 2024; this represents significant progress, and turned out to be important for ICARDA due to the evacuation of their Aleppo site in 2014 (Simon, 2020).

**Table 5.** Storage conditions of faba bean *ex situ* collections, regeneration status, and safety duplication status. Main *ex situ* collections data from Genesys and FAO WIEWS (2024). Regeneration status information from FAO WIEWS (2024); data from 2014 to 2019. Safety duplication out of the country data based only on Genesys (2024) data. Svalbard Global Seed Vault data from SGSV portal (2024).

| Metric | Number | Percentage |
|---|---|---|
| Number of accessions held in seed storage in genebank collections | 63,602 | 95.5% |
| Number of accessions held in short-term seed storage in genebank collections | 0 | 0% |
| Number of accessions held in medium-term seed storage in genebank collections | 13,488 | 21.2% |
| Number of accessions held in long-term seed storage in genebank collections | 33,610 | 52.8% |
| Number of accessions held in seed storage of undefined type in genebank collections | 16,504 | 26.0% |
| Number of accessions held in field storage in genebank collections | 26 | 0.04% |
| Number of accessions held in in-vitro storage in genebank collections | 1 | 0% |
| Number of accessions held in cryo storage in genebank collections | 32 | 0.05% |
| Number of accessions held as DNA in genebank collections | 105 | 0.2% |
| Number of accessions held in other storage in genebank collections | 0 | 0% |
| Number of accessions not marked with a storage type in genebank collections | 2,931 | 4.4% |
| Number of accessions in genebank collections regenerated 2014–2019 | 2,369 | 17,8% |
| Number of accessions in genebank collections in need of regeneration 2014–2019 | 7,753 | 58.2% |
| Number of accessions in genebank collections in need of regeneration without budget for regeneration 2014–2019 | 7,283 | 54.7% |
| Number of accessions safety duplicated out of the country in genebank collections* | 5,646 | 25.1% |
| Number of accessions in genebank collections safety duplicated in Svalbard | 12,478 | 18.8% |

*ICARDA passport data list accessions under one institute code (LBN002) even though it has two main sites (in Lebanon and in Morocco) which enable safety duplication outside of the country of the main collection; thus this metric may underreport the proportion of accessions duplicated outside of country for this institute.

# Documentation, information systems, and research resources

A descriptor list for faba bean was published in 1983 and is available online (IBPGR and ICARDA, 1983), and a prioritized list of characterization and evaluation descriptors was published in 2009 (Bioversity International and ICARDA, 2009). The estimated completeness of passport information for faba bean accessions listed in Genesys was 5.5 on a scale of 0 (no data) to 10 (complete data), which indicates that some data is available, but also that there are gaps that it would be valuable to fill. Fifteen faba bean characterization and evaluation datasets are available via Genesys, covering a total of 8,847 accessions. Four metrics of the current degree of digital sequence information (DSI) for faba bean (from the National Center for Biotechnology Information (USA) database), two metrics of published literature on the crop (Google Scholar and PubMed Central), and one metric of the degree of research resources such as herbarium specimens (from the Global Biodiversity Information Facility - GBIF), are listed in Table 6. *Vicia* stands out compared to other grain legumes in terms of research resources in GBIF, having among the largest numbers of specimens and observations.

The stakeholder meeting for the 2009 Strategy identified priorities for faba bean documentation and information systems (Crop Trust, 2009). Participants recognized the need for an integrated online information system for faba bean genetic resources. The current Genesys and FAO WIEWS databases offer some essential taxonomic, institutional, and passport data, and Genesys now holds some characterization data for the crop, but a dedicated online information system including accession-level characterization and evaluation data for faba bean germplasm collections remains a gap. The stakeholder meeting also emphasized the need to compile and make available existing evaluation data that were not available in databases.

**Table 6.** Documentation, information systems, and research resources for faba bean. Passport data completeness index (PDCI) from Genesys (2024), based on the methods outlined in van Hintum *et al*. (2011). Global Biodiversity Information Facility data from GBIF (2025). All other metrics data from Khoury *et al*. (2023).

| Metric | Number |
|---|---|
| Passport data completeness index (range 0-10) as a median value across accessions in genebank collections | 5.5 |
| Number of genes as recorded in NCBI's Entrez database as of 2022 | 106 |
| Number of genomes as recorded in NCBI's Entrez database as of 2022 | 1 |
| Number of nucleotides as recorded in NCBI's Entrez database as of 2022 | 94,087 |
| Number of proteins as recorded in NCBI's Entrez database as of 2022 | 23,212 |
| Number of publications listed in Google Scholar with taxon name in title published between 2009 and 2019 | 2,940 |
| Number of publications listed in PubMed Central with taxon name in text as of 2022 | 9,247 |
| Number of research materials as recorded in GBIF (2025) | 3,184,355 |

# Germplasm distributions and varietal registrations and releases

Germplasm distribution and varietal development statistics for faba bean are listed in Table 7. Germplasm distribution data from FAO WIEWS and the Plant Treaty Data Store reflect different reporting scopes: FAO WIEWS primarily reports distributions from national genebanks, while the Plant Treaty Data Store includes all transfers made under the SMTA, encompassing distributions made by genebanks as well as by breeding programs and other organizational types (Khoury *et al.*, 2025) (Table 7).

**Table 7.** Faba bean germplasm distributions and varietal registrations and releases. FAO WIEWS distributions data is annual average over years 2014 to 2019. Plant Treaty Data Store distributions data is annual average over years 2015 to 2021. Evenness metric quantifies evenness of germplasm distributions across world regions, where 0 equals highly uneven and 1 equals completely even. International Union for the Protection of New Varieties of Plants (UPOV) PLUTO data is annual average over years 2014 to 2018. FAO WIEWS varietal releases data is annual average over years 2015 to 2019. All metrics data from Khoury et al. (2023), with Plant Treaty Data Store additions for more recent years (2019 to 2021).

| Metric | Number |
|---|---|
| Average annual number of accessions distributed worldwide as recorded in FAO WIEWS | 1,758.4 |
| Average annual number of samples distributed worldwide as recorded in FAO WIEWS | 2,466.4 |
| Average annual number of samples distributed worldwide as recorded in the Plant Treaty Data Store | 3,361.7 |
| Number of countries receiving germplasm as recorded in the Plant Treaty Data Store | 31.7 |
| Evenness of distributions across world regions as recorded in the Plant Treaty Data Store | 0.6 |
| Average annual number of varietal registrations worldwide as recorded in UPOV's PLUTO | 78.0 |
| Average annual number of varietal releases worldwide as recorded in FAO WIEWS | 13.8 |

# Networks and partnerships

- ICARDA continues to play a critical role in faba bean germplasm conservation and varietal development, maintaining active partnerships with national agricultural research organizations, other international centers, and several academic and industry institutions.
- The European Cooperative Programme for Plant Genetic Resources (ECPGR) Grain Legumes Working Group was initiated in 1991 and remains active, particularly in germplasm characterization and evaluation through competitive calls.
- The African Orphan Crops Consortium focuses on the crop for Africa.
- The BEANS Meta Network (Better pulses for Environment, Agriculture, Nutrition and Societies) was launched in 2025 to transform Mediterranean food systems through the power of legumes. This initiative builds upon the MEDIET project, which highlighted the nutritional, health, and environmental benefits of faba beans, lentils, chickpeas, and dry beans.
- The Global Bean Project is a network that aims to increase the cultivation and consumption of legumes around the world.
- The USDA ARS has a pertinent Crop Germplasm Committee on food legumes (also here)
- There is an active faba bean genome consortium
- Several active networks exist within particular countries and regions, including in Australia and in the UK.

- The 2009 Strategy mentioned that West Asia and North Africa, East Africa, and the Americas all had regional genetic resources networks that recognize the conservation of faba bean germplasm as being important to their region, and, further, that these networks varied in funding and extent of work completed (Crop Trust, 2009). Very little information is currently available online that might indicate the persistence and level of activity of these networks over the past two decades.

# Conclusions

Faba bean continues to be an important grain legume worldwide and it is likely that it will grow in importance in future food systems for both human health and environmental sustainability. Faba bean genetic resources are bolstered by the activities of ICARDA as well as several major collections in national agricultural research organizations. Although difficult to discern clearly from available data, over recent decades it appears that there has been some progress made in germplasm collecting, safety duplication and in information systems, there are considerable associated research resources, and there has been significant activity in germplasm distribution and varietal development for the crop. But the data also indicates that additional efforts are needed to fill persisting gaps in existing collections through further collecting of wild relatives and landraces, and to make the information accompanying accessions more complete and/or more accessible in online databases. Further efforts are also needed to address regeneration and safety duplication backlogs.

MICHAEL MAJOR

# Methods and materials

Primary data sources for the metrics reported in this summary include: Genesys; World Information and Early Warning System on Plant Genetic Resources for Food and Agriculture of the Food and Agriculture Organization of the United Nations (FAO WIEWS); Botanic Gardens Conservation International PlantSearch database (BGCI PlantSearch); Global Information System of the International Treaty on Plant Genetic Resources for Food and Agriculture (Plant Treaty GLIS); Data Store of the International Treaty on Plant Genetic Resources for Food and Agriculture (Plant Treaty Data Store); Svalbard Global Seed Vault portal (SGSV portal); International Union for the Protection of New Varieties of Plants (UPOV) PLUTO database; FAOSTAT; National Center for Biotechnology Information's Entrez database (NCBI Entrez); Google Scholar; PubMed Central; Wikipedia; and the Global Biodiversity Information Facility (GBIF). Some of these data were acquired from literature/databases including Khoury *et al.* (2023) and Khoury *et al.* (2025). Data processing, metric calculation, and table generation were conducted in R, with code available on this GitHub repository. Extended methods are available here.

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# Supplementary information

**Supplementary Table 1:** Full list of *ex situ* collections of faba bean genetic resources, in descending order by total number of accessions. Number of accessions and storage condition information from Genesys and FAO WIEWS (2024), with supplementary information as noted. Multilateral System (MLS) status from Plant Treaty GLIS (2025) and from Genesys and FAO WIEWS (2024).

| Institution Code | Institution name | Number of accessions | Percent of total | Cumulative percent | Number of accessions in long term storage (-18-20 C) | Number of accessions included in MLS (from Plant Treaty GLIS) | Number of accessions included in MLS (from genebank collections databases) |
|---|---|---|---|---|---|---|---|
| LBN002 | International Centre for Agricultural Research in Dry Areas | 16,111 | 24.2% | 24.2% | Not listed* | 15,990 | 15,992 |
| AUS165 | Australian Grains Genebank, Agriculture Victoria | 5,985 | 9.0% | 33.2% | 4,240 | 4,842 | 5,816 |
| RUS001 | N.I. Vavilov All-Russian Research Institute of Plant Industry | 5,398 | 8.1% | 41.3% | 5,398 | 0 | 0 |
| DEU146 | Genebank, Leibniz Institute of Plant Genetics and Crop Plant Research | 4,894 | 7.3% | 48.7% | 4,833 | 4,895 | 4,894 |
| ESP004 | Centro Nacional de Recursos Fitogenéticos | 3,021 | 4.5% | 53.2% | 2,286 | 0 | 1,973 |
| USA022 | Western Regional Plant Introduction Station, USDA-ARS, Washington State University | 2,640 | 4.0% | 57.2% | 2,471 | 0 | 0 |
| ETH085 | Ethiopian Biodiversity Institute | 2,242 | 3.4% | 60.5% | 563 | 0 | 2,129 |
| BGR001 | Institute for Plant Genetic Resources 'K.Malkov' | 2,159 | 3.2% | 63.8% | 1,549 | 0 | 0 |
| GBR004 | Millennium Seed Bank - Royal Botanic Gardens Kew | 2,111 | 3.2% | 67.0% |  | 0 | 402 |
| POL003 | Plant Breeding and Acclimatization Institute | 1,941 | 2.9% | 69.9% | 1,936 | 0 | 1,232 |
| GBR016 | Genetic Resources Unit, Institute of Biological, Environmental & Rural Sciences, Aberystwyth University | 1,562 | 2.4% | 72.2% | Not listed | 0 | 4 |
| TUR001 | Plant Genetic Resources Department | 1,192 | 1.8% | 74.0% | 1,192 | 0 | 0 |
| MAR088 | Centre Régional de la Recherche Agronomique de Settat | 1,007 | 1.5% | 75.5% | Not listed | 0 | 0 |

| Institution Code | Institution name | Number of accessions | Percent of total | Cumulative percent | Number of accessions in long term storage (-18-20 C) | Number of accessions included in MLS (from Plant Treaty GLIS) | Number of accessions included in MLS (from genebank collections databases) |
|---|---|---|---|---|---|---|---|
| PRT001 | Banco Português de Germoplasma Vegetal | 946 | 1.4% | 76.9% | 634 | 0 | 946 |
| IND001 | National Bureau of Plant Genetic Resources | 904 | 1.4% | 78.3% | 904 | 0 | 0 |
| HUN003 | Centre for Plant Diversity | 881 | 1.3% | 79.6% | 158 | 0 | 15 |
| CZE122 | Gene bank | 817 | 1.2% | 80.9% | 817 | 58 | 817 |
| ROM007 | Suceava Genebank | 816 | 1.2% | 82.1% | 559 | 190 | 190 |
| NLD037 | Centre for Genetic Resources, the Netherlands | 720 | 1.1% | 83.2% | 720 | 718 | 717 |
| BOL317 | Estación Experimental de Toralapa | 714 | 1.1% | 84.2% | Not listed | 0 | 0 |
| UKR008 | Ustymivka Experimental Station of Plant Production | 646 | 1.0% | 85.2% | 121 | 0 | 0 |
| NZL001 | Margot Forde Genebank, AgResearch Ltd | 485 | 0.7% | 85.9% | Not listed | 0 | 0 |
| BLR011 | Republican Unitary Enterprise 'Research and Practical Centre of the National Academy of Sciences of Belarus for Arable Farming' | 482 | 0.7% | 86.7% | 300 | 0 | 0 |
| EGY087 | National Gene Bank | 471 | 0.7% | 87.4% | 267 | 0 | 470 |
| ESP046 | Junta de Andalucía. Consejería de Agricultura y Pesca. Instituto Andaluz de Investigación y Formación Agraria, Pesquera, Alimentaria y de la Producción Ecológica. Centro Alameda del Obispo | 410 | 0.6% | 88.0% | 90 | 0 | 83 |
| JPN183 | NARO Genebank | 399 | 0.6% | 88.6% | 119 | 14 | 14 |
| UKR007 | Institute of Agriculture & Cattle-breeding of the Western Region | 342 | 0.5% | 89.1% | 95 | 0 | 0 |
| ECU023 | Departamento Nacional de Recursos Fitogenéticos | 321 | 0.5% | 89.6% | 300 | 0 | 295 |
| ARM005 | Institute of Botany | 319 | 0.5% | 90.1% | 295 | 0 | 302 |
| AZE015 | Genetic Resources Institute | 306 | 0.5% | 90.5% | 88 | 0 | 277 |

| Institution Code | Institution name | Number of accessions | Percent of total | Cumulative percent | Number of accessions in long term storage (-18-20 C) | Number of accessions included in MLS (from Plant Treaty GLIS) | Number of accessions included in MLS (from genebank collections databases) |
|---|---|---|---|---|---|---|---|
| CHL028 | Banco Base de Semillas INIA Intihuasi | 300 | 0.4% | 91.0% | 300 | 0 | 0 |
| CYP004 | National (CYPARI) Genebank, Agricultural Research Institute, Ministry of Agriculture, Rural Development and Environment | 287 | 0.4% | 91.4% | 64 | 0 | 186 |
| PAK001 | Plant Genetic Resources Program | 286 | 0.4% | 91.8% | 163 | 0 | 189 |
| PER014 | Estación Experimental Agraria Illpa | 281 | 0.4% | 92.2% | Not listed | 0 | 0 |
| COL017 | Corporación Colombiana de Investigación Agropecuaria, AGROSAVIA | 248 | 0.4% | 92.6% | 230 | 0 | 0 |
| ETH013 | International Livestock Research Institute | 248 | 0.4% | 93.0% | | 249 | 247 |
| PRT102 | Banco de Germoplasma - Universidade da Madeira | 214 | 0.3% | 93.3% | 214 | 0 | 214 |
| CAN004 | Plant Gene Resources of Canada, Saskatoon Research and Development Centre | 211 | 0.3% | 93.6% | 211 | 0 | 211 |
| GBR247 | Germplasm Resources Unit, John Innes Centre, Norwich Research Park | 209 | 0.3% | 93.9% | 209 | 0 | 0 |
| ARM059 | Agrobiotechnology Scientific Center | 204 | 0.3% | 94.3% | 38 | 0 | 6 |
| TUN029 | Banque Nationale de Gènes de Tunisie | 195 | 0.3% | 94.5% | 195 | 0 | 195 |
| TUR034 | Field Crop Central Research Institute | 190 | 0.3% | 94.8% | 190 | 0 | 0 |
| SWE054 | Nordic Genetic Resource Center | 178 | 0.3% | 95.1% | 178 | 172 | 167 |
| TJK027 | National Center for Genetic Resources | 177 | 0.3% | 95.4% | 132 | 0 | 177 |
| CHL171 | Banco de Semillas SAG Magallanes | 166 | 0.2% | 95.6% | 166 | 0 | 0 |
| KEN212 | Genetic Resources Research Institute | 159 | 0.2% | 95.9% | 159 | 152 | 159 |
| USA974 | Seed Savers Exchange | 150 | 0.2% | 96.1% | Not listed | 0 | 0 |
| ERI003 | National Agricultural Research Institute | 148 | 0.2% | 96.3% | 148 | 0 | 51 |

| Institution Code | Institution name | Number of accessions | Percent of total | Cumulative percent | Number of accessions in long term storage (-18-20 C) | Number of accessions included in MLS (from Plant Treaty GLIS) | Number of accessions included in MLS (from genebank collections databases) |
|---|---|---|---|---|---|---|---|
| ISR002 | Israel Gene Bank for Agricultural Crops, Agricultural Research Organisation, Volcani Center | 145 | 0.2% | 96.5% | 49 | 0 | 0 |
| BRA003 | Embrapa Recursos Genéticos e Biotecnologia | 144 | 0.2% | 96.7% | 144 | 0 | 0 |
| GRC005 | Greek Genebank, Institute of Plant Breeding and Genetic Resources | 130 | 0.2% | 96.9% | Not listed | 0 | 0 |
| LBN020 | Lebanese Agricultural Research Institute | 114 | 0.2% | 97.1% | 114 | 115 | 25 |
| UKR001 | Institute of Plant Production n.a. V.Y. Yurjev of UAAS | 114 | 0.2% | 97.3% | 22 | 0 | 0 |
| SDN002 | Agricultural Plant Genetic Resources Conservation and Research Centre | 113 | 0.2% | 97.4% | 113 | 0 | 112 |
| SVK001 | National Agricultural and Food Centre (NPPC), Research Institute of Plant Production (RIPP) | 100 | 0.1% | 97.6% | Not listed | 0 | 63 |
| UKR093 | Poltava State Regional Agricultural Experimental Station | 94 | 0.1% | 97.7% | 37 | 0 | 0 |
| LTU001 | Lithuanian Institute of Agriculture | 90 | 0.1% | 97.9% | 52 | 0 | 80 |
| CHL177 | Banco Activo INIA La Platina | 88 | 0.1% | 98.0% | Not listed | 0 | 0 |
| MNG030 | Institute of Plant and Agricultural Science | 87 | 0.1% | 98.1% | Not listed | 0 | 8 |
| ARG1350 | Banco Activo de Germoplasma de La Consulta | 78 | 0.1% | 98.2% | Not listed | 0 | 0 |
| SVN019 | Crops and Seed Production Department, Agricultural Institute of Slovenia | 77 | 0.1% | 98.4% | 33 | 0 | 4 |
| ALB026 | Plant Genetic Resources Center | 69 | 0.1% | 98.5% | 69 | 0 | 60 |
| AUT001 | Austrian Agency for Health and Food Safety | 65 | 0.1% | 98.6% | 63 | 0 | 65 |
| JOR105 | National Agricultural Research Center | 64 | 0.1% | 98.7% | Not listed | 64 | 64 |

| Institution Code | Institution name | Number of accessions | Percent of total | Cumulative percent | Number of accessions in long term storage (-18-20 C) | Number of accessions included in MLS (from Plant Treaty GLIS) | Number of accessions included in MLS (from genebank collections databases) |
|---|---|---|---|---|---|---|---|
| BLR014 | State research institution 'Institute of Experimental Botany of the National Academy of Sciences of Belarus' | 62 | 0.1% | 98.8% | 62 | 0 | 0 |
| EST019 | Estonian Crop Research Institute | 51 | 0.1% | 98.8% | 51 | 0 | 51 |
| LBY006 | National Bank for Plant Genetic Resources | 51 | 0.1% | 98.9% | Not listed | 0 | 0 |
| GRC100 | CIHEAM Mediterranean Agronomic Institute of Chania | 46 | 0.1% | 99.0% | 46 | 0 | 0 |
| DEU502 | Botanical Garden of the University of Osnabrück | 45 | 0.1% | 99.0% | Not listed | 0 | 45 |
| GBR017 | Henry Doubleday Research Association | 40 | 0.1% | 99.1% | Not listed | 0 | 0 |
| LVA009 | Latvian State Forest Research Institute 'Silava' | 40 | 0.1% | 99.2% | 40 | 0 | 40 |
| ITA394 | CREA-Centro di Ricerca Zootecnia e Acquacoltura - Sede di Lodi | 39 | 0.1% | 99.2% | Not listed | 0 | 0 |
| ESP172 | Cabildo Insular de Tenerife. Centro de Conservación de la Biodiversidad Agrícola de Tenerife | 38 | 0.1% | 99.3% | Not listed | 0 | 33 |
| AUT005 | Genebank Tirol | 32 | 0.0% | 99.3% | Not listed | 0 | 32 |
| URY003 | INIA La Estanzuela | 30 | 0.0% | 99.4% | 30 | 0 | 0 |
| CHE001 | Agroscope Changins | 21 | 0.0% | 99.4% | 21 | 0 | 21 |
| DEU515 | Botanischer Versuchs- und Lehrgarten der Universitaet Regensburg | 21 | 0.0% | 99.4% | Not listed | 0 | 21 |
| ITA363 | Dipartimento di Chimica, Biologia e Biotecnologie, Universitá degli Studi Perugia | 20 | 0.0% | 99.5% | 19 | 0 | 0 |
| DEU626 | Pädagogische Hochschule Karlsruhe | 18 | 0.0% | 99.5% | Not listed | 0 | 18 |
| NPL069 | National Agriculture Genetic Resources Centre-Genebank | 18 | 0.0% | 99.5% | 18 | 0 | 0 |
| USA971 | Desert Legume Program | 16 | 0.0% | 99.5% | Not listed | 0 | 0 |
| DEU022 | Botanical Garden Berlin-Dahlem | 14 | 0.0% | 99.6% | Not listed | 0 | 14 |

| Institution Code | Institution name | Number of accessions | Percent of total | Cumulative percent | Number of accessions in long term storage (-18-20 C) | Number of accessions included in MLS (from Plant Treaty GLIS) | Number of accessions included in MLS (from genebank collections databases) |
|---|---|---|---|---|---|---|---|
| ESP117 | Gobierno de Canarias. Consejería de Agricultura, Ganadería, Pesca y Medio Ambiente. Instituto Canario de Investigaciones Agrarias. Jardín de Aclimatación de La Orotava | 14 | 0.0% | 99.6% | Not listed | 0 | 2 |
| GHA091 | Plant Genetic Resources Research Institute | 13 | 0.0% | 99.6% | Not listed | 13 | 13 |
| MLT003 | Plant Protection Directorate, Veterinary and Phytosanitary Regulation Department | 13 | 0.0% | 99.6% | Not listed | 0 | 0 |
| ARM010 | Armenian Botanical Society | 12 | 0.0% | 99.6% | Not listed | 0 | 0 |
| BLR026 | The Polessye Institute of Plant Growing | 12 | 0.0% | 99.7% | 12 | 0 | 0 |
| ARE003 | International Center for Biosaline Agriculture | 11 | 0.0% | 99.7% | Not listed | 48 | 11 |
| BRA020 | Embrapa Clima Temperado | 10 | 0.0% | 99.7% | Not listed | 0 | 0 |
| GRC006 | Plant Production Department, Institute of industrial and forage crops | 10 | 0.0% | 99.7% | 10 | 0 | 0 |
| USA995 | National Center for Genetic Resources Preservation | 10 | 0.0% | 99.7% | 10 | 0 | 0 |
| ESP027 | Gobierno de Aragón. Centro de Investigación y Tecnología Agroalimentaria. Banco de Germoplasma de Hortícolas | 9 | 0.0% | 99.7% | 4 | 0 | 0 |
| ESP109 | Junta de Castilla y León. Instituto Tecnológico Agrario de Castilla y León. Centro de Investigación de Zamadueñas | 9 | 0.0% | 99.8% | Not listed | 0 | 9 |
| KGZ040 | Bank-Laboratory of Plant Genetic Resources of the KR | 9 | 0.0% | 99.8% | 9 | 0 | 9 |
| HRV044 | College of Agriculture at Križevci | 8 | 0.0% | 99.8% | Not listed | 0 | 3 |

| Institution Code | Institution name | Number of accessions | Percent of total | Cumulative percent | Number of accessions in long term storage (-18-20 C) | Number of accessions included in MLS (from Plant Treaty GLIS) | Number of accessions included in MLS (from genebank collections databases) |
|---|---|---|---|---|---|---|---|
| TWN001 | World Vegetable Center | 8 | 0.0% | 99.8% | 8 | 5 | 5 |
| VNM049 | Plant Resources Center | 8 | 0.0% | 99.8% | 1 | 0 | 0 |
| AZE003 | Research Institute of Crop Husbandry | 7 | 0.0% | 99.8% | Not listed | 0 | 0 |
| CHE100 | Sortengarten Erschmatt | 7 | 0.0% | 99.8% | Not listed | 0 | 7 |
| MEX208 | INIFAP, Centro Nacional de Recursos Genéticos (CNRG) | 6 | 0.0% | 99.8% | 6 | 0 | 0 |
| BLR012 | Department of Genetics, Faculty of Biology, Belarussian State University | 5 | 0.0% | 99.8% | Not listed | 0 | 0 |
| HRV041 | Faculty of Agriculture, University of Zagreb | 5 | 0.0% | 99.8% | Not listed | 0 | 0 |
| MKD001 | Faculty of Agriculture, University Ss. Cyril and Methodius | 5 | 0.0% | 99.9% | 3 | 0 | 0 |
| UGA132 | Plant Genetic Resource Centre | 5 | 0.0% | 99.9% | 5 | 0 | 0 |
| UGA528 | Uganda National Genebank | 5 | 0.0% | 99.9% | Not listed | 0 | 0 |
| UKR020 | Institute of Forages | 5 | 0.0% | 99.9% | 2 | 0 | 0 |
| BIH039 | Institute of Genetic Resources, University of Banja Luka | 4 | 0.0% | 99.9% | 3 | 0 | 0 |
| GEO013 | Niko Ketskhoveli Institute of Botany | 4 | 0.0% | 99.9% | Not listed | 0 | 0 |
| ARG1352 | Atar Semillas Hibridas S.A. | 3 | 0.0% | 99.9% | Not listed | 0 | 0 |
| BGD003 | Bangladesh Agricultural Research Institute | 3 | 0.0% | 99.9% | 3 | 0 | 0 |
| ESP026 | Generalidad Valenciana. Universidad Politécnica de Valencia. Escuela Técnica Superior de Ingenieros Agrónomos. Banco de Germoplasma | 3 | 0.0% | 99.9% | Not listed | 0 | 3 |

| Institution Code | Institution name | Number of accessions | Percent of total | Cumulative percent | Number of accessions in long term storage (-18-20 C) | Number of accessions included in MLS (from Plant Treaty GLIS) | Number of accessions included in MLS (from genebank collections databases) |
|---|---|---|---|---|---|---|---|
| ESP200 | Govern de les Illes Balears. Conselleria de Presidència. Direcció General d'Agricultura i Desenvolupament Rural. Institut de recerca i formació agrària i pesquera | 3 | 0.0% | 99.9% | Not listed | 0 | 3 |
| FRA001 | Unité de Recherche Pluridisciplinaire Prairies et Plantes Fourragères, Plant Biology and Breeding, INRAE Lusignan | 3 | 0.0% | 99.9% | 3 | 0 | 3 |
| GRC044 | Balkan Botanic Garden of Kroussia, Institute of Plant Breeding and Genetic Resources | 3 | 0.0% | 99.9% | Not listed | 0 | 0 |
| GRC102 | Hellenic Mediterranean University | 3 | 0.0% | 99.9% | Not listed | 0 | 0 |
| MEX006 | UACh, Banco Nacional de Germoplasma Vegetal (BANGEV) | 3 | 0.0% | 99.9% | 2 | 0 | 0 |
| MEX131 | UDG, Centro Universitario de Ciencias Biológicas y Agropecuarias (UDG-CUCBA) | 3 | 0.0% | 99.9% | Not listed | 0 | 0 |
| MEX263 | SNICS, Depositario Nacional de Referencia de Semillas (DNRS) | 3 | 0.0% | 99.9% | Not listed | 0 | 0 |
| POL101 | Research Institute of Horticulture | 3 | 0.0% | 99.9% | Not listed | 0 | 2 |
| UZB006 | Uzbek Research Institute of Plant Industry | 3 | 0.0% | 99.9% | Not listed | 0 | 0 |
| AUT025 | Referat Pflanzengesundheit und Spezialkulturen | 2 | 0.0% | 99.9% | 2 | 0 | 2 |
| BEL002 | Gembloux agro-biotech, Université de Liège, département des Sciences agronomiques, Phytotechnie tropicale et Horticulture | 2 | 0.0% | 99.9% | Not listed | 0 | 2 |
| BRA144 | Embrapa Pecuária Sul | 2 | 0.0% | 100.0% | Not listed | 0 | 0 |

| Institution Code | Institution name | Number of accessions | Percent of total | Cumulative percent | Number of accessions in long term storage (-18-20 C) | Number of accessions included in MLS (from Plant Treaty GLIS) | Number of accessions included in MLS (from genebank collections databases) |
|---|---|---|---|---|---|---|---|
| CHL071 | Banco de Germoplasma de Papa, Universidad Austral de Chile | 2 | 0.0% | 100.0% | 2 | 0 | 0 |
| ESP133 | Región de Murcia. Instituto Murciano de Investigación y Desarrollo Agrario y Alimentario. Fruticultura | 2 | 0.0% | 100.0% | Not listed | 0 | 1 |
| GBR006 | Warwick Genetic Resources Unit | 2 | 0.0% | 100.0% | 2 | 0 | 2 |
| HRV021 | Agricultural Institute Osijek | 2 | 0.0% | 100.0% | 2 | 0 | 0 |
| ITA368 | Banca del germoplasma autoctono vegetale regionale | 2 | 0.0% | 100.0% | Not listed | 0 | 0 |
| ITA435 | Banca del Germoplasma Vegetale | 2 | 0.0% | 100.0% | 2 | 0 | 2 |
| UGA130 | | 2 | 0.0% | 100.0% | Not listed | 0 | 0 |
| UKR021 | Institute of Vegetable and Melon Growing | 2 | 0.0% | 100.0% | Not listed | 0 | 0 |
| USA151 | National Arboretum-Germplasm Unit, USDA/ARS | 2 | 0.0% | 100.0% | Not listed | 0 | 0 |
| ARG1351 | Banco Activo de Germoplasma de Anguil | 1 | 0.0% | 100.0% | Not listed | 0 | 0 |
| AUT060 | HBLFA Raumberg-Gumpenstein | 1 | 0.0% | 100.0% | 1 | 0 | 1 |
| AZE014 | Azerbaijan State Agrarian University | 1 | 0.0% | 100.0% | Not listed | 0 | 0 |
| ECU167 | Banco de Germoplasma de la Universidad Técnica Particular de Loja | 1 | 0.0% | 100.0% | Not listed | 0 | 0 |
| ESP003 | Comunidad de Madrid. Universidad Politécnica de Madrid. Escuela Técnica Superior de Ingeniería Agronómica, Alimentaria y de Biosistemas . Banco de Germoplasma César Gómez Campo | 1 | 0.0% | 100.0% | 1 | 0 | 0 |

| Institution Code | Institution name | Number of accessions | Percent of total | Cumulative percent | Number of accessions in long term storage (-18-20 C) | Number of accessions included in MLS (from Plant Treaty GLIS) | Number of accessions included in MLS (from genebank collections databases) |
|---|---|---|---|---|---|---|---|
| ESP198 | Comunidad de Madrid. Consejería de Medio Ambiente, Vivienda y Ordenación del Territorio. Instituto Madrileño de Investigación y Desarrollo Rural. Banco de Variedades Locales de Madrid | 1 | 0.0% | 100.0% | Not listed | 0 | 1 |
| GEO001 | I.Lomouri Institute of Crop Science | 1 | 0.0% | 100.0% | Not listed | 0 | 0 |
| LKA036 | Plant Genetic Resources Centre | 1 | 0.0% | 100.0% | Not listed | 0 | 0 |
| MDG038 | Fiompiana Fambolena Malagasy Norvéziana | 1 | 0.0% | 100.0% | Not listed | 0 | 1 |
| ROM055 | Research and Development Station for Vegetables - Bacau | 1 | 0.0% | 100.0% | Not listed | 0 | 0 |
| THA300 | Genebank | 1 | 0.0% | 100.0% | Not listed | 0 | 0 |
| UKR019 | Research Station of Medicinal Crops | 1 | 0.0% | 100.0% | Not listed | 0 | 0 |
| UKR068 | Krasnohrad Experimental Station | 1 | 0.0% | 100.0% | 1 | 0 | 0 |
| ZAF062 | RSA National Plant Genetic Resources Centre | 1 | 0.0% | 100.0% | 1 | 0 | 0 |

*But documented in the 2008 Strategy as maintaining collections in long-term conditions (Crop Trust, 2008)

**Supplementary Table 2:** Full list of taxonomic names in *ex situ* genetic resource collections, in descending order by number of accessions conserved. Germplasm data from Genesys and FAO WIEWS (2024).

| Taxon | Number of accessions (from genebank collections databases) |
|---|---|
| *Vicia faba* L. | 34,471 |
| *Vicia sativa* L. | 6,906 |
| *Vicia sativa* subsp. *sativa* | 6,027 |
| *Vicia ervilia* (L.) Willd. | 2,427 |
| *Vicia* L. | 2,118 |
| *Vicia sativa* subsp. *nigra* (L.) Ehrh. | 1,689 |
| *Vicia villosa* Roth | 1,475 |
| *Vicia narbonensis* L. | 1,001 |
| *Vicia sativa* subsp. *cordata* (Wulfen ex Hoppe) Batt. | 671 |
| *Vicia peregrina* L. | 664 |
| *Vicia hybrida* L. | 578 |
| *Vicia cracca* L. | 458 |
| *Vicia benghalensis* L. | 392 |
| *Vicia palaestina* Boiss. | 380 |
| *Vicia villosa* subsp. *villosa* | 370 |
| *Vicia hirsuta* (L.) Gray | 337 |
| *Vicia pannonica* Crantz | 331 |
| *Vicia villosa* subsp. *varia* (Host) Corb. | 294 |
| *Vicia sativa* subsp. *amphicarpa* (L.) Batt. | 283 |
| *Vicia lutea* L. | 276 |
| *Vicia articulata* Hornem. | 257 |
| *Vicia tetrasperma* (L.) Schreb. | 241 |
| *Vicia grandiflora* Scop. | 231 |
| *Vicia bithynica* (L.) L. | 210 |
| *Vicia faba* var. *equina* St.-Amans | 199 |
| *Vicia monantha* Retz. | 195 |
| *Vicia villosa* subsp. *eriocarpa* (Hausskn.) P. W. Ball | 175 |
| *Vicia lutea* subsp. *vestita* (Boiss.) Rouy | 174 |
| *Vicia lathyroides* L. | 167 |
| *Vicia sativa* subsp. *macrocarpa* (Moris) Arcang. | 166 |
| *Vicia sepium* L. | 164 |
| *Vicia sericocarpa* Fenzl | 146 |
| *Vicia cuspidata* Boiss. | 132 |
| *Vicia magellanica* Hook. f. | 132 |
| *Vicia anatolica* Turrill | 131 |
| *Vicia narbonensis* var. *narbonensis* | 131 |
| *Vicia pannonica* subsp. *striata* (M. Bieb.) Nyman | 129 |
| *Vicia monantha* subsp. *monantha* | 126 |
| *Vicia tenuifolia* Roth | 113 |
| *Vicia johannis* var. *procumbens* H. I. Schäf. | 107 |
| *Vicia hyrcanica* Fisch. & C. A. Mey. | 102 |
| *Vicia pannonica* subsp. *pannonica* | 101 |
| *Vicia narbonensis* var. *affinis* Kornh. ex Asch. & Schweinf. | 81 |
| *Vicia monantha* subsp. *triflora* (Ten.) B. L. Burtt & P. Lewis | 79 |

| Taxon | Number of accessions (from genebank collections databases) |
|---|---|
| *Vicia michauxii* Spreng. | 78 |
| *Vicia mollis* Boiss. & Hausskn. | 61 |
| *Vicia narbonensis* var. *aegyptiaca* Asch. & Schweinf. | 59 |
| *Vicia johannis* var. *johannis* | 56 |
| *Vicia amoena* Fisch. ex Ser. | 52 |
| *Vicia serratifolia* Jacq. | 48 |
| *Vicia canescens* subsp. *variegata* (Willd.) P. H. Davis | 47 |
| *Vicia johannis* Tamamsch. | 46 |
| *Vicia lutea* subsp. *lutea* | 43 |
| *Vicia narbonensis* var. *salmonea* (Mouterde) H. I. Schäf. | 43 |
| *Vicia pyrenaica* Pourr. | 43 |
| *Vicia aintabensis* Boiss. & Hausskn. | 40 |
| *Vicia bijuga* Gillies ex Hook. & Arn. | 40 |
| *Vicia disperma* DC. | 39 |
| *Vicia cassubica* L. | 38 |
| *Vicia faba* var. *minuta* (hort. ex Alef.) Mansf. | 35 |
| *Vicia unijuga* A. Braun | 35 |
| *Vicia pisiformis* L. | 34 |
| *Vicia galilaea* Plitmann & Zohary | 33 |
| *Vicia noeana* Reut. ex Boiss. | 33 |
| *Vicia tenuifolia* subsp. *tenuifolia* | 32 |
| *Vicia melanops* Sm. | 31 |
| *Vicia parviflora* Cav. | 29 |
| *Vicia dumetorum* L. | 26 |
| *Vicia galeata* Boiss. | 26 |
| *Vicia hyaeniscyamus* Mouterde | 26 |
| *Vicia sylvatica* L. | 23 |
| *Vicia cracca* subsp. *cracca* | 22 |
| *Vicia ciliatula* Lipsky | 20 |
| *Vicia lilacina* Ledeb. | 19 |
| *Vicia montbretii* Fisch. & C. A. Mey. | 19 |
| *Vicia cappadocica* Boiss. & Balansa | 18 |
| *Vicia epetiolaris* Burkart | 18 |
| *Vicia graminea* Sm. | 18 |
| *Vicia tenuifolia* subsp. *dalmatica* (A. Kern.) Greuter | 18 |
| *Vicia americana* Muhl. ex Willd. | 17 |
| *Vicia cretica* Boiss. & Heldr. | 17 |
| *Vicia narbonensis* var. *jordanica* H. I. Schäf. | 16 |
| *Vicia abbreviata* Fisch. ex Spreng. | 15 |
| *Vicia orobus* DC. | 15 |
| *Vicia cassia* Boiss. | 14 |
| *Vicia pseudo-orobus* Fisch. & C. A. Mey. | 14 |
| *Vicia costata* Ledeb. | 13 |
| *Vicia incisa* M. Bieb. | 13 |
| *Vicia ludoviciana* Nutt. ex Torr. & A. Gray | 13 |
| *Vicia paucifolia* Baker | 12 |
| *Vicia amurensis* Oett. | 11 |

| Taxon | Number of accessions (from genebank collections databases) |
|---|---|
| *Vicia cirrhosa* C. Sm. ex Webb & Berthel. | 11 |
| *Vicia dionysiensis* Mouterde | 11 |
| *Vicia loiseleurii* (M. Bieb.) Litv. | 11 |
| *Vicia qatmensis* Gomb. | 11 |
| *Vicia canescens* Labill. | 10 |
| *Vicia kalakhensis* Khattab et al. | 10 |
| *Vicia megalotropis* Ledeb. | 10 |
| *Vicia pulchella* Kunth | 10 |
| *Vicia cypria* Kotschy | 9 |
| *Vicia esdraelonensis* Warb. & Eig | 9 |
| *Vicia multicaulis* Ledeb. | 9 |
| *Vicia nana* Vogel | 9 |
| *Vicia onobrychioides* L. | 9 |
| *Vicia balansae* Boiss. | 8 |
| *Vicia biennis* L. | 8 |
| *Vicia scandens* R. P. Murray | 8 |
| *Vicia assyriaca* Boiss. | 7 |
| *Vicia nigricans* subsp. *gigantea* (Hook.) Lassetter & C. R. Gunn | 6 |
| *Vicia pubescens* (DC.) Link | 6 |
| *Vicia cordata* Wulfen ex Hoppe | 5 |
| *Vicia cracca* subsp. *incana* (Gouan) Rouy | 5 |
| *Vicia lunata* (Boiss. & Balansa) Boiss. & Balansa | 5 |
| *Vicia oroboides* Wulfen | 5 |
| *Vicia sosnowskyi* Ekutim. | 5 |
| *Vicia villosa* subsp. *microphylla* (d'Urv.) P. W. Ball | 5 |
| *Vicia andicola* Kunth | 4 |
| *Vicia hulensis* Plitmann | 4 |
| *Vicia laeta* Ces. | 4 |
| *Vicia venosa* (Willd. ex Link) Maxim. | 4 |
| *Vicia acutifolia* Elliott | 3 |
| *Vicia alpestris* Steven | 3 |
| *Vicia basaltica* Plitmann | 3 |
| *Vicia crocea* (Desf.) B. Fedtsch. | 3 |
| *Vicia eristalioides* Maxted | 3 |
| *Vicia floridana* S. Watson | 3 |
| *Vicia japonica* A. Gray | 3 |
| *Vicia johannis* var. *ecirrhosa* (Popov) H. I. Schäf. | 3 |
| *Vicia ludoviciana* subsp. *leavenworthii* (Torr. & A. Gray) Lassetter & C. R. Gunn | 3 |
| *Vicia nipponica* Matsum. | 3 |
| *Vicia canescens* subsp. *serinica* (R. Uechtr. & Huter) P. H. Davis | 2 |
| *Vicia ciceroidea* Boiss. | 2 |
| *Vicia cusnae* Foggi & Ricceri | 2 |
| *Vicia iranica* Boiss. | 2 |
| *Vicia kokanica* Regel & Schmalh. | 2 |
| *Vicia leucantha* Biv. | 2 |
| *Vicia macrograminea* Burkart | 2 |

| Taxon | Number of accessions (from genebank collections databases) |
|---|---|
| *Vicia nervata* Sipliv. | 2 |
| *Vicia nigricans* Hook. & Arn. | 2 |
| *Vicia sativa* subsp. *incisa* (M. Bieb.) Arcang. | 2 |
| *Vicia* spp. | 2 |
| *Vicia tigridis* Mouterde | 2 |
| *Vicia vicioides* (Desf.) Cout. | 2 |
| *Vicia alpestris* subsp. *hypoleuca* (Boiss.) P. H. Davis | 1 |
| *Vicia altissima* Desf. | 1 |
| *Vicia americana* var. *americana* | 1 |
| *Vicia argentea* Lapeyr. | 1 |
| *Vicia bakeri* Ali | 1 |
| *Vicia barbazitae* Ten. & Guss. | 1 |
| *Vicia faba* var. *faba* | 1 |
| *Vicia filicaulis* Webb & Berthel. | 1 |
| *Vicia fulgens* Batt. | 1 |
| *Vicia glauca* C. Presl | 1 |
| *Vicia intermedia* Viv. | 1 |
| *Vicia koeieana* Rech. f. | 1 |
| *Vicia montevidensis* Vogel | 1 |
| *Vicia ocalensis* R. K. Godfrey & Kral | 1 |
| *Vicia ochroleuca* Ten. | 1 |
| *Vicia ochroleuca* subsp. *dinara* (Borbás) K. Malý ex Rohlena | 1 |
| *Vicia pallida* Hook. & Arn. | 1 |
| *Vicia ramuliflora* (Maxim.) Ohwi | 1 |
| *Vicia sericocarpa* var. *microphylla* Boiss. | 1 |
| *Vicia sibirica* Herb. ex Colla | 1 |
| *Vicia sicula* (Raf.) Guss. | 1 |
| *Vicia stenophylla* Bianca | 1 |
| *Vicia subrotunda* (Maxim.) Czefr. | 1 |
| *Vicia subvillosa* (Ledeb.) Boiss. | 1 |
| *Vicia venulosa* Boiss. & Hohen. | 1 |
| *Vicia villosa* subsp. *pseudocracca* (Bertol.) Rouy | 1 |

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