

GLOBAL CROP CONSERVATION AND USE METRICS

ONIONS, GARLIC, AND LEEKS

(Allium L.)



Cover photo: Michael Major for Crop Trust

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Global crop conservation and use metrics

ONIONS, GARLIC, AND LEEKS

(Allium L.)



With support from



Description

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

- global statistics on crop production, trade, and availability in food supplies;
- 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;
- varietal registrations and releases; and
- crop networks and partnerships

Introduction and background on *Allium*

Cultivated species in the genus *Allium* L., which includes onions (*Allium cepa* L.), garlic (*Allium sativum* L.), leeks (*Allium porrum* L., syn. *Allium ampeloprasum* L.), shallots (*A. cepa*), scallions [several species, including *A. cepa*, *Allium chinense* G. Don, *Allium fistulosum* L., and *Allium ×proliferum* (Moench) Schrad. ex Willd.], and chives (*Allium schoenoprasum* L.), have been cultivated for thousands of years, with archaeological evidence documenting garlic and onion cultivation in ancient Egypt and Greece (Brewster, 2008; Block, 2009; USDA, 2025). These vegetables spread via trade routes and became fundamental to cuisines across Europe, Asia, Africa, and eventually the Americas following European colonization (Brewster, 2008). Beyond their culinary importance as aromatic base ingredients in countless dishes worldwide, *Allium* species have been valued medicinally for their antimicrobial, anti-inflammatory, cardiovascular, and antioxidant effects (Putnik *et al.*, 2019).

Based on the most recently available production statistics from FAOSTAT, reporting for the year 2023, onions, garlic, and leeks and other alliaceous vegetables (in combination) are cultivated in at least 157 countries on 7.9 million hectares worldwide, producing 147.3 million tonnes of fresh or dry product at a value of over USD 92 billion (FAO, 2025a). The largest producers include China, India, Egypt, USA, Bangladesh, Türkiye, Indonesia, Iran,

Republic of Korea, Algeria, and Mexico, each producing over 2 million tonnes per annum.

There is considerable international trade in onions, garlic, and leeks and other alliaceous vegetables (over 16 million tonnes exported per annum), with China, India, Netherlands, Egypt, Mexico, Spain, USA, Uzbekistan, Afghanistan, Argentina, and Peru reporting exporting over 250,000 tonnes each year (FAO, 2025a). Among the 195 countries reporting importing onions, garlic, and leeks and other alliaceous vegetables, the top recipients include Bangladesh, USA, Malaysia, Indonesia, Viet Nam, United Arab Emirates, Pakistan, UK, Sri Lanka, Germany, Netherlands, Japan, Côte d'Ivoire, Canada, and the Russian Federation, all importing over 250,000 tonnes each year.

Global consumption statistics are imprecise, with FAOSTAT reporting onions, garlic, and leeks and other alliaceous vegetables under its “Vegetables, Other” category (Khoury *et al.*, 2023). Estimates derived from these data for the years 2015-2018 indicate that these vegetables are a major contributor to calories in the food supplies of at least 101 countries, to protein in 114 countries, and to food weight in 150 countries (Table 1). Production, trade, and food supply metrics all indicate that these vegetables are widely utilized outside of their regions of origin, implying significant international interdependence with regard to crop genetic resources.

Table 1. Global status of *Allium* production, trade, availability in food supplies, and public interest for assessed *Allium* crops. Production, trade, and food supply statistics from FAOSTAT (2015 to 2018 average). Production and trade metrics are reported directly for onions, garlic, and leeks and other alliaceous vegetable crops in FAOSTAT; for food supply, these crops are placed within “Vegetables, Other” and the estimates presented here were derived by disaggregating that 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, and is reported for whichever of the *Allium* crops has the maximum number of countries reported. 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, and is reported as an average value across the *Allium* crops. 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, and is reported as an average value across the *Allium* crops. Wikipedia metric is public pageviews over one year (2019) of the taxon name of the crop, and is the sum of the *Allium* crops. 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)	6,963,460	55.25	0.25	0.88
Total production (tonnes)	129,929,957	92.25	0.24	0.84
Gross production value (current thousand USD)	65,129,740	84.75	0.20	0.84
Export quantity (tonnes)	10,259,149	40.25	0.22	0.90
Export value (current thousand USD)	6,409,171	28.25	0.20	0.92
Import quantity (tonnes)	10,121,683	133.00	0.34	0.81
Import value (current thousand USD)	6,155,588	115.50	0.33	0.83
Contribution to calories in food supplies (kcal/capita/day)	13.78	101.00	0.66	1.00
Contribution to protein in food supplies (g/capita/day)	0.54	114.00	0.65	1.00
Contribution to fat in food supplies (g/capita/day)	0.08	23.00	0.65	0.99
Contribution to food weight in food supplies (g/capita/day)	14.24	150.25	0.65	0.99
Number of public pageviews on Wikipedia over one year	27,004			

Identity and composition of *ex situ* collections

Based on the latest data in global genetic resource databases, germplasm collections of *Allium* crops and their wild relatives (i.e., genus *Allium* L.) are present in at least 178 institutions worldwide, collectively maintaining 24,365 accessions (Table 2, Table 3; Supplementary Table 1). This is slightly more than the number of accessions reported for *Allium* crops (23,580) in the major germplasm collections listed in *The Third Report on the State of the World's Plant Genetic Resources for Food and Agriculture* (FAO, 2025b).

The institutions are mainly distributed in the Northern Hemisphere, including large collec-

tions in Europe, North America, and Asia. The World Vegetable Center maintains an international collection of the crops, while the largest national collections are in Germany, UK, Japan, USA, Poland, India, and Bulgaria; these international and national collections collectively maintain over half of documented accessions worldwide.

The International Board for Plant Genetic Resources (IBPGR)/International Plant Genetic Resources Institute (IPGRI) Register of Base Collections, which included collections that had formed (or had been proposed for) agreements with the international institutions

based on long-term conservation of crop gene pools on global or regional bases during the 1970s through 1990s (IBPGR/IPGRI, 1993; Thormann *et al.*, 2019), listed, for *Allium* crops:

- World Vegetable Center – global collection
- Research Institute for Plant Production (Czechia) - global collection in maintained in field conditions (agreement dated 1985)
- Research Centre for Agrobiodiversity (RCA) (Hungary) – regional collection for South and East Europe (agreement dated 1984)
- National Institute of Agrobiological Science (NIAS) (Japan) - regional collection for Asia (agreement dated 1985)
- Center for Genetic Resources (CGN) (The Netherlands) - global collections of onion, leeks, and wild species (agreement dated 1986)
- Warwick Genetic Resources Unit (UK) – global collection (agreement dated 1981)
- USDA National Plant Germplasm System (NPGS) (USA) – global collection of onion and wild species (proposed)

Based on the number of current accessions (Table 2, Supplementary Table 1), it appears that all of these recognized collections continue to maintain diverse *Allium* germplasm, noting that names of some institutions have changed.

Allium L. (Amaryllidaceae) is an enormous genus, containing around 1000 species, native mainly to temperate regions of the Northern Hemisphere, with a few species native to other regions, such as temperate South America and tropical Africa (USDA, 2025; WFO, 2025). Published gene pool concepts are available for onion, leeks, and Japanese bunching/Welsh onions (USDA, 2025).

The gene pool concept for onion places one taxon in the primary gene pool – *Allium vavilovii* Popov & Vved (USDA, 2025). This putative progenitor is native to Iran and Turkmenistan.

The secondary gene pool contains two taxa – *Allium galanthum* Kar. & Kir. and *Allium roylei* Stearn.

The tertiary gene pool contains the following taxa:

Allium albidum Fisch. ex M. Bieb.
Allium altaicum Pall.
Allium altynolicum N. Friesen
Allium asarense R. M. Fritsch & Matin
Allium chrysanthum Regel
Allium chrysocephalum Regel
Allium farctum Wendelbo
Allium fistulosum L.
Allium herderianum Regel
Allium hymenorrhizum Ledeb.
Allium karelinii Poljakov
Allium lineare L.
Allium macrostemon Bunge
Allium maowenense J. M. Xu
Allium obliquum L.
Allium rhabdotum Stearn
Allium rude J. M. Xu
Allium saxatile M. Bieb.
Allium schoenoprasoides Regel
Allium semenowii Regel
Allium sphaerocephalum L.
Allium tanguticum Regel
Allium xichuanense J. M. Xu

The quaternary gene pool for onion contains the following taxa, with all remaining taxa in the genus assumed to be more distantly related to onions:

Allium angulosum L.
Allium chinense G. Don
Allium gunibicum Miscz. ex Grossh.
Allium nutans L.
Allium oschaninii O. Fedtsch.
Allium praemixtum Vved.
Allium pskemense B. Fedtsch.
Allium senescens L.

The gene pool concept for leeks places the following taxa in the primary gene pool:
Allium ampeloprasum L. (putative progenitor, native to West Asia, Europe, and North Africa)
Allium ampeloprasum L. var. *ampeloprasum*

Table 2. Major *ex situ* collections of *Allium* 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 (2025), with supplementary information as noted. Multilateral System (MLS) status from Plant Treaty GLIS (2025) and from Genesys and FAO WIEWS (2025).

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)
DEU146	Genebank, Leibniz Institute of Plant Genetics and Crop Plant Research	2,600	10.7%	10.7%	581	0	0
GBR006	Warwick Genetic Resources Unit	1,822	7.5%	18.1%	Not listed	0	0
JPN183	NARO Genebank	1,332	5.5%	23.6%	133	0	0
USA022	Western Regional Plant Introduction Station, USDA-ARS, Washington State University	1,273	5.2%	28.8%	Not listed*	0	0
USA003	Northeast Regional Plant Introduction Station, Plant Genetic Resources Unit, USDA-ARS, New York State Agricultural Experiment Station, Cornell University	1,223	5.0%	33.9%	Not listed*	0	0
POL101	Research Institute of Horticulture	1,196	4.9%	38.8%	555	0	0
IND001	National Bureau of Plant Genetic Resources	1,162	4.8%	43.5%	1,148	0	0
BGR001	Institute for Plant Genetic Resources 'K.Malkov'	975	4.0%	47.5%	179	0	0
TWN001	World Vegetable Center	866	3.5%	51.1%	586	582	631
CZE061	Gene bank - Vegetables and special crops	777	3.2%	54.3%	Not listed	0	777
HUN003	Centre for Plant Diversity	698	2.9%	57.1%	186	0	108
USA974	Seed Savers Exchange	659	2.7%	59.9%	Not listed	0	0
ESP027	Gobierno de Aragón. Centro de Investigación y Tecnología Agroalimentaria. Banco de Germoplasma de Hortícolas	586	2.4%	62.3%	544	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)
BRA003	Embrapa Recursos Genéticos e Biotecnologia	555	2.3%	64.5%	Not listed	0	0
PRT001	Banco Português de Germoplasma Vegetal	554	2.3%	66.8%	20	0	0
POL003	Plant Breeding and Acclimatization Institute	493	2.0%	68.8%	424	0	0
NLD037	Centre for Genetic Resources, the Netherlands	437	1.8%	70.6%	437	0	0
GBR004	Millennium Seed Bank - Royal Botanic Gardens Kew	433	1.8%	72.4%	Not listed*	0	0
ESP124	Junta de Comunidades de Castilla-La Mancha. Consejería de Agricultura. Centro de Investigación Agraria de Albaladejito.	353	1.4%	73.9%	Not listed	0	0
BRA020	Embrapa Clima Temperado	271	1.1%	75.0%	Not listed	0	0
	Other institutions (n = 158)	6,100	24.9%	100.0%	1,839	119	626

*But known to conserve accessions in long-term storage conditions

Allium ampeloprasum L. var. *babingtonii* (Borrer) Syme
Allium atrovioleaceum Boiss.
Allium bourgeaui Rech. f.
Allium bourgeaui Rech. f. subsp. *bourgeaui*
Allium bourgeaui Rech. f. subsp. *creticum* Bothmer
Allium bourgeaui Rech. f. subsp. *cycladicum* Bothmer
Allium commutatum Guss.
Allium iranicum (Wendelbo) Wendelbo (putative progenitor, native to Iran and Iraq)
Allium truncatum (Feinbrun) Kollmann & Zohary

No species are currently assigned to the secondary gene pool. The tertiary gene pool of

leeks contacts the following taxa:
Allium fistulosum L.
Allium polyanthum Schult. & Schult. f.
Allium pyrenaicum Costa & Vayr.
Allium schoenoprasum L.

Data compilation for this report on *Allium* crop genetic resources included all taxa in the genus *Allium*. Around 451 taxonomic names are present in germplasm collections, including the crops, wild relatives, hybrids, and accessions only determined to the genus level (Supplementary Table 2). The largest collections are of the crops and several wild relative species. Landraces make up the largest proportion of collections (33.8%), followed by improved varieties (17.9%), wild

Table 3. Composition of *ex situ* collections of *Allium* genetic resources. Main *ex situ* collections data from Genesys and FAO WIEWS (2025). Primary and secondary regions information from Khoury *et al.* (2023) and subsequent research for this summary. Botanic gardens data from BGCI PlantSearch (2025).

Metric	Number	Percentage
Total number of accessions in genebank collections	24,365	
Number of institutions holding genebank collections	177	
Number of distinct taxonomic names in genebank collections	451	
Number of accessions of crop wild relatives (CWR) in genebank collections	3,609	14.8%
Number of accessions of weedy materials in genebank collections	51	0.2%
Number of accessions of landraces in genebank collections	8,245	33.8%
Number of accessions of breeding materials in genebank collections	2,198	9.0%
Number of accessions of improved varieties in genebank collections	4,348	17.9%
Number of accessions of other materials in genebank collections	1,791	7.3%
Number of accessions not marked with an improvement type in genebank collections	4,123	16.9%
Number of countries where germplasm has been collected for genebank collections	132	
Number of accessions in genebank collections from the primary region(s) of diversity	6,418	26.3%
Number of taxa in botanic garden collections	558	
Number of botanic gardens holding collections of crop or its wild relatives	397	

relatives (14.8%), and breeding materials (9%) (Table 3); these percentages are estimates based on available data, noting that 16.9% of accessions do not have biological status data and another 7.3% are marked as “other” materials.

Allium germplasm has been collected from at least 132 countries, with approximately 26.3% of accessions originating from the primary regions of diversity of the crops (i.e. Central and West Asia, Southern Europe, and the Mediterranean); these statistics are also estimates, as 9.1% of *Allium* landrace accessions and 13.1% 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 397 botanic

gardens collectively conserve 558 *Allium* taxa; comparing these to genebank collections, 199 are present only 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. In a global *ex situ* conservation gap analysis of the wild relatives of major crops, Castañeda-Álvarez *et al.* (2016), assessing 12 *Allium* crop wild relatives, listed ten (83.3%) as of high priority for further collecting, and two other species as of medium priority.

Multilateral System status of accessions in *ex situ* collections

The genus *Allium* is not listed in Annex I of the International Treaty on Plant Genetic Resources for Food and Agriculture (Plant Treaty) and is thus not included in its Multilateral System of Access and Benefit Sharing (MLS). This said, institutions can voluntarily place their collections under the MLS. Of the 24,365 accessions conserved globally, approximately 3.6% are held in international institutions (mainly the World Vegetable Center), with 2.6% included in the MLS of the Plant Treaty, and the remainder maintained in national and other collections (Table 4).

As of 2025, 706 accessions are formally included in the MLS according to the Plant Treaty's GLIS database, and 4,639 accessions have been assigned Digital Object Identifiers (DOIs). Per the relevant fields in the global genetic resources databases, 2,142 accessions (8.8% of world total) are listed as included in the MLS; this may be an underestimate, noting that 48.8% of accessions do not have MLS status data.

Table 4. Representation of *Allium* 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 (2025). DOI and MLS data from Plant Treaty GLIS (2025).

Metric	Number	Percentage
Number of accessions in genebank collections in international institutions	890	3.6%
Number of accessions in genebank collections in national or other institutions	23,475	96.3%
Number of accessions in genebank collections in Annex I	0	0%
Number of accessions with DOI (Plant Treaty GLIS 2025)	4,639	
Number of accessions included in the Multilateral System (MLS) (Plant Treaty GLIS 2025)	706	
Number of accessions included in the Multilateral System (MLS) (genebank collections databases)	2,142	8.8%
Number of accessions included in the Multilateral System (MLS) that are in international collections (genebank collections databases)	638	2.6%
Number of accessions not included in the Multilateral System (MLS) (genebank collections databases)	10,330	42.4%
Number of accessions without information regarding inclusion in the Multilateral System (MLS) (genebank collections databases)	11,893	48.8%

Storage conditions, regeneration status, and safety duplication

As expected for mainly orthodox seed crops, the majority (at least 67.7%) of *Allium* accessions are conserved as seed, with 40.2% of these accessions listed as conserved under long-term cold-storage conditions (Table 5). Some *Allium* crops are also conserved

vegetatively, and 27.3% of accessions are currently maintained in field collections. Information on storage in general is missing for 8.6% of all accessions, and information on seed storage type (i.e., long, medium, or short term) is missing for 35.8% of seed accessions.

Current regeneration status and needs cannot be directly derived from the global germplasm databases. FAO WIEWS reporting for the *Third State of the World's Plant Genetic Resources for Food and Agriculture* (FAO, 2025b) for the years 2014 to 2019, documented 438 *Allium* accessions regenerated during this time by reporting institutions, with 691 accessions identified as needing regeneration, and 438 lacking funds to conduct the regeneration.

Analysis of the location of safety duplication sites of *Allium* germplasm, as listed in Genesys, indicates that at least 11.9% 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 *Allium* accessions worldwide, when also considering safety duplication within the same country, may be higher than this estimate, given that some national genebanks, such as the USA, typically provide safety backup their collections in a different location within the country. Information from the SGSV database from 2025 indicates that approximately 7.4% of total accessions worldwide are duplicated in Svalbard.

Table 5. Storage conditions of *Allium ex situ* collections, regeneration status, and safety duplication status. Main *ex situ* collections data from Genesys and FAO WIEWS (2025). Regeneration status information from FAO WIEWS (2025); data from 2014 to 2019. Safety duplication out of the country data based only on Genesys (2025) data. Svalbard Global Seed Vault data from SGSV portal (2025).

Metric	Number	Percentage
Number of accessions held in seed storage in genebank collections	16,488	67.7%
Number of accessions held in short-term seed storage in genebank collections	17	0.1%
Number of accessions held in medium-term seed storage in genebank collections	3,945	23.9%
Number of accessions held in long-term seed storage in genebank collections	6,632	40.2%
Number of accessions held in seed storage of undefined type in genebank collections	5,894	35.8%
Number of accessions held in field storage in genebank collections	6,652	27.3%
Number of accessions held in in-vitro storage in genebank collections	317	1.3%
Number of accessions held in cryo storage in genebank collections	545	2.2%
Number of accessions held as DNA in genebank collections	9	0.0%
Number of accessions held in other storage in genebank collections	558	2.3%
Number of accessions not marked with a storage type in genebank collections	2,094	8.6%
Number of accessions in genebank collections regenerated 2014-2019	438	30%
Number of accessions in genebank collections in need of regeneration 2014-2019	691	47.3%
Number of accessions in genebank collections in need of regeneration without budget for regeneration 2014-2019	438	30%
Number of accessions safety duplicated out of the country in genebank collections	2,124	11.9%
Number of accessions in genebank collections safety duplicated in Svalbard	1,802	7.4%

Documentation, information systems, and research resources

A descriptor list for *Allium* was published by the international agricultural research community in 2000 and is available online (IPGRI, ECPGR, and AVRDC, 2000). The World Vegetable Center also published a descriptor in 2015 (WorldVeg, 2015).

The estimated completeness of passport information for *Allium* accessions listed in Genesys is 6.2 on a scale of 0 (no data) to 10 (complete data), which indicates that a sizable amount of data is available, but also that there are gaps that it would be valuable to fill. Four metrics of the current degree of

digital sequence information (DSI) for *Allium* (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. Onions and garlic, along with tomatoes, beets, and lettuce, stand out compared to many other vegetables in terms of the degree of DSI resources, published literature, and research resources in GBIF (Khoury *et al.*, 2023).

Table 6. Documentation, information systems, and research resources for *Allium*. Passport data completeness index (PDCI) from Genesys (2025), 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	6.2
Number of genes as recorded in NCBI's Entrez database as of 2022	14,197
Number of genomes as recorded in NCBI's Entrez database as of 2022	2
Number of nucleotides as recorded in NCBI's Entrez database as of 2022	740,786
Number of proteins as recorded in NCBI's Entrez database as of 2022	280,036
Number of publications listed in Google Scholar with taxon name in title published between 2009 and 2019	8,822
Number of publications listed in PubMed Central with taxon name in text as of 2022	52,398
Number of research materials as recorded in GBIF (2025)	1,436,870

Germplasm distributions and varietal registrations and releases

Germplasm distribution and varietal development statistics for *Allium* 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). Distributions as reported in the FAO

WIEWS dataset were made from institutions in 28 countries, with the largest numbers of samples distributed from institutions in Romania, Sweden, Spain, Netherlands, and India, and were primarily to within-country national agricultural research centers and to farmers or non-governmental organizations (NGOs) (Khoury *et al.*, 2025). In the Plant Treaty dataset, the providers of the most samples were located in the Netherlands, China, the UK, and Spain, and the recipients of the most samples were located in the Nether-

lands, France, Italy, Belgium, the UK, Republic of Korea, and the USA. The differences in numbers of samples distributed as recorded by FAO WIEWS versus the Plant Treaty Data

Store is likely a reflection of the lack of inclusion of the crops in Annex 1 of the Plant Treaty (Khoury *et al.*, 2023).

Table 7. *Allium* 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	435.6
Average annual number of samples distributed worldwide as recorded in FAO WIEWS	1,455.1
Average annual number of samples distributed worldwide as recorded in the Plant Treaty Data Store	170.0
Number of countries receiving germplasm as recorded in the Plant Treaty Data Store	8.3
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	238.0
Average annual number of varietal releases worldwide as recorded in FAO WIEWS	121.3

Networks and partnerships

Currently active networks focused on *Allium* crops include:

- The Africa Vegetable Breeding Consortium (AVBC)
- The African Orphan Crops Consortium
- The European Cooperative Programme for Plant Genetic Resources (ECPGR) [Allium Working Group](#)
- The USDA ARS [Root & Bulb Crop Germplasm Committee](#) (also [here](#))

Conclusions

Onions, garlic, leeks, and other crops in the genus *Allium* are essential vegetables in many cuisines worldwide. *Allium* genetic resources are bolstered by the activities taking place in collections in national and subnational agricultural research organizations as well as at the World Vegetable Center. Available data indicates that these collections, in combination, are diverse and extensive, although they do not represent the full range of crop varieties as well as species and populations of wild relatives in *Allium* that could be conserved *ex situ* and made available for use. Lack of inclusion of the crops in Annex 1 of the Plant Treaty constrains international access to germplasm, with only around 8.8% of total accessions worldwide currently listed as included in the MLS. Botanic garden collections of *Allium* probably represent important complementary *ex situ* resources, but further analysis is required to better understand the degree of complementarity and to reveal gaps in *ex situ* conservation. There are considerable amounts of associated research resources, and there has been significant activity in germplasm distribution and varietal development for the crops. Further efforts are required to: identify/determine taxa within current *ex situ* accessions; regenerate accessions in need; more fully secure these accessions in long-term seed storage conditions and safety backup all unique accessions, including at the SGSV; and provide more complete accession-level passport information as well as generate further characterization and evaluation datasets.



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 Plant-Search 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 [GitLab repository](#). Extended methods are available [here](#).

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Supplementary Information

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

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)
DEU146	Genebank, Leibniz Institute of Plant Genetics and Crop Plant Research	2,600	10.7%	10.7%	581	0	0
GBR006	Warwick Genetic Resources Unit	1,822	7.5%	18.1%	Not listed	0	0
JPN183	NARO Genebank	1,332	5.5%	23.6%	133	0	0
USA022	Western Regional Plant Introduction Station, USDA-ARS, Washington State University	1,273	5.2%	28.8%	Not listed	0	0
USA003	Northeast Regional Plant Introduction Station, Plant Genetic Resources Unit, USDA-ARS, New York State Agricultural Experiment Station, Cornell University	1,223	5.0%	33.9%	Not listed	0	0
POL101	Research Institute of Horticulture	1,196	4.9%	38.8%	555	0	0
IND001	National Bureau of Plant Genetic Resources	1,162	4.8%	43.5%	1,148	0	0
BGR001	Institute for Plant Genetic Resources 'K.Malkov'	975	4.0%	47.5%	179	0	0
TWN001	World Vegetable Center	866	3.5%	51.1%	586	582	631
CZE061	Gene bank - Vegetables and special crops	777	3.2%	54.3%	Not listed	0	777
HUN003	Centre for Plant Diversity	698	2.9%	57.1%	186	0	108
USA974	Seed Savers Exchange	659	2.7%	59.9%		0	0
ESP027	Gobierno de Aragón. Centro de Investigación y Tecnología Agroalimentaria. Banco de Germoplasma de Hortícolas	586	2.4%	62.3%	544	0	0
BRA003	Embrapa Recursos Genéticos e Biotecnologia	555	2.3%	64.5%		0	0
PRT001	Banco Português de Germoplasma Vegetal	554	2.3%	66.8%	20	0	0
POL003	Plant Breeding and Acclimatization Institute	493	2.0%	68.8%	424	0	0
NLD037	Centre for Genetic Resources, the Netherlands	437	1.8%	70.6%	437	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)
GBR004	Millennium Seed Bank - Royal Botanic Gardens Kew	433	1.8%	72.4%	Not listed	0	0
ESP124	Junta de Comunidades de Castilla-La Mancha. Consejería de Agricultura. Centro de Investigación Agraria de Albaladejito.	353	1.4%	73.9%	Not listed	0	0
BRA020	Embrapa Clima Temperado	271	1.1%	75.0%	Not listed	0	0
SWE054	Nordic Genetic Resource Center	266	1.1%	76.1%	266	0	0
UZB006	Uzbek Research Institute of Plant Industry	264	1.1%	77.1%	Not listed	0	0
BGD206	Lal Teer Seed Limited	260	1.1%	78.2%	250	0	0
ESP026	Generalidad Valenciana. Universidad Politécnica de Valencia. Escuela Técnica Superior de Ingenieros Agrónomos. Banco de Germoplasma	219	0.9%	79.1%	152	0	0
BRA012	Embrapa Hortaliças	215	0.9%	80.0%		0	1
ISR002	Israel Gene Bank for Agricultural Crops, Agricultural Research Organisation, Volcani Center	206	0.8%	80.8%	85	0	0
PAK001	Plant Genetic Resources Program	204	0.8%	81.7%	Not listed	0	117
ARG1350	Banco Activo de Germoplasma de La Consulta	186	0.8%	82.4%	Not listed	0	0
FRA179	UE1346 RGCO Unité Expérimentale sur les Ressources Génétiques Végétales en Conditions Océaniques, INRAE Ploudaniel	185	0.8%	83.2%	Not listed	0	0
MNG030	Institute of Plant and Agricultural Science	182	0.8%	83.9%	Not listed	0	0
LVA025	Institute of Horticulture	171	0.7%	84.6%	Not listed	0	0
ROM007	Suceava Genebank	167	0.7%	85.3%	Not listed	4	4
UKR021	Institute of Vegetable and Melon Growing	149	0.6%	85.9%	85	0	0
CHL177	Banco Activo INIA La Platina	135	0.6%	86.5%	Not listed	0	0
SVN019	Crops and Seed Production Department, Agricultural Institute of Slovenia	126	0.5%	87.0%	62	0	1
CHL099	Banco Base INIA Quilamapu	120	0.5%	87.5%	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)
GRC005	Greek Genebank, Institute of Plant Breeding and Genetic Resources	115	0.5%	88.0%	Not listed	0	0
PRT102	Banco de Germoplasma - Universidade da Madeira	105	0.4%	88.4%	Not listed	0	105
SDN002	Agricultural Plant Genetic Resources Conservation and Research Centre	98	0.4%	88.8%	98	0	0
ESP172	Cabildo Insular de Tenerife. Centro de Conservación de la Biodiversidad Agrícola de Tenerife	92	0.4%	89.2%	Not listed	0	0
TUN029	Banque Nationale de Gènes de Tunisie	86	0.3%	89.5%	86	0	0
VNM049	Plant Resources Center	79	0.3%	89.9%	Not listed	0	0
URY003	INIA La Estanzuela	75	0.3%	90.2%	75	0	0
ALB026	Plant Genetic Resources Center	71	0.3%	90.5%	71	0	1
UKR008	Ustymivka Experimental Station of Plant Production	70	0.3%	90.7%	11	0	0
COL017	Corporación Colombiana de Investigación Agropecuaria, AGROSAVIA	69	0.3%	91.0%	25	0	0
NOR007	NTNU, Norwegian University of Science and Technology, NTNU University Museum, Ringve Botanical Garden	69	0.3%	91.3%	Not listed	0	69
TUR001	Plant Genetic Resources Department	67	0.3%	91.6%	67	0	0
NZL001	Margot Forde Genebank, AgResearch Ltd	66	0.3%	91.9%	Not listed	0	0
MKD001	Faculty of Agriculture, University Ss. Cyril and Methodius	64	0.3%	92.1%	Not listed	0	0
URY002	Facultad de Agronomía	64	0.3%	92.4%	6	0	0
ITA365	Dipartimento di Scienze dei Sistemi Culturali, Forestali e dell'Ambiente, Facoltà di Agraria dell'Università degli Studi della Basilicata	62	0.2%	92.6%	Not listed	0	0
MEX009	INIFAP, Campo Experimental Bajío (CEBAJ)	62	0.2%	92.9%		0	0
CZE122	Gene bank	60	0.2%	93.1%	59	100	60
GHA091	Plant Genetic Resources Research Institute	57	0.2%	93.4%	Not listed	1	1

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)
TJK027	National Center for Genetic Resources	55	0.2%	93.6%	46	0	2
FIN016	Natural Resources Institute Finland Piikkiö	51	0.2%	93.8%	Not listed	0	0
ARM005	Institute of Botany	50	0.2%	94.0%	Not listed	0	0
CHE001	Agroscope Changins	50	0.2%	94.2%	49	0	50
CYP004	National (CYPARI) Genebank, Agricultural Research Institute, Ministry of Agriculture, Rural Development and Environment	46	0.2%	94.4%	24	0	0
SAU015	Plant Genetic Resources Bank	46	0.2%	94.6%	Not listed	0	46
USA151	National Arboretum-Germplasm Unit, USDA/ ARS	45	0.2%	94.8%	Not listed	0	0
BEL094	ILVO - Instituut voor Landbouw- en Visserijonderzoek (Institute for Agricultural and Fisheries Research)	44	0.2%	95.0%	Not listed	0	44
GBR017	Henry Doubleday Research Association	42	0.2%	95.1%	Not listed	0	0
GRC044	Balkan Botanic Garden of Kroussia, Institute of Plant Breeding and Genetic Resources	40	0.2%	95.3%	Not listed	0	0
AZE015	Genetic Resources Institute	38	0.2%	95.5%	Not listed	0	0
CUB014	Instituto de Investigaciones Fundamentales en Agricultura Tropical	38	0.2%	95.6%	Not listed	0	0
NOR017	NIBIO Landvik	38	0.2%	95.8%	Not listed	0	38
ITA436	Istituto di Bioscienze e Biorisorse, Consiglio Nazionale delle Ricerche	37	0.1%	95.9%	Not listed	0	0
LBN020	Lebanese Agricultural Research Institute	35	0.1%	96.1%	35	0	1
HRV050	Institute of Agriculture and Tourism	33	0.1%	96.2%	Not listed	0	0
ESP004	Centro Nacional de Recursos Fitogenéticos	32	0.1%	96.3%	30	0	0
JOR105	National Agricultural Research Center	32	0.1%	96.5%	Not listed	0	0
ROM055	Research and Development Station for Vegetables - Bacau	31	0.1%	96.6%	Not listed	0	0
ECU023	Departamento Nacional de Recursos Fitogenéticos	30	0.1%	96.7%	29	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)
KGZ040	Bank-Laboratory of Plant Genetic Resources of the KR	30	0.1%	96.8%	8	0	0
MAR088	Centre Régional de la Recherche Agronomique de Settat	29	0.1%	97.0%	2	0	0
DNK011	Department of Food Sciences, Aarhus University	28	0.1%	97.1%	Not listed	0	0
FRA098	Station de la Réunion, CIRAD-FLHOR	25	0.1%	97.2%	25	0	0
HRV048	Institute for Adriatic Crops and Karst Reclamation	25	0.1%	97.3%	Not listed	0	0
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	24	0.1%	97.4%	2	0	0
COL029	Centro de Investigación La Selva, Corporación Colombiana de Investigación Agropecuaria	22	0.1%	97.5%	Not listed	0	0
ITA393	CREA-Centro di Ricerca Genomica e Bioinformatica - Sede di Montanaso Lombardo	22	0.1%	97.6%	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	20	0.1%	97.6%	20	0	0
NOR060	UiT – The Arctic University of Norway , Tromsø Arctic-Alpine Botanic Garden	20	0.1%	97.7%	Not listed	0	20
DEU502	Botanical Garden of the University of Osnabrück	19	0.1%	97.8%	Not listed	0	0
LBY006	National Bank for Plant Genetic Resources	19	0.1%	97.9%	Not listed	0	0
BGD028	Bangladesh Institute of Nuclear Agriculture (BINA)	17	0.1%	97.9%	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)
ESP032	Principado de Asturias. Servicio Regional de Investigación y Desarrollo Agroalimentario	15	0.1%	98.0%	1	0	0
TUR034	Field Crop Central Research Institute	15	0.1%	98.1%	15	0	0
BEL002	Gembloux agro-biotech, Université de Liège, département des Sciences agronomiques, Phytotechnie tropicale et Horticulture	14	0.1%	98.1%		0	14
EST019	Estonian Crop Research Institute	14	0.1%	98.2%	11	0	0
RUS001	N.I. Vavilov All-Russian Research Institute of Plant Industry	14	0.1%	98.2%	Not listed	0	0
SWE089	Department of Landscape Architecture, Planning and Management/National Genebank Alnarp	14	0.1%	98.3%	Not listed	0	0
ZMB030	SADC Plant Genetic Resources Centre	14	0.1%	98.4%	14	0	0
DEU022	Botanical Garden Berlin-Dahlem	13	0.0%	98.4%	Not listed	0	0
HRV041	Faculty of Agriculture, University of Zagreb	13	0.0%	98.5%	Not listed	0	0
ITA368	Banca del germoplasma autoctono vegetale regionale	13	0.0%	98.5%	1	0	0
BLR011	Republican Unitary Enterprise 'Research and Practical Centre of the National Academy of Sciences of Belarus for Arable Farming'	12	0.0%	98.6%	12	0	0
DEU515	Botanischer Versuchs- und Lehrgarten der Universitaet Regensburg	12	0.0%	98.6%	Not listed	0	0
MEX208	INIFAP, Centro Nacional de Recursos Genéticos (CNRG)	12	0.0%	98.7%	1	0	0
BLR014	State research institution 'Institute of Experimental Botany of the National Academy of Sciences of Belarus'	11	0.0%	98.7%	11	0	0
EGY087	National Gene Bank	11	0.0%	98.8%	Not listed	0	0
AUT001	Austrian Agency for Health and Food Safety	10	0.0%	98.8%	8	0	0
BGD099	Bangladesh Rural Advancement Committee (BRAC)	10	0.0%	98.8%	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)
BLR016	Republican Unitary Enterprise 'Research and Practical Center of the National Academy of Sciences of Belarus for Potato, Fruit and Vegetable Growing'	10	0.0%	98.9%	Not listed	0	0
CAN004	Plant Gene Resources of Canada, Saskatoon Research and Development Centre	10	0.0%	98.9%	10	0	10
NOR011	NIBIO Apelsvoll	10	0.0%	99.0%	Not listed	0	10
GRC102	Hellenic Mediterranean University	9	0.0%	99.0%	Not listed	0	0
KGZ034	Botanical Garden named after E.Z.Gareev	9	0.0%	99.0%	Not listed	0	0
AUT047	HBLFA Gartenbau Schönbrunn	8	0.0%	99.1%	8	0	0
AZE014	Azerbaijan State Agrarian University	8	0.0%	99.1%	Not listed	0	0
GRC100	CIHEAM Mediterranean Agronomic Institute of Chania	8	0.0%	99.1%	8	0	0
GUY021	National Agricultural Research and Extension Institute	8	0.0%	99.2%	Not listed	0	0
HRV044	College of Agriculture at Križevci	8	0.0%	99.2%	Not listed	0	0
LBN002	International Centre for Agricultural Research in Dry Areas	8	0.0%	99.2%	Not listed	6	6
NIC014	Centro Nacional de Investigación Agropecuaria (INTA-CNIA)	8	0.0%	99.3%	8	0	0
ARM059	Agrobiotechnology Scientific Center	7	0.0%	99.3%	3	0	0
BGD016	Bangladesh Agricultural University (BAU)	7	0.0%	99.3%	7	0	0
LTU006	Lithuanian Institute of Horticulture	7	0.0%	99.3%	3	0	3
MKD007	Fabia CSB Bogdanci	7	0.0%	99.4%	Not listed	0	0
MLT003	Plant Protection Directorate, Veterinary and Phytosanitary Regulation Department	7	0.0%	99.4%	Not listed	0	0
DEU626	Pädagogische Hochschule Karlsruhe	6	0.0%	99.4%	Not listed	0	0
NOR059	University of Agder, Natural History Museum and Botanical Garden	6	0.0%	99.5%	Not listed	0	6

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)
UKR075	Kolomyia Experimental Station	6	0.0%	99.5%	1	0	0
ALB037	National Agency of Protected Areas	5	0.0%	99.5%	Not listed	0	0
AUT025	Referat Pflanzengesundheit und Spezialkulturen	5	0.0%	99.5%	5	0	0
ITA363	Dipartimento di Chimica, Biologia e Biotecnologie, Università degli Studi Perugia	5	0.0%	99.5%	5	0	0
NER001	Institut national de la recherche agronomique du Niger	5	0.0%	99.6%	5	0	0
QAT004	Biotechnology Center, Ministry of Environment	5	0.0%	99.6%	5	3	5
SVK001	National Agricultural and Food Centre (NPPC), Research Institute of Plant Production (RIPP)	5	0.0%	99.6%	Not listed	0	0
UKR019	Research Station of Medicinal Crops	5	0.0%	99.6%	1	0	0
ZAF062	RSA National Plant Genetic Resources Centre	5	0.0%	99.6%	2	0	0
AUT005	Genebank Tirol	4	0.0%	99.7%		0	0
ETH085	Ethiopian Biodiversity Institute	4	0.0%	99.7%	1	0	0
HRV045	Faculty of Agrobiotechnical Sciences Osijek, University J.J. Strossmayer in Osijek	4	0.0%	99.7%	Not listed	0	0
MDG048	Laboratoire des semences et ressources phytogénétiques, FOFIFA	4	0.0%	99.7%	Not listed	0	0
NGA010	National Centre for Genetic Resources and Biotechnology	4	0.0%	99.7%	4	4	4
UKR036	Nikitskyi Botanical Gardens	4	0.0%	99.7%	Not listed	0	0
AZE004	Institute of Botany	3	0.0%	99.8%	Not listed	0	0
BGD215	Advanced Seed Research & Biotech Centre	3	0.0%	99.8%	Not listed	0	0
GEO001	I.Lomouri Institute of Crop Science	3	0.0%	99.8%	Not listed	0	0
NOR066	Lier Bygdetun	3	0.0%	99.8%	Not listed	0	3
ROM021	Research and Development Station for Plant Culture on Sands Dabuleni	3	0.0%	99.8%	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)
ROM077	Research and Development Station for Vegetables - Iernut	3	0.0%	99.8%	Not listed	0	0
SWZ015	National Plant Genetic Resources Centre	3	0.0%	99.8%	3	0	0
ZWE049	Genetic Resources and Biotechnology Institute-Department of Research and Specialist Services	3	0.0%	99.8%	Not listed	0	0
ARG1408	Instituto de Investigación y Desarrollo Hortícola Semillero	2	0.0%	99.8%	Not listed	0	0
AZE005	Vegetable Growing Research Institute Public Leqal Entity	2	0.0%	99.9%	Not listed	0	0
FRA366	Conservatoire botanique national de Bailleul	2	0.0%	99.9%	2	0	0
ITA391	CREA-Centro di Ricerca Orticoltura e Florovivaismo - Sede di Pontecagnano	2	0.0%	99.9%	Not listed	0	0
PER110	Centro Experimental La Molina	2	0.0%	99.9%		0	0
UKR018	Institute of Volatile Oil Bearing and Medicine Crops	2	0.0%	99.9%	1	0	0
UKR023	Donets'k Experimental Station	2	0.0%	99.9%	2	0	0
UKR081	Experimental Station 'Maiak'	2	0.0%	99.9%	2	0	0
AUT060	HBLFA Raumberg-Gumpenstein	1	0.0%	99.9%	1	0	0
BGD003	Bangladesh Agricultural Research Institute	1	0.0%	99.9%	1	0	0
CHL071	Banco de Germoplasma de Papa, Universidad Austral de Chile	1	0.0%	99.9%	1	0	0
CRI001	Centro Agronómico Tropical de Investigación y Enseñanza	1	0.0%	99.9%	1	1	1
CUB005	Instituto Nacional de Ciencias Agrícolas	1	0.0%	99.9%	Not listed	0	0
CUB042	Instituto de Investigaciones Hortícolas Liliانا Dimitrova	1	0.0%	99.9%	Not listed	0	0
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	1	0.0%	99.9%	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)
ESP200	Govern de les Illes Balears. Conselleria de Presidència. Direcció General d'Agricultura i Desenvolupament Rural. Institut de recerca i formació agrària i pesquera	1	0.0%	99.9%	Not listed	0	0
FIN043	Botany unit, Finnish Museum of Natural History, University of Helsinki	1	0.0%	99.9%	Not listed	0	0
GRC047	Vegetable Department, Institute of Plant Breeding and Genetic Resources	1	0.0%	100.0%	Not listed	0	0
IRL029	Department of Agriculture, Fisheries and Food, National Crop Variety Testing Centre	1	0.0%	100.0%	Not listed	0	1
IRL037	Irish Seed Savers Association CLG	1	0.0%	100.0%	1	0	0
LTU001	Lithuanian Institute of Agriculture	1	0.0%	100.0%	1	0	1
LVA009	Latvian State Forest Research Institute 'Silava'	1	0.0%	100.0%	1	0	0
NIC026	Centro de Desarrollo Tecnológico Hugo Chavez Fria	1	0.0%	100.0%	1	0	0
NOR067	Museum Nord - Lofotenhagene	1	0.0%	100.0%	Not listed	0	1
NPL069	National Agriculture Genetic Resources Centre-Genebank	1	0.0%	100.0%	1	0	0
PHL024	Bureau of Plant Industry-Davao National Crop Research and Development Center	1	0.0%	100.0%	Not listed	0	0
ROM019	Research and Development Institute for Vegetables and Floriculture Vidra	1	0.0%	100.0%	Not listed	0	0
SLV050	CENTA - Banco de Germoplasma	1	0.0%	100.0%	Not listed	0	0
TZA016	National Plant Genetic Resources Centre	1	0.0%	100.0%	1	0	0
UKR057	Nosivka Experimental Station	1	0.0%	100.0%	1	0	0

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 (2025).

Taxon	Number of accessions (from genebank collections databases)
<i>Allium cepa</i> L.	11,101
<i>Allium sativum</i> L.	4,759
<i>Allium ampeloprasum</i> L.	1,636
<i>Allium</i> L.	1,479
<i>Allium fistulosum</i> L.	1,091
<i>Allium schoenoprasum</i> L.	386
<i>Allium tuberosum</i> Rottler ex Spreng.	280
<i>Allium ascalonicum</i> L.	189
<i>Allium rotundum</i> L.	99
<i>Allium ursinum</i> L.	90
<i>Allium altaicum</i> Pall.	87
<i>Allium senescens</i> L.	85
<i>Allium angulosum</i> L.	82
<i>Allium sphaerocephalon</i> L.	74
<i>Allium ramosum</i> L.	73
<i>Allium stipitatum</i> Regel	70
<i>Allium nutans</i> L.	62
<i>Allium proliferum</i> (Moench) Schrad. ex Willd.	62
<i>Allium victorialis</i> L.	61
<i>Allium neapolitanum</i> Cirillo	55
<i>Allium atroviolaceum</i> Boiss.	51
<i>Allium cernuum</i> Roth	50
<i>Allium</i> hybr.	50
<i>Allium lusitanicum</i> Lam.	49
<i>Allium vineale</i> L.	41
<i>Allium chinense</i> G. Don	40
<i>Allium textile</i> A. Nelson & J. F. Macbr.	39
<i>Allium carolinianum</i> Redouté	37
<i>Allium acuminatum</i> Hook.	34
<i>Allium ochotense</i> Prokh.	33
<i>Allium ericetorum</i> Thore	32
<i>Allium galanthum</i> Kar. & Kir.	32
<i>Allium oleraceum</i> L.	32
<i>Allium scorodoprasum</i> L.	32
<i>Allium subhirsutum</i> L.	32
<i>Allium pskemense</i> B. Fedtsch.	30
<i>Allium rosenorum</i> R. M. Fritsch	28
<i>Allium caesium</i> Schrenk	27
<i>Allium aflatunense</i> B. Fedtsch.	26
<i>Allium flavum</i> L.	26
<i>Allium rubens</i> Schrad. ex Willd.	26
<i>Allium schubertii</i> Zucc.	26
<i>Allium sphaerocephalon</i> subsp. <i>sphaerocephalon</i>	26
<i>Allium caeruleum</i> Pall.	25

Taxon	Number of accessions (from genebank collections databases)
<i>Allium cornutum</i> Clementi	24
<i>Allium hymenorrhizum</i> Ledeb.	24
<i>Allium oschaninii</i> B. Fedtsch.	24
<i>Allium denudatum</i> Redouté	23
<i>Allium obliquum</i> L.	23
<i>Allium curtum</i> Boiss. & Gaill.	22
<i>Allium paniculatum</i> subsp. <i>paniculatum</i>	21
<i>Allium trifoliatum</i> Cirillo	21
<i>Allium ledebourianum</i> Schult. & Schult. f.	20
<i>Allium oreophilum</i> C. A. Mey.	20
<i>Allium vavilovii</i> Popov & Vved.	20
<i>Allium stamineum</i> Boiss.	19
<i>Allium tel-avivense</i> Eig	18
<i>Allium giganteum</i> Regel	17
<i>Allium macleanii</i> Baker	17
<i>Allium nigrum</i> L.	17
<i>Allium jodanthum</i> Vved.	16
<i>Allium rubellum</i> M. Bieb.	16
<i>Allium rupestre</i> Steven	16
<i>Allium strictum</i> Schrad.	16
<i>Allium barszczewskii</i> Lipsky	15
<i>Allium moly</i> L.	15
<i>Allium paniculatum</i> L.	15
<i>Allium saxatile</i> M. Bieb.	15
<i>Allium aschersonianum</i> Barbey	14
<i>Allium cristophii</i> Trautv.	14
<i>Allium farreri</i> Stearn	14
<i>Allium narcissiflorum</i> Vill.	14
<i>Allium paradoxum</i> (M. Bieb.) G. Don	14
<i>Allium polyrhizum</i> Turcz. ex Regel	14
<i>Allium guttatum</i> Steven	13
<i>Allium karataviense</i> Regel	13
<i>Allium roseum</i> L.	13
<i>Allium altynolicum</i> N. Friesen	12
<i>Allium bidentatum</i> Fisch. ex Prokh. & Ikonn.-Gal.	12
<i>Allium carinatum</i> subsp. <i>pulchellum</i> (G. Don) Bonnier & Layens	12
<i>Allium scorodoprasum</i> subsp. <i>scorodoprasum</i>	12
<i>Allium atropurpureum</i> Waldst. & Kit.	11
<i>Allium jesdianum</i> subsp. <i>angustitepalum</i> (Wendelbo) F. O. Khass. & R. M. Fritsch	11
<i>Allium junceum</i> subsp. <i>junceum</i>	11
<i>Allium sarawschanicum</i> Regel	11
<i>Allium triquetrum</i> L.	11
<i>Allium basalticum</i> Fragman & R. M. Fritsch	10
<i>Allium dictyoprasum</i> C. A. Mey. ex Kunth	10
<i>Allium flavum</i> subsp. <i>tauricum</i> (Besser ex Rchb.) K. Richt.	10

Taxon	Number of accessions (from genebank collections databases)
<i>Allium geyeri</i> S. Watson	10
<i>Allium komarowii</i> Lipsky	10
<i>Allium ponticum</i> Misch. ex Grossh.	10
<i>Allium cyrilli</i> Ten.	9
<i>Allium guttatum</i> subsp. <i>guttatum</i>	9
<i>Allium hollandicum</i> R. M. Fritsch	9
<i>Allium lineare</i> L.	9
<i>Allium oreoprasum</i> Schrenk	9
<i>Allium altissimum</i> Regel	8
<i>Allium amplexans</i> Torr.	8
<i>Allium anisopodium</i> Ledeb.	8
<i>Allium carinatum</i> subsp. <i>carinatum</i>	8
<i>Allium fuscoviolaceum</i> Fomin	8
<i>Allium negevense</i> Kollmann	8
<i>Allium phaneranthum</i> Boiss. & Hausskn.	8
<i>Allium platyspathum</i> Schrenk	8
<i>Allium bourgeai</i> subsp. <i>cycladicum</i> Bothmer	7
<i>Allium carinatum</i> L.	7
<i>Allium commutatum</i> Guss.	7
<i>Allium drobovi</i> Vved.	7
<i>Allium fetisowi</i> Regel	7
<i>Allium gunibicum</i> Misch. ex Grossh.	7
<i>Allium libani</i> Boiss.	7
<i>Allium melanantherum</i> Pancic	7
<i>Allium mongolicum</i> Regel	7
<i>Allium oreoscordum</i> Vved.	7
<i>Allium przewalskianum</i> Regel	7
<i>Allium pseudoflavum</i> Vved.	7
<i>Allium roseum</i> var. <i>roseum</i>	7
<i>Allium roylei</i> Stearn	7
<i>Allium thunbergii</i> G. Don	7
<i>Allium tianschanicum</i> Rupr.	7
<i>Allium tricoccum</i> Aiton	7
<i>Allium tschimganicum</i> B. Fedtsch.	7
<i>Allium umbilicatum</i> Boiss.	7
<i>Allium bourgeai</i> subsp. <i>creticum</i> Bothmer	6
<i>Allium daninianum</i> Brullo, Pavone & Salmeri	6
<i>Allium erubescens</i> K. Koch	6
<i>Allium falcifolium</i> Hook. & Arn.	6
<i>Allium fuscum</i> Waldst. & Kit.	6
<i>Allium heldreichii</i> Boiss.	6
<i>Allium longifolium</i> (Kunth) Spreng.	6
<i>Allium macrostemon</i> Bunge	6
<i>Allium pyrenaicum</i> Costa & Vayr.	6
<i>Allium rothii</i> Zucc.	6

Taxon	Number of accessions (from genebank collections databases)
<i>Allium scorzonerifolium</i> Desf. ex Redouté	6
<i>Allium suworowi</i> Regel	6
<i>Allium willeaenum</i> Holmboe	6
<i>Allium akirense</i> N. Friesen & Fragman	5
<i>Allium bourgeaui</i> subsp. <i>bourgeaui</i>	5
<i>Allium canadense</i> L.	5
<i>Allium cardiostemon</i> Fisch. & C. A. Mey.	5
<i>Allium carmeli</i> Boiss.	5
<i>Allium filidens</i> subsp. <i>filidens</i>	5
<i>Allium insubricum</i> Boiss. & Reut.	5
<i>Allium iranicum</i> (Wendelbo) Wendelbo	5
<i>Allium kokanicum</i> Regel	5
<i>Allium kunthianum</i> Vved.	5
<i>Allium maximowiczii</i> Regel	5
<i>Allium montanum</i> F. W. Schmidt	5
<i>Allium oliganthum</i> Kar. & Kir.	5
<i>Allium orientale</i> Boiss.	5
<i>Allium remediorum</i> (R. M. Fritsch) R. M. Fritsch	5
<i>Allium rosenbachianum</i> Regel	5
<i>Allium sinaiticum</i> Boiss.	5
<i>Allium splendens</i> Willd. ex Schult. & Schult. f.	5
<i>Allium truncatum</i> (Feinbrun) Kollmann & D. Zohary	5
<i>Allium affine</i> Ledeb.	4
<i>Allium albotunicatum</i> O. Schwarz	4
<i>Allium amethystinum</i> Tausch	4
<i>Allium autumnale</i> P. H. Davis	4
<i>Allium bisceptrum</i> S. Watson	4
<i>Allium cassium</i> Boiss.	4
<i>Allium cupani</i> subsp. <i>cyprium</i> Meikle	4
<i>Allium cupuliferum</i> subsp. <i>cupuliferum</i>	4
<i>Allium drummondii</i> Regel	4
<i>Allium egorovae</i> M. V. Agab. & Ogan.	4
<i>Allium flavescens</i> Besser	4
<i>Allium gramineum</i> K. Koch	4
<i>Allium israeliticum</i> Fragman & R. M. Fritsch	4
<i>Allium jesdianum</i> Boiss. & Buhse	4
<i>Allium junceum</i> Sm.	4
<i>Allium karelinii</i> Poljak.	4
<i>Allium meronense</i> Fragman & R. M. Fritsch	4
<i>Allium nevskianum</i> Vved. ex Wendelbo	4
<i>Allium pallens</i> var. <i>pallens</i>	4
<i>Allium paniculatum</i> subsp. <i>tenuiflorum</i> (Ten.) K. Richt.	4
<i>Allium papillare</i> Boiss.	4
<i>Allium prostratum</i> Trevir.	4
<i>Allium regelii</i> Trautv.	4

Taxon	Number of accessions (from genebank collections databases)
<i>Allium scabriscapum</i> Boiss.	4
<i>Allium sibthorpiatum</i> Schult. & Schult. f.	4
<i>Allium siculum</i> Ucria	4
<i>Allium siculum</i> subsp. <i>dioscoridis</i> (Sm.) K. Richt.	4
<i>Allium sikkimense</i> Baker	4
<i>Allium siskiyouense</i> Ownbey ex Traub	4
<i>Allium sphaerocephalon</i> subsp. <i>arvense</i> (Guss.) Arcang.	4
<i>Allium szovitsii</i> Regel	4
<i>Allium talassicum</i> Regel	4
<i>Allium unifolium</i> Kellogg	4
<i>Allium alamutense</i> Razyfard, Zarre & R. M. Fritsch	3
<i>Allium albidum</i> Besser	3
<i>Allium artemisietorum</i> Eig & Feinbrun	3
<i>Allium atrosanguineum</i> var. <i>atrosanguineum</i>	3
<i>Allium brevicaule</i> Boiss. & Balansa	3
<i>Allium burjaticum</i> N. Friesen	3
<i>Allium campanulatum</i> S. Watson	3
<i>Allium canadense</i> var. <i>canadense</i>	3
<i>Allium darwasicum</i> Regel	3
<i>Allium desertorum</i> Forssk.	3
<i>Allium douglasii</i> Hook.	3
<i>Allium drepanophyllum</i> Vved.	3
<i>Allium elburzense</i> Wendelbo	3
<i>Allium ellisii</i> Hook. f.	3
<i>Allium erdelii</i> Zucc.	3
<i>Allium eriocoleum</i> Vved.	3
<i>Allium fibrillum</i> M. E. Jones	3
<i>Allium flavovirens</i> Regel	3
<i>Allium griffithianum</i> Boiss.	3
<i>Allium gusaricum</i> Regel	3
<i>Allium ionicum</i> Brullo & Tzanoud.	3
<i>Allium jesdianum</i> subsp. <i>jesdianum</i>	3
<i>Allium kollmannianum</i> Brullo, Pavone & Salmeri	3
<i>Allium lemmonii</i> S. Watson	3
<i>Allium macedonicum</i> Zahar.	3
<i>Allium macranthum</i> Baker	3
<i>Allium materculae</i> Bordz.	3
<i>Allium moly</i> subsp. <i>moly</i>	3
<i>Allium moschatum</i> L.	3
<i>Allium multibulbosum</i> Jacq.	3
<i>Allium neriniflorum</i> (Herb.) G. Don	3
<i>Allium nevii</i> S. Watson	3
<i>Allium pallasii</i> Murray	3
<i>Allium paniculatum</i> subsp. <i>pallens</i> (L.) K. Richt.	3
<i>Allium peninsulare</i> Lemmon ex Greene	3

Taxon	Number of accessions (from genebank collections databases)
<i>Allium platyspathum</i> subsp. <i>platyspathum</i>	3
<i>Allium pseudostrictum</i> Albov	3
<i>Allium qasyunense</i> Mouterde	3
<i>Allium schoenoprasoides</i> Regel	3
<i>Allium spirale</i> Schweigg.	3
<i>Allium suaveolens</i> Jacq.	3
<i>Allium tardiflorum</i> Kollmann & Shmida	3
<i>Allium tashkenticum</i> F. O. Khass. & R. M. Fritsch	3
<i>Allium tolmiei</i> Baker	3
<i>Allium tuvnicum</i> (N. Friesen) N. Friesen	3
<i>Allium wallichii</i> Kunth	3
<i>Allium winklerianum</i> Regel	3
<i>Allium zebdanense</i> Boiss. & Noë	3
<i>Allium aaseae</i> Ownbey	2
<i>Allium akaka</i> S. G. Gmel. ex Schult. & Schult. f.	2
<i>Allium akaka</i> subsp. <i>bozghushense</i> R. M. Fritsch	2
<i>Allium atosanguineum</i> var. <i>fedschenkoanum</i> (Regel) G. H. Zhu & Turland	2
<i>Allium aucheri</i> Boiss.	2
<i>Allium auriculatum</i> Kunth	2
<i>Allium austroiranicum</i> R. M. Fritsch	2
<i>Allium austrosibiricum</i> N. Friesen	2
<i>Allium bakhtiaricum</i> Regel	2
<i>Allium bigelovii</i> S. Watson	2
<i>Allium brevidens</i> subsp. <i>pshikharvicum</i> R. M. Fritsch & F. O. Khass.	2
<i>Allium breviscapum</i> Stapf	2
<i>Allium callimischon</i> subsp. <i>haemostictum</i> Stearn	2
<i>Allium condensatum</i> Turcz.	2
<i>Allium cyprium</i> subsp. <i>lefkareense</i> (Brullo, Pavone & Salmeri) Christodoulou & Hand	2
<i>Allium derderianum</i> Regel	2
<i>Allium dumetorum</i> Feinbrun & Szel.	2
<i>Allium dyctioprasmum</i> C. A. Mey. ex Kunth	2
<i>Allium eduardi</i> Stearn ex Airy Shaw	2
<i>Allium exaltatum</i> (Meikle) Brullo, Pavone, Salmeri & Venora	2
<i>Allium flavellum</i> Vved.	2
<i>Allium furkatii</i> R. M. Fritsch	2
<i>Allium gasyunense</i> Mouterde	2
<i>Allium geyeri</i> var. <i>geyeri</i>	2
<i>Allium grande</i> Lipsky	2
<i>Allium grosii</i> Font Quer	2
<i>Allium hookeri</i> Thwaites	2
<i>Allium inconspicuum</i> Vved.	2
<i>Allium intradarvazicum</i> R. M. Fritsch	2
<i>Allium judaeum</i> Ben-Natan & Fragman	2
<i>Allium kasteki</i> Popov	2
<i>Allium lenkoranicum</i> Misch. ex Grossh.	2

Taxon	Number of accessions (from genebank collections databases)
<i>Allium lepticum</i> R. M. Fritsch, N. Friesen & S. V. Smirn.	2
<i>Allium leucosphaerum</i> Aitch. & Baker	2
<i>Allium lipskyanum</i> Vved.	2
<i>Allium macropetalum</i> Rydb.	2
<i>Allium marathasicum</i> Brullo, Pavone & Salmeri	2
<i>Allium microdictyon</i> Prokh.	2
<i>Allium myrianthum</i> Boiss.	2
<i>Allium nutans</i> x <i>senescens</i>	2
<i>Allium oreophiloides</i> Regel	2
<i>Allium pangasicum</i> Turak.	2
<i>Allium paniculatum</i> subsp. <i>longispathum</i> (Redouté) K. Richt.	2
<i>Allium parnassicum</i> (Boiss.) Halácsy	2
<i>Allium permixtum</i> Guss.	2
<i>Allium petraeum</i> Kar. & Kir.	2
<i>Allium platyspathum</i> subsp. <i>amblyophyllum</i> (Kar. & Kir.) N. Friesen	2
<i>Allium plummerae</i> S. Watson	2
<i>Allium polyanthum</i> Schult. & Schult. f.	2
<i>Allium praemixtum</i> Vved.	2
<i>Allium protensum</i> Wendelbo	2
<i>Allium pseudoampeloprasum</i> Misch. ex Grossh.	2
<i>Allium pseudohollandicum</i> R. M. Fritsch	2
<i>Allium punctum</i> L. F. Hend.	2
<i>Allium rubrovittatum</i> Boiss. & Heldr.	2
<i>Allium sahandicum</i> R. M. Fritsch	2
<i>Allium sanbornii</i> Alph. Wood	2
<i>Allium saposhnikovii</i> Nikitina	2
<i>Allium scabriscapum</i> Boiss. & Kotschy	2
<i>Allium schmitzii</i> Cout.	2
<i>Allium semenovii</i> Regel	2
<i>Allium sordidiflorum</i> Vved.	2
<i>Allium staticiforme</i> Sm.	2
<i>Allium stracheyi</i> Baker	2
<i>Allium subvillosum</i> Salzm. ex Schult. & Schult. f.	2
<i>Allium synnotia</i> G. Don	2
<i>Allium taeniopetalum</i> subsp. <i>taeniopetalum</i>	2
<i>Allium trachyoscordum</i> Vved.	2
<i>Allium trautvetterianum</i> Regel	2
<i>Allium tricoccum</i> var. <i>burdickii</i> Hanes	2
<i>Allium ubipetrense</i> R. M. Fritsch	2
<i>Allium validum</i> S. Watson	2
<i>Allium vavilovii</i> x <i>cepa</i>	2
<i>Allium vvedenskyanum</i> Pavlov	2
<i>Allium woronowii</i> Misch. ex Grossh.	2
<i>Allium xiphopetalum</i> Aitch. & Baker	2
<i>Allium abramsii</i> (Traub) McNeal	1
<i>Allium acutiflorum</i> Loisel.	1

Taxon	Number of accessions (from genebank collections databases)
<i>Allium aladaghense</i> Memariani & Joharchi	1
<i>Allium alaicum</i> Vved.	1
<i>Allium albovianum</i> Vved.	1
<i>Allium alekii</i> R. M. Fritsch & M. V. Agab.	1
<i>Allium alexandrae</i> Vved.	1
<i>Allium amphibolum</i> Ledeb.	1
<i>Allium angulosum</i> × <i>nutans</i>	1
<i>Allium aroides</i> Popov & Vved.	1
<i>Allium autumniflorum</i> F. O. Khass. & Akhani	1
<i>Allium backhousianum</i> Regel	1
<i>Allium baeticum</i> Boiss.	1
<i>Allium borszczowii</i> Regel	1
<i>Allium brachyscapum</i> Vved.	1
<i>Allium brachyspathum</i> Brullo, Pavone & Salmeri	1
<i>Allium calabrum</i> (N. Terracc.) Brullo, Pavone & Salmeri	1
<i>Allium callimischon</i> subsp. <i>callimischon</i>	1
<i>Allium canadense</i> var. <i>mobile</i> (Regel) Ownbey	1
<i>Allium canariense</i> (Regel) N. Friesen & P. Schönfelder	1
<i>Allium cepa</i> var. <i>proliferum</i> (Moench) Regel	1
<i>Allium cepa</i> × <i>fistulos</i>	1
<i>Allium chamaespathum</i> Boiss.	1
<i>Allium chychkanense</i> R. M. Fritsch	1
<i>Allium clathratum</i> Ledeb.	1
<i>Allium convallarioides</i> Grossh.	1
<i>Allium costatovaginatatum</i> Kamelin & Levichev	1
<i>Allium cristophii</i> subsp. <i>golestanicum</i> R. M. Fritsch	1
<i>Allium cupani</i> Raf.	1
<i>Allium cupani</i> subsp. <i>hirtovaginatatum</i> (Kunth) Stearn	1
<i>Allium cupuliferum</i> Regel	1
<i>Allium cyaneum</i> Regel	1
<i>Allium cyathophorum</i> Bureau & Franch.	1
<i>Allium cyprium</i> Brullo, Pavone & Salmeri	1
<i>Allium daghestanicum</i> Grossh.	1
<i>Allium diabolense</i> (Ownbey & Aase ex Traub) McNeal	1
<i>Allium dodecadontum</i> Vved.	1
<i>Allium dolichostylum</i> Vved.	1
<i>Allium elegans</i> Drobow	1
<i>Allium fasciculatum</i> Rendle	1
<i>Allium feinbergii</i> Oppenh.	1
<i>Allium filidens</i> Regel	1
<i>Allium filidens</i> subsp. <i>mogianense</i> R. M. Fritsch & F. O. Khass.	1
<i>Allium filidens</i> subsp. <i>ugami</i> (Vved.) R. M. Fritsch & F. O. Khass.	1
<i>Allium filidentiforme</i> Vved.	1
<i>Allium fimbriatum</i> S. Watson	1
<i>Allium flavum</i> var. <i>minus</i> Boiss.	1

Taxon	Number of accessions (from genebank collections databases)
<i>Allium fraseri</i> (Ownbey) Shinnery	1
<i>Allium garbarii</i> Peruzzi	1
<i>Allium geyeri</i> var. <i>tenerum</i> M. E. Jones	1
<i>Allium glaciale</i> Vved.	1
<i>Allium goloskokovii</i> Vved.	1
<i>Allium gomphrenoides</i> Boiss. & Heldr.	1
<i>Allium gracillimum</i> Vved.	1
<i>Allium graveolens</i> (R. M. Fritsch) R. M. Fritsch	1
<i>Allium guttatum</i> subsp. <i>dalmaticum</i> (A. Kern. ex Janch.) Stearn	1
<i>Allium guttatum</i> subsp. <i>sardoum</i> (Moris) Stearn	1
<i>Allium haematochiton</i> S. Watson	1
<i>Allium hamedanense</i> R. M. Fritsch	1
<i>Allium haneltii</i> F. O. Khass. & R. M. Fritsch	1
<i>Allium helicophyllum</i> Vved.	1
<i>Allium hermoneum</i> (Kollmann & Shmida) Brullo, Guglielmo, Pavone & Salmeri	1
<i>Allium humile</i> Kunth	1
<i>Allium inaequale</i> Janka	1
<i>Allium incensiodorum</i> Radic	1
<i>Allium inderiense</i> Fisch. ex Bunge	1
<i>Allium jaegeri</i> R. M. Fritsch	1
<i>Allium kaschianum</i> Regel	1
<i>Allium kermesinum</i> Rchb.	1
<i>Allium kirilovii</i> N. Friesen & Seregin	1
<i>Allium koelzii</i> (Wendelbo) Perss. & Wendelbo	1
<i>Allium kopsedorum</i> R. M. Fritsch	1
<i>Allium korolkowi</i> Regel	1
<i>Allium kujukense</i> Vved.	1
<i>Allium kurtzianum</i> Asch. & Sint. ex Kollmann	1
<i>Allium kwakense</i> (R. M. Fritsch) R. M. Fritsch	1
<i>Allium lacunosum</i> var. <i>davisiae</i> (M. E. Jones) McNeal & Ownbey	1
<i>Allium litvinovii</i> Drobow ex Vved.	1
<i>Allium lutescens</i> Vved.	1
<i>Allium madidum</i> S. Watson	1
<i>Allium mairei</i> H. Lév.	1
<i>Allium mannii</i> Traub & T. M. Howard	1
<i>Allium margaritaceum</i> Moench	1
<i>Allium margaritae</i> B. Fedtsch.	1
<i>Allium mariae</i> Bordz.	1
<i>Allium marschalianum</i> Vved.	1
<i>Allium melananthum</i> Coincy	1
<i>Allium meteoricum</i> Heldr. & Hausskn. ex Halácsy	1
<i>Allium mirum</i> Wendelbo	1
<i>Allium monophyllum</i> Vved. ex Czerniak.	1
<i>Allium najafdaricum</i> R. M. Fritsch	1
<i>Allium nebrodense</i> Guss.	1
<i>Allium oltense</i> Grossh.	1

Taxon	Number of accessions (from genebank collections databases)
<i>Allium opacum</i> Rech. f.	1
<i>Allium parviflorum</i> Viv.	1
<i>Allium parvum</i> Kellogg	1
<i>Allium peninsulare</i> var. <i>peninsulare</i>	1
<i>Allium phrygium</i> Boiss. & Balansa	1
<i>Allium pictistamineum</i> O. Schwarz	1
<i>Allium praecox</i> Brandegee	1
<i>Allium pseudostamineum</i> Kollmann & Shmida	1
<i>Allium pskemense</i> x <i>cepa</i>	1
<i>Allium rhodiaceum</i> Brullo, Pavone & Salmeri	1
<i>Allium robinsonii</i> L. F. Hend.	1
<i>Allium rupicola</i> Boiss. ex Mouterde	1
<i>Allium samothracicum</i> Tzanoud., Strid & Kit Tan	1
<i>Allium sannineum</i> Gomb.	1
<i>Allium saralicum</i> R. M. Fritsch	1
<i>Allium schachimardanicum</i> Vved.	1
<i>Allium schergianum</i> Boiss.	1
<i>Allium senescens</i> subsp. <i>glaucum</i> (Schrad. ex Poir.) Dostál	1
<i>Allium sergii</i> Vved.	1
<i>Allium setifolium</i> Schrenk	1
<i>Allium sewerzowi</i> Regel	1
<i>Allium sindjarense</i> Boiss. & Hausskn. ex Regel	1
<i>Allium spathulatum</i> F. O. Khass. & R. M. Fritsch	1
<i>Allium sphaerocephalon</i> subsp. <i>trachypus</i> (Boiss. & Spruner) K. Richt.	1
<i>Allium spurium</i> G. Don	1
<i>Allium stearnii</i> Pastor & Valdés	1
<i>Allium stellatum</i> Nutt. ex Ker Gawl.	1
<i>Allium stellerianum</i> Willd.	1
<i>Allium struzlianum</i> Ogan.	1
<i>Allium stylosum</i> O. Schwarz	1
<i>Allium subakaka</i> Razyfard & Zarre	1
<i>Allium subscabrum</i> (Regel) R. M. Fritsch	1
<i>Allium taeniopetalum</i> subsp. <i>mogoltavicum</i> (Vved.) R. M. Fritsch & F. O. Khass.	1
<i>Allium talyschense</i> Miscz. ex Grossh.	1
<i>Allium tardans</i> Greuter & Zahar.	1
<i>Allium tenuissimum</i> L.	1
<i>Allium therinanthum</i> C. Brullo, Brullo, Fragman, Giusso & Salmeri	1
<i>Allium tolmiei</i> var. <i>tolmiei</i>	1
<i>Allium tripedale</i> Trautv.	1
<i>Allium turcomanicum</i> Regel	1
<i>Allium turkestanicum</i> Regel	1
<i>Allium vasilevskajae</i> Ogan.	1
<i>Allium verticillatum</i> Regel	1
<i>Allium viridiflorum</i> Pobed.	1
<i>Allium weschniakowi</i> Regel	1

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