

REGIONAL STRATEGY
FOR THE CONSERVATION, REPLENISHMENT
AND USE OF PLANT GENETIC RESOURCES
FOR FOOD AND AGRICULTURE
IN CENTRAL ASIA AND THE CAUCASUS

for the period until 2015

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Disclaimer

This document has been developed by the Central Asian and Transcaucasian Network on Plant Genetic Resources (CATCN-PGR). The objective of this Strategy is to provide a framework for the efficient and effective ex situ conservation of the most important crop diversity collections in the Central Asia and the Caucasus region, and to promote the availability of these plant genetic resources for food and agriculture.

The Global Crop Diversity Trust (the Trust) provided support towards this initiative and considers the document, particularly those portions pertaining directly to the Trust's mandated areas of interest, to be an important input to the Trust's own planning and work. We expect the Strategy to continue to evolve, as appropriate, and for the Network to lead this on-going process.

The Regional Strategy is the strategy of the region. The Trust does not take responsibility for its contents or for the accuracy or completeness of the information contained in the document. Please direct specific questions and comments to the regional strategy coordinator mentioned in the document.

Global Crop Diversity Trust

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Introduction

The vast area of Central Asia and the Caucasus (CAC), the broad diversity of natural and socio-economic conditions found there, and the multiplicity of nationalities and ethnic groups—as well as cultures and traditions—provide a unique opportunity for conservation of biodiversity in the region. The territory of CAC encompasses a considerable part of the diversity contained within Eurasia's ecosystems. The flora found within the region includes over 8,100 registered plant species, of which 890 are endemic.

In the Soviet era, the Vavilov All-Union Institute of Plant Industry (VIR), Leningrad (now St. Petersburg), provided management and coordination of all the activities in the sphere of plant genetic resources (PGR). The global base seed collection was kept at the Central Genebank at the Kuban Experiment Station (Krasnodar region). Regional collections were established at VIR's experiment stations and branches in Uzbekistan (cereal, fruit and industrial crops), Turkmenistan (fruits), Kazakhstan (fodder and pasture plants) and Georgia (subtropical crops and grapes). Between 1917 and 1990, numerous plant collecting missions explored the territories of the CAC republics. They collected valuable crops samples and discovered new forms of cultivated species and their wild relatives. At present, the global PGR collection of VIR comprises approximately 323,000 accessions, with more than 22,000 collected in the CAC region.

After the collapse of the USSR, the situation with PGR conservation and use in the region suffered an abrupt deterioration. VIR's branches situated within CAC became isolated from their headquarters, scientific links were broken, and the coordination of PGR activities ceased. At the same time, the threat of extinction jeopardizing the natural genetic diversity considerably increased because of the worsening of environmental conditions in the region. The pressure of environmental pollution became much heavier, the areas of excessive soil salinity expanded, pastures degraded because of overgrazing, while more and more lands underwent desolation. These negative changes are further aggravated by the decline in the public awareness of ecological risks, imperfectness of legislation on agricultural biodiversity, poor development of the intellectual property protection system, and low level of introduction and distribution of agricultural knowledge, innovations and new technologies. Transitional nature of the regional economy weakened the mechanism of governmental financial support of scientific institutions.

Representatives from the CAC countries and CGIAR international centers (ICARDA, IPGRI, CIMMYT and ISNAR) participated in their first meeting in December 1995 to identify priorities in the development of the regional agriculture. Conservation of plant genetic resources was marked there as a top-priority area. In 1996 the Central Asian PGR Network was established. In 1999 it was converted into the Central Asian and Transcaucasian Network (CATCN-PGR). The following institutes were chosen in each countries as the leading organizations of the network:

1. Armenia—Scientific Center of Biotechnology
2. Azerbaijan—Institute of Genetic Resources/NAS

3. Georgia—Research Institute of Agriculture
4. Kazakhstan—Science & Production Center of Agriculture and Crop Science
5. Kyrgyzstan—Research Institute of Agriculture
6. Tajikistan—Republican National Center of Genetic Resources
7. Turkmenistan—Garrygala Science & Production Center of Genetic Resources
8. Uzbekistan—Research Institute of Crop Production

In the process of development of the Regional Strategy, with direct participation and in collaboration with PFU CGIAR, ICARDA and IPGRI (presently Bioversity International), a number of meetings of the CAC Network Coordination Committee were held and a special international workshop was organized for politicians in order to raise their awareness of the common benefits for the countries from joining the International Treaty on Plant Genetic Resources for Food and Agriculture (IT PGRFA).

With the support of CGIAR international centers, the CAC countries have conducted plant explorations in the region, collected plant germplasm, made inventories, evaluation and documentation of the collections, upgraded germplasm conservation facilities, and consistently provided training for the personnel.

In the past years the CAC countries experienced significant improvement of their *ex situ* conservation potential. *In situ* PGR conservation projects are also underway in the region, being a priority task for the CAC countries. It is important to harmonize *in situ*/on-farm and *ex situ* conservation methods so that they could complement each other and serve to achieve the final goal—conservation and sustainable utilization of PGR for food and agriculture.

Up to date the countries of CAC achieved certain success in *ex situ* conservation of PGR. Several countries have formulated their national strategies and started national programs, established Gene Banks were established and data bases were created. (*Appendix 1*).

In the existing socio-economic circumstances, taking into account that CAC is one of the world's most important centers of origin of cultivated plants, the CAC countries unanimously recognize the imperishable value and necessity of collecting, conservation, studying and sustainable utilization of PGR for the sake of the present and future generations.

The CAC countries are also aware of the need to concentrate joint efforts and efficiently coordinate regional activities while solving complex problems of agricultural biodiversity and attracting all kinds of stakeholders—governmental, private, public, non-governmental, regional and international.

I. THE OBJECTIVE AND PRIORITY AREAS OF THE CAC REGIONAL STRATEGY

The objective of the CAC Regional Strategy is to develop and introduce through coordination and mutually beneficial collaboration an efficient system for safe conservation, replenishment, collecting, studying and rational utilization of plant genetic resources with the purpose of raising the common weal and managing environment-friendly and sustainable agricultural practice.

Priority areas:

- I. *In situ*/on-farm conservation of plant genetic resources.
- II. Further development of safe conservation and replenishment measures for *ex situ* collections of cultivated plants and their wild relatives.
- III. Efficient studying, replenishment and rational utilization of the genetic potential of plant diversity.
- IV. Improvement of technical possibilities and enhancement of scientific potential

II. MEASURES AND TASKS IN THE PRIORITY AREAS

1. *In situ*/on-farm conservation of plant genetic resources

Conservation of primitive wild species and landraces used by various population groups and farmers for food and feed as well as for medicinal, traditional and ritual purposes within local communities (i.e. on-farm conservation) is of great social, cultural and historical importance. This approach allows the local population to take active part in preserving agricultural biodiversity, control the access to its components and gain direct benefits from their subsequent utilization, thus raising the life standards of poor farmers and destitute groups within rural communities. *In situ*/on-farm conservation is also important, since the CAC region was regarded by N.I. Vavilov as one of the centers of origin and morphogenesis of cultivated plants. The regional plant diversity includes wild forms of cereal, leguminous, fodder, vegetable, horticultural and industrial crops and a large number of medicinal, aromatic and other plant species (*Appendix 2*). The region also comprises spacious ranges of natural pasturelands with vegetation adapted to severe environments, low temperatures and limited rainfall.

Major tasks for this priority area:

- Inventorying plant diversity of domestic origin, having socio-economic, cultural and historical significance;
- Identifying CAC territories with highest concentration of plant species and forms, their documentation and electronic mapping of their areas of distribution;
- Conducting explorations to collect PGR for safe duplication in *ex situ* collections;
- Monitoring genetic diversity for early warning on the threats of its loss and/or

extinction and expanding the existing protected areas in order to preserve wild crop relatives;

- Promoting conservation and efficient utilization of local agricultural biodiversity by local population and on-farm regeneration of landraces;
- Collecting, analyzing and documenting traditional local knowledge on food value and other properties of PGR as well as the ways of their utilization by rural and indigenous communities.

2. Further development of safe conservation and replenishment measures for *ex situ* collections of cultivated plants and their wild relatives

The world's countries have rich and lengthy experience in establishing *ex situ* PGR collections and their efficient utilization for breeding and research purposes. There are nearly 1600 genebanks in the world, holding over 6 million accessions of various crops. *Ex situ* conservation has several advantages. The most essential among them are: concentration of PGR at one location; comparative security of storage; possibilities for consistent and targeted research and accelerated utilization; quick access to genetic material and related information; availability and, in the course of study and assessment, constant expansion of databases on the stored genetic diversity; manageability and control over the distribution/acquisition of germplasm.

The CAC countries maintain unique crop collections. Some of them were founded in N.I. Vavilov's times within the experimental network of VIR; others have been established recently and are maintained at national research institutes and organizations. Total amount of PGR stored in the region's collections is 228 001 accessions. In addition, various organizations in the CAC countries are also holders of crop collections (*Appendix 3*).

With the support and assistance of the international community, medium-term storage genebanks have been or are being set up in the CAC countries, and the first stage of the work on inventorying and documentation of PGR collections is being finalized. These genebanks are expected to assume major responsibilities for conservation, utilization and exchange of PGR inside each country and on the regional level. Efficient functioning of the regional PGR network to a great extent depends on the capabilities of these national genebanks. The Regional Strategy is primarily oriented to the *ex situ* conservation of the plant and crop species crucially important for food security and economy of the region, identified among national and global priorities, or under the threat of extinction.

On the national level, priority crops are:

- crops included in the IT Multilateral System (Annex I to the Treaty), (*Appendix 4*);
- crops having rich diversity within the local vegetation;
- landraces and local varieties;
- crops of market demand and economic importance (including potential one);
- crops with adaptive possibilities;

- crops of dual purpose (food / feed);
- crops significant for providing global/regional food security.

The most important crops within the CAC region are:

- | | | | |
|-----------|-------------|---------------|-------------|
| • wheat | • chickpea | • pomegranate | • rice |
| • grapes | • cotton | • pea | • maize |
| • apple | • tomato | • barley | • lentil |
| • alfalfa | • melon | • sugar beet | • soybean |
| • apricot | • pistachio | • haricot | • persimmon |

Criteria for priority crop identification are presented in *Appendix 5*.

Five key collections of regional priority (wheat, grapes, apple, alfalfa and apricot) are presented in *Appendix 6*.

Criteria for identification of priority *ex situ* collections eligible for long-term support by the Global Trust within the Regional Strategy are listed in *Appendix 7*.

Major tasks for this priority area:

- Continuation of inventorying, updating of national/regional databases, identification of national base collections and priority crops, development of unified descriptors to facilitate germplasm data exchange;
- Studying possibilities of complementary (*ex situ/in situ/on-farm*) conservation of prioritized or threatened national PGR;
- Working out unified conservation principles and standards (protocols) as well as legal regulations of collection management (access, exchange, reintroduction, regeneration, etc.);
- Modernization and optimization of medium- and long-term PGR storage conditions and methods for *ex situ* collections;
- Distribution of responsibilities for safe conservation of the regional genetic diversity and its safe duplication among genebanks and different categories of collection holders;
- Participation in the reconstruction of agrosystems affected by genetic erosion or damaged by natural calamities, technogenic catastrophes or military conflicts;
- Making PGR available to various categories of users for research, breeding or education purposes;
- Conducting plant collecting explorations and replenishment of national *ex situ* collections.

3. Efficient studying, replenishment and rational utilization of the genetic potential of plant diversity

After the disintegration of the USSR, the CAC republics faced a sharp decline of scientific research, suffered critical deficit of trained personnel and financial resources in the research field, and required upgrading of outdated facilities and equipment. These factors produce negative effect on the capabilities of the CAC

counties in solving the tasks of efficient PGR utilization in agriculture. It is important to unite the efforts and existing potentials of the CAC countries and international organizations toward promotion of crucial areas of agricultural biodiversity, breeding of high-yielding cultivars resistant to biotic and abiotic stresses and diversification of plant production. It is necessary to carry out wide-scale screening of the accessions stored in the collection to facilitate their prompt utilization in breeding process as donors and sources of economically valuable traits.

Major tasks for this priority area:

- Setting up an effective system for study and evaluation of genetic resources;
- Studying, identification and development of agrobiodiversity management methods, minimizing negative effect of agricultural production on agroecosystems and increasing its efficiency by means of PGR utilization;
- Assessing the economic potential of PGR and identifying their nutritional properties to introduce them directly in agricultural production, thus providing the rural population with means of subsistence and raising their welfare;
- Introducing modern methods and technologies to identify genes determining most important commercial traits of genetic resources and development of PGR molecular passports;
- Development of novel biotechnological methods for genetic improvement of economically valuable crop characters;
- Screening, identifying and obtaining new sources and donors from different *ex situ* collections to ensure their prompt utilization for breeding new cultivars and hybrids;
- Utilizing the potential of plant genetic diversity in agricultural production in order to remove the negative pressure of monoculture crops on agricultural ecosystems, diversify the assortment of crops, and simulate rural population to participate in their production and sales;
- Researching the economic value and existing potential of rare, underutilized and wild plants, their promotion and reintroduction in rural communities and suburban private homesteads with the purpose of restoring microagroecosystems and on-farm conservation;
- Assisting the development of seed production and seed supply;
- Promoting market demand and expanding markets for local varieties and traditional food diversity;
- Collecting, analyzing, documenting and distributing traditional and local knowledge about PGR value for food and other purposes and the ways of their utilization by rural and indigenous communities.

4. Development of technical possibilities and enhancement of scientific potential

Effective PGR conservation, study and utilization require continuous enhancement of the structure and functions of the Strategy's stakeholders, especially genebanks,

collections and research institutes. Practically all CAC countries have no infrastructure meeting modern requirements for PGR conservation, studying and efficient utilization. To resolve this problem they need assistance from the governments and international organizations. Modernization of the existent facilities and equipment in genebanks and PGR institutions is a top-priority task of the Strategy. It is essential to undertake measures to evaluate the current situation with logistics and equipment in the priority collections and genebanks of the CAC countries. In order to obtain long-term support from the Global Trust, germplasm holders and genebanks must meet certain Trust's criteria (*Appendix 6*).

Of primary importance for raising the PGR conservation potential on the national level is the participation of the state in setting up a wide network of partnership, involving public and non-governmental organizations, religious congregations, private business enterprises, and mass media, and creating an effective public system of agrobiodiversity management.

Information and analytical backup of the Regional Strategy is a basic requirement for efficient arrangement of the strategic PGR conservation process. It is essential to build up a common information platform based on the unified standards of PGR conservation and data dissemination, as well as develop integrated conservation protocols and information on genebank management systems.

An important component of the Regional Strategy is training of scientific and technical staff, raising their expertise in new PGR technologies, qualification improvement of the personnel through various training courses and programs, learning the experience of foreign genebanks, methodological assistance of leading scientists and experts, etc.

The current situation in the CAC countries is characterized by low public awareness of the problems related to agricultural biodiversity and poor understanding of the importance of PGR conservation. Therefore, raising environmental knowledgeability of the population and their responsibility for agrobiodiversity protection is a fundamental task of PGR conservation activities in the CAC region.

Major tasks for this priority area:

- Capacity building, reinforcement of the infrastructure, and encouraging government authorities on different levels to provide PGR conservation and research with funding;
- Promoting partnership and integration between all stakeholders to ensure efficiency of their activities;
- Securing governmental support for conservation and study of PGR as strategically important resources for food security of the county and the region;
- Participating in the development of PGR economic assessment systems and launching regional projects in separate socio-economic aspects of studying and utilization of agrobiodiversity components;
- Raising public awareness of socio-economic, cultural and historical importance of PGR through mass media and keeping the population informed on the situation with PGR and existing threats to their safety;

- Providing support as well as scientific and methodological assistance to the initiatives of the population in the sphere of agrobiodiversity conservation and utilization;
- Improving the system of PGR documentation, information supply and exchange systems and making the information on PGR and agrobiodiversity available for users;
- Improving the systems of training and qualification improvement for scientific and technical personnel involved in agrobiodiversity-related activities.

III. MECHANISMS AND FORMS OF THE REGIONAL STRATEGY IMPLEMENTATION

1. Collaboration, partnership and coordination

The Regional Strategy is based upon the effective, mutually beneficial cooperation, partnership and coordination of activities between all stakeholders. Cooperation in the framework of the Strategy should be carried out in different forms, depending on specific problems of PGR conservation and utilization. To effectively conserve priority collections in the CAC region, it is necessary to identify the main institutions/organizations responsible for the conservation of *ex situ* PGR collections, and other organizations responsible for the provision of specific services. The most important conditions for the partnership include: the unity of purpose; complete trust between the holders of collections and other participating organizations; readiness to cooperate both within and beyond the region; availability of adequate funds; and conformity to the international standards of PGR collections conservation and management. The partnership stipulates that some countries/genebanks will be given a lead role in the conservation of specific species/gene pools and/or creation of regional databases. Selection of these countries/organizations will be based on their comparative advantages, the availability of facilities, human resources qualifications, and their stable interest in and ability to sustain this type of activity.

Collaboration and cooperation can be multilateral and bilateral, and encompass all areas of PGR activities. These areas may include documentation, regeneration and PGR accessions safety duplication, quarantine provision, studying, evaluation, characterization and distribution/dissemination of accessions, participation in various research projects, database development, harmonization of the PGR-related legal base and legislation.

At the regional level, PGR activities are coordinated by the Central Asian and Transcaucasian Network on Plant Genetic Resources (CATCN-PGR), the governing body of which is the Coordination Committee that consists of National PGR Coordinators of the Network member countries. Eight crop-specific Working Groups have been formed within the Network at the national and regional levels, namely on cereals and legumes; forage and pasture crops; fruit, berry and subtropical crops; vegetable and melon crops, industrial crops; medicinal and aromatic crops; and on cotton. These Working Groups coordinate activities aimed at studying, conservation and utilization of certain plant groups.

For the system of rational *ex situ* PGR conservation to work effectively, the following is required:

- The rational and confidence-based sharing of specific PGR conservation-related responsibilities/functions among the partners;
- Readiness to the wide-scale exchange of genetic materials and related information;
- Transparency of cooperation and obtaining of equal benefits from joint activities;
- Stable and effective links/communication between relevant organizations, institutions, and genetic resources users;
- Commitment of stakeholders to the realization of tasks and actions set forth in the Regional Plan of Actions for the Strategy, as well as affordable contributions in the form of financial support or other resources.

2. International collaboration

International cooperation is the most important mechanisms for achieving the objectives of the Regional Strategy. Such cooperation must build on the balance between international commitments to conserve agrobiodiversity, and the sovereign right of countries to use their plant genetic resources. The system of international cooperation in conservation and utilization of PGR includes a number of global, regional, and bilateral agreements and programs, as well as organizations. The forms of the international cooperation development by the CAC countries should be as follows:

- Membership of international treaties and organizations and active participation in activities of their organs at all levels;
- Cooperation with international foundations, development agencies and financial organizations;
- Utilization of financial and other resources of international donors and foundations;
- Cooperation and efforts to involve international research and educational institutions in the Regional Network.

An important role in the implementation of the Regional Strategy is played by the cooperation with the CGIAR's International Centers and other international organizations capable of providing efficient assistance in terms of the effective conservation and utilization of PGR, the replenishment of collections, the coordination and management. For instance, the centers whose mandates cover specific crop species, may be put in charge of the establishment and coordination at the regional level of the networks concerned with these species. These centers can also develop regional/subregional projects on specific PGR-related issues, and then take over their implementation.

3. Legislative and legal aspects

Current legislation which aims to conserve biodiversity in CAC countries is a system of legal institutions, norms and instructions based on the countries'

constitutions, as well as on a number of laws and decrees of countries' presidents, governmental resolutions and by-laws dealing with the issues of the conservation and utilization of natural resources including PGR. However, the existing legal mechanisms regulating PGR conservation and utilization contain many gaps and discrepancies. As a result, further efforts are required to introduce changes and amendments into the existing legislation and to create new directions in lawmaking policies. A top priority for CAC countries is the development of the intellectual property protection legislation, as well as of that regulating access to genetic resources and sharing the benefits that result from their use. The international legislation system is the most important regulatory mechanism in the arena of genetic resources conservation, use and exchange, which is based on the balance of international commitments and each country's sovereign right to use its resources. The most important components are: the International Treaty on Plant Genetic Resources for Food and Agriculture (IT PGRFA) and the Global Plan of Action on Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (GPA); the Convention of Biological Diversity (CBD); the International Convention and International Union on Protection of New Plant Varieties (UPOV); a series of agreements of the World Trade Organization (WTO); the Cartagena Protocol on Biosafety. Improvement of the legal regulatory mechanisms in the PGR area should follow the directions listed below:

- The signing and ratification of international treaties, agreements, and other documents related to study, conservation, access to and exchange of PGR;
- Further improvement of the existing legislation concerned with conservation of agrobiodiversity and utilization of its components;
- The development of legislation to regulate access to genetic resources and the sharing of benefits resulting from their use;
- The observance of commitments resulting from membership of international organizations and treaties;
- The organization of effective coordination with respect to the implementation of the adopted international agreements, creation of respective mechanisms for the control of this activity.

4. Funding

Key to implementing the Regional Strategy is its financing mechanism. During the transition period, the funding system used must provide support to the most valuable, as well as to the most vulnerable, areas of PGR conservation and utilization. Such a system must combine program-oriented principles with wide-scale multiple-source funding for specific projects and programs. Thus, the implementation of the Regional Strategy will be ensured by multiplicity of funding sources and the allocation of funds for specific objectives. The following are the main funding sources for the implementation of the Regional Strategy:

- Targeted national scientific research and technical programs concerned with biodiversity and PGR;
- The fundamental and applied research programs of ministries and national academies in CAC countries;
- Specific innovation and investment funds for PGR, including those allocated from profitable agricultural structures;

- Resources from various international funds and grants;
- International programs and projects, including joint projects with international agricultural research centers;
- Financial support from national and international sponsors;
- The funds that the holders of collections and genebanks earn by selling services and genetic materials.

New possibilities, sources and ways of obtaining financial resources may emerge in the future, therefore, the structure and functions of genebanks, collections and PGR-related organizations must favor any such novelties as much as possible.

IV. ASSESSMENT AND MONITORING OF THE REGIONAL STRATEGY IMPLEMENTATION

The results of implementing the Regional Strategy will be assessed both as it is being implemented and after the finalization of separate stages set forth in the Regional Plan of Actions. Such assessment will be based on the following criteria:

- Indicators characterizing qualitative and quantitative changes in priority areas of PGR conservation and utilization;
- Indicators characterizing strengthening of collaboration and coordination;
- Indicators characterizing the improvement of facilities, equipment and information systems at genebanks and *ex situ* PGR collections, of staff training, and scientific provision;
- Changes in public awareness and propaganda associated with the conservation of biodiversity and PGR;
- Changes in the legislation and regulatory framework concerned with the conservation and exchange of PGR, and with access to PGR and the benefits derived from their use;
- Improvements in the area of funding and the capturing of resources for attaining the long-term goals of the Regional Strategy.

The criteria, indicators and methods of assessment may change subject to the information available and the accuracy of justifications. One of preconditions for the successful implementation of the Strategy is a well-organized control system that would track progress in the realization of stages of the Regional Plan of Actions and provide periodic information on the completed and ongoing tasks of the Strategy, and on any obstacles and ways used to overcome them. The general assessment of Strategy implementation must form the basis for the development of trends and activities for biennial periods until 2015.

Monitoring and assessment of the implementation of the Strategy is provided by the National PGR Coordinator. These control and assess activities on PGR conservation, exchange and use at the national level. The process is carried out by means of regular visits, hearings and the review of progress reports on genebank activities, on the status of *ex situ* collections and on achievements of the PGR-related organizations. Also, annual meetings are held to sum up the results of the work, carry out a general assessment of National and Regional Strategies

implementation, and to approve a work plan for the next year. The Annual Report is submitted by the National PGR Coordinator to the Chairperson of the CATCN-PGR Coordination Council.

Responsibility for monitoring and assessment of the Strategy implementation at the regional level is borne by the the CATCN-PGR Coordination Committee, which is headed by the Chairperson elected for a two-year term of office from the member National PGR Coordinators. The Consolidated Biennial Regional Report on the Strategy implementation, based on the National Reports, is presented by the Chairperson at the Meeting of the CATCN-PGR Coordination Committee. Proceeding from the results of the Strategy implementation, a Regional Plan of Actions (*Appendix 8*) for the next two years is developed and approved. It should set forth specific activities concerning priority trends in the Strategy-related activities. The Plan should be coordinated with National Plans of countries of the region, and should be subject to modifications depending on the degree of the planned works completion, status of agrobiodiversity, socio-economic changes in the countries and success of implementation of the Strategy.

LIST OF ABBREVIATIONS AND TERMS

ARI	Agricultural Research Institute
AVRDC	the World Vegetable Center
□A□	Central Asia and the Caucasus
CATCN-PGR	Central Asian and Transcaucasian Network on Plant Genetic Resources
CBD	Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
CIMMYT	International Maize and Wheat Improvement Center
CIP	International Potato Center
GCDT	Global Crop Diversity Trust
GPA	Global Plan of Action on Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture.
ICARDA	International Center for Agricultural Research in the Dry Areas
ICRISAT	International Crops Research Institute for Semi-Arid Tropics
ISNAR	International Service for National Agricultural Research
IT PGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IRRI	International Rice Research Institute
NARS	National Agriculture Research System
NAS	National Academy of Sciences
PGR	Plant Genetic Resources
UPOV	International Union for the Protection of New Varieties of Plants
USSR	Union of the Soviet Socialist Republics
VIR	Vavilov Institute of Plant Industry, St. Petersburg, Russia
WTO	World Trade Organization

Agrobiodiversity (or agricultural biodiversity) – encompasses the variety and variability of animals, plants and micro-organisms which are necessary to sustain key functions of the agroecosystem, its structure and processes for, and in support of, food production and food security.

Agrosystem – Agricultural enterprises – crop or livestock – deal with such concepts as labor supply, marketing, finances, natural resources, genetic stock, nutrition, equipment, and hazards. While it is possible to effectively manipulate each mechanism of successful farming individually, better results can often be obtained by treating the farming operation as a system.

- Agroecosystem** – a site of agricultural production, including all organisms and environmental factors within it, which functions with human assistance as a stable system with circular flows of material and energy.
- Descriptor** – (from the Latin “describo” meaning “describe”), terms used to describe or characterize cultivars or to distinguish plant seeds collected in germplasm programs.
- Deecology** – (from the Latin “de” meaning describe, “ecos” meaning house and “logos” meaning science), inappropriate attention to environment problems from side of civil society, including local communities and governments.
- Ex-situ conservation** – means the conservation of components of biological diversity outside their natural habitats.
- Genebank** – facility where crop diversity is stored in the form of seeds, pollen, *in vitro* culture or DNA.
- Genetic erosion** – loss of genetic diversity between and within populations of the same species over time or reduction of the genetic base of a species due to human intervention, environmental changes, etc.
- Genetic resources** – genetic material of plants, animals and other organisms, which is value for present and future generations of people.
- Genepool** – the total amount of genetic diversity present in a particular population.
- In-situ conservation** – means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.
- Landrace** – farmer-developed variety of a crop plant that is adapted to local environmental conditions.
- Monoculture** – crop of a species cultivated in the same region during years.
- On farm conservation** – means the sustainable management of genetic diversity of locally developed traditional crop varieties along with associated wild and weedy species or forms within traditional agricultural, horticultural or agri-silvicultural cultivation system.
- Reintroduction** – the process of planting species back into its natural habitat and historic range; also referred to as restoration.
- Traditional knowledge** – knowledge that develops in a particular area and accumulates over time through being handed down from generation-to-generation.
- Wild relative** – a non cultivated species that is more or less closely related to a crop species (usually in the same genus). It is not normally used for agriculture but can occur in agrosystems (e.g. as a weed or a component of pasture or grazing lands).

Status of *ex situ* conservation in the CAC countries

Country	National programme	National strategy	Genebank	National base collection	<i>Ex situ</i> holding institutes	Total number of <i>ex situ</i> accessions	National inventory database	CBD	UPOV	IT
Armenia			+		8	15 931	4 707	+	-	+
Azerbaijan	+	+	+		14	14 720	7 773	+	+	-
Georgia			+		4	3 705	1 283	+	-	-
Kazakhstan			+		14	75 249	38 337	+	-	-
Kyrgyzstan					8	1 457	988	+	+	-
Tajikistan			+		6	9 421	2 849	+	-	-
Turkmenistan			+		6	14 510	908	+	-	-
Uzbekistan			+		16	93 008	58 432	+	-	-

Diversity of cultivated plants and their wild relatives in CAC region

Genus name		No. of species
Scientific name	English name	
<i>Cereals</i>		
<i>Triticum</i> L.	Wheat	29
<i>Avena</i> L.	Oat	17
<i>Hordeum</i> L.	Barley	16
<i>Aegilops</i> L.	Aegilops	16
<i>Secale</i> L.	Rye	8
<i>Fruit plants</i>		
<i>Rosa</i> L.	Dog rose	132
<i>Pyrus</i> L.	Pear	46
<i>Crataegus</i> L.	Hawthorn	41
<i>Amygdalus</i> L.	Almond	20
<i>Cerasus</i> Mill.	Sour cherry, sweet cherry	18
<i>Berberis</i> L.	Berberis	16
<i>Prunus</i> L.	Myrobalan	14
<i>Corylus</i> L.	Hazel	9
<i>Elaeagnus</i> L.	Oleaster	6
<i>Juglans</i> L.	Walnut	5
<i>Malus</i> Mill.	Apple	4
<i>Pistacia</i> L.	Pistachio	4
<i>Armeniaca</i> Scop.	Apricot	3
<i>Diospyros</i> L.	Persimmon	3
<i>Vitis</i> L.	Grapevine	2
<i>Castanea</i> Mill.	Chestnut	1
<i>Cornus</i> L.	Cornelian cherry	1
<i>Cydonia</i> Mill.	Quince	1
<i>Ficus</i> L.	Fig	1
<i>Laurocerasus</i> Duham.	Cherry laurel	1
<i>Mespilus</i> L.	Medlar	1
<i>Padus</i> Mill.	Bird cherry	1
<i>Punica</i> L.	Pomegranate	1
<i>Ziziphus</i> Mill.	Jujube	1
<i>Vegetable, melon, aromatic plants</i>		
<i>Allium</i> L.	Onion	271
<i>Lepidium</i> L.	Garden cress	28
<i>Lactuca</i> L.	Lettuce	17
<i>Pimpinella</i> L.	Anise	17
<i>Brassica</i> L.	Cabbage, turnip	7
<i>Beta</i> L.	Beet	6
<i>Carum</i> L.	Caraway	5
<i>Melo</i> Adans.	Melon	5
<i>Raphanus</i> L.	Garden radish, black radish	4
<i>Cucurbita</i> L.	Pumpkin, cucumber	3
<i>Spinacia</i> L.	Spinach	3
<i>Cucumis</i> L.	Cucumber	2
<i>Daucus</i> L.	Carrot	2
<i>Coriandrum</i> L.	Coriander	1

<i>Lagenaria</i> Ser.	Gourd	1
<i>Ocimum</i> L.	Basil	1
<i>Petroselinum</i> Hill	Parsley	1
<i>Grain legumes</i>		
<i>Vicia</i> L.	Vetch, beans	64
<i>Lathyrus</i> L.	Peavine	35
<i>Cicer</i> L.	Chickpea	22
<i>Lens</i> Mill.	Lentil	5
<i>Pisum</i> L.	Pea	3
<i>Lupinus</i> L.	Lupin	2
<i>Vigna</i> Savi	Mung bean	2
<i>Oil, fiber, tanning, tinctorial plants</i>		
<i>Papaver</i> L.	Poppy	36
<i>Linum</i> L.	Flax	29
<i>Cephalaria</i>	Cephalaria	21
<i>Camelina</i> Crantz	Camelina	7
<i>Carthamus</i> L.	Safflower	7
<i>Gossypium</i> L.	Cotton	7
<i>Cannabis</i> L.	Hemp	2
<i>Rhus</i> L.	Squawbush	2
<i>Eruca</i> Mill.	Rocket	1
<i>Ricinus</i> L.	Castor oil plant	1
<i>Sesamum</i> L.	Sesame	1
<i>Forages</i>		
<i>Onobrychis</i> Mill.	Sainfoin	61
<i>Trifolium</i> L.	Clover	60
<i>Medicago</i> L.	Lucerne	45
<i>Trigonella</i> L.	Fenugreek	24

* done on the basis of N.I. Vavilov, P.M. Jukovskiy, E.V. Vulf papers and summaries of cultivated floras, prepared by VIR

Ex situ collections in the CAC region

#	Holders of the collections	Number of accessions, by 2005
AZERBAIJAN		
1	Institute of Genetic Resources, Baku	5 696
2	Institute of Botany of the National Academy of Sciences of Azerbaijan, Baku	128
3	Central Botanical Gardens of the National Academy of Sciences of Azerbaijan, Baku	512
4	Mardakan Arboretum of the National Academy of Sciences of Azerbaijan, Baku	300
5	Institute of Bioresources of Nakhchivan Branch of the National Academy of Sciences of Azerbaijan, Nakhchivan	1 043
6	Agricultural Academy of Sciences, Gandzha	304
7	Research Institute of Farming, Baku	2 490
8	Research Institute of Horticulture and Subtropical Crops, Guba	1 519
9	Research Institute of Fodder, Meadows and Pastures, Baku	189
10	Research Institute of Vegetables, Baku	578
11	Research Institute of Viticulture and Winemaking, Baku	549
12	Research Institute of Cotton Production, Gandzha	680
13	Research Institute of Silk Production, Gandzha	322
14	JSPO "Araz", Nakhchivan	284
ARMENIA		
1	Scientific Center of Agrobiotechnology, Yerevan	1 402
2	Genebank of the National Academy of Sciences of Armenia, Yerevan	2 287
3	Institute of Botany of the National Academy of Sciences of Armenia, Yerevan	5 000
4	Laboratory of Cultivated Plants and their Wild Relatives Genepool, Armenian Agrarian University, Yerevan	3 500
5	Scientific Center of Farming and Plant Protection, Echmiadzin	2 638
6	Scientific Center of Vegetables and Industrial Crops, Daraket	423

7	Scientific Center of Horticulture, Viticulture and Winemaking, Merdzavan	460
8	Scientific Center of Soil Science, Agrochemistry and Melioration, Yerevan	221
GEORGIA		
1	Research Institute of Farming, Mtskheta	2 000
2	Institute of Botany, Tbilisi	223
3	Research Institute of Horticulture, Viticulture and Wine-making, Tbilisi	1 362
4	State Agrarian University, Department of Genetics and Breeding, Tbilisi	120
KAZAKSTAN		
1	Scientific Production Center of Farming and Plant Production, Almaty	15 689
2	Scientific Production Center of Livestock and Veterinary, Almaty	842
3	South-West Scientific Production Center of Agriculture, Shymkent	13 248
4	Scientific Production Center of Grain Farming, Shortandy	11 815
5	Scientific Production Center of Processing and Food Industry, Almaty	3 182
6	Karaganda Research Institute of Plant Production and Breeding, Karaganda	1 013
7	Institute of Botany and Phytointroduction, Almaty	250
8	Research Institute of Potato and Vegetables, Almaty	8 419
9	Pavlodar Research Institute of Agriculture, Pavlodar	21 100
10	Priaral Research Institute of Agroecology and Agriculture, Kzylorda	1 018
11	Karabalyk Agricultural Experimental Station, Kostanay	1 500
12	Krasnyi Vodopad Agricultural Experimental Station, Shymkent	779
13	Shalkar Agricultural Experimental Station, Kzylorda	9 369
14	Scientific Production Center of Forestry, Shuchinsk	846
KYRGYZSTAN		
1	Kyrgyz Research Institute of Agriculture, Bishkek	231
2	Sugar Beet Experimental Breeding Station, Chuy province	100
3	Experimental station of Kyrgyz Research Institute of Agriculture	191
4	Issyk-Kul Experimental Breeding Station, Issyk-Kul	100
5	Research Institute of Livestock, Veterinary and Pastures, Bishkek	378
6	Botanical Gardens of the National Academy of Sciences, Bishkek	172

7	Research Institute of Forestry and Nut Production, Bishkek	41
8	Kyrgyz State Commission on Variety Testing, Bishkek	244
TAJKISTAN		
1	Republican National Center of Genetic Resources of Tajik Academy of Agricultural Sciences, Dushanbe	3 966
2	Research Production Center "Bogparvar", Dushanbe	122
3	Sogd Branch of the Research Production Center "Bogparvar", Sogd Province	3 200
4	Institute of Plant Physiology and Genetics, Dushanbe	890
5	Institute of Botany, Dushanbe	172
6	Pamir Biological Institute, Khorog	1 071
TURKMENISTAN		
1	Research Institute of Grain Crops, Ashgabat	5 628
2	Research Institute of Farming, Ashgabat	808
3	National Institute of Deserts, Flora and Fauna, Ashgabat	36
4	Turkmen Agrarian State University, Ashgabat	1 200
5	Research Institute of Cotton Production, Ashgabat	300
6	Makhtumguli Scientific Production Center	3 600
UZBEKISTAN		
1	Uzbek Research Institute of Plant Industry, Tashkent	37 417
2	Republican Scientific and Production Center of Ornamental gardening and Forestry, Tashkent	138
3	Uzbek Research Institute of Vegetable, Melon Crops and Potato, Tashkent	589
4	Uzbek Research Institute of Horticulture, Viticulture and Wine-making, Tashkent	7 203
5	Uzbek Research Institute of Cotton Breeding and Seed Production, Tashkent	17 810
6	Samarkand Agricultural Institute, Samarkand	1 223
7	Gulistan State University, Gulistan	982
8	Uzbek National State University, Tashkent	941
9	Uzbek Research Institute of Silk Production, Tashkent	222
10	Institute of Genetics and Plant Experimental Biology, Tashkent	5 230

11	Uzbek Research Institute of Rice, Tashkent	1 370
12	Research Production Center "Botanica", Tashkent	4 702
13	Galla-Aral branch of Andijan Institute of Grain and Leguminous Crops on Irrigated Lands	14 750
14	Uzbek Research Institute of Cotton Production	199
15	Uzbek Experimental Station of Fiber Crops	172
16	Uzbek Research Institute of Karakul Sheep Breeding and Desert Ecology	60

The list of crops in Annex I of IT PGRFA

Food crops

Crop	Genus	Observations
Breadfruit	<i>Artocarpus</i>	Breadfruit only.
Asparagus	<i>Asparagus</i>	
Oat	<i>Avena</i>	
Beet	<i>Beta</i>	
	Brassica complex	
	<i>Brassica</i> et al.	Genera included are: <i>Brassica</i> , <i>Armoracia</i> , <i>Barbarea</i> , <i>Camelina</i> , <i>Crambe</i> , <i>Diplotaxis</i> , <i>Eruca</i> , <i>Isatis</i> , <i>Lepidium</i> , <i>Raphanobrassica</i> , <i>Raphanus</i> , <i>Rorippa</i> , and <i>Sinapis</i> . This comprises oilseed and vegetable crops such as cabbage, rapeseed, mustard, cress, rocket, radish, and turnip. The species <i>Lepidium meyenii</i> (maca) is excluded.
Pigeon Pea	<i>Cajanus</i>	
Chickpea	<i>Cicer</i>	
Citrus	<i>Citrus</i>	Genera <i>Poncirus</i> and <i>Fortunella</i> are included as root stock.
Coconut	<i>Cocos</i>	
Major aroids	<i>Colocasia</i> , <i>Xanthosoma</i>	Major aroids include taro, cocoyam, dasheen and tannia.
Carrot	<i>Daucus</i>	
Yams	<i>Dioscorea</i>	
Finger Millet	<i>Eleusine</i>	
Strawberry	<i>Fragaria</i>	
Sunflower	<i>Helianthus</i>	
Barley	<i>Hordeum</i>	
Sweet Potato	<i>Ipomoea</i>	
Grass pea	<i>Lathyrus</i>	
Lentil	<i>Lens</i>	
Apple	<i>Malus</i>	
Cassava	<i>Manihot</i>	<i>Manihot esculenta</i> only.
Banana / Plantain	<i>Musa</i>	Except <i>Musa textilis</i> .
Rice	<i>Oryza</i>	
Pearl Millet	<i>Pennisetum</i>	
Beans	<i>Phaseolus</i>	Except <i>Phaseolus polyanthus</i> .
Pea	<i>Pisum</i>	
Rye	<i>Secale</i>	
Potato	<i>Solanum</i>	Section <i>tuberosa</i> included, except <i>Solanum phureja</i> .
Eggplant	<i>Solanum</i>	Section <i>melongena</i> included.
Sorghum	<i>Sorghum</i>	
Triticale	<i>Triticosecale</i>	
Wheat	<i>Triticum</i> et al.	Including <i>Agropyron</i> , <i>Elymus</i> , and <i>Secale</i> .
Faba Bean / Vetch	<i>Vicia</i>	
Cowpea et al.	<i>Vigna</i>	
Maize	<i>Zea</i>	Excluding <i>Zea perennis</i> , <i>Zea diploperennis</i> , and <i>Zea luxurians</i> .

Forages

Genera	Species
Legume forages	
<i>Astragalus</i>	<i>Chinensis, cicer, arenarius</i>
<i>Canavalia</i>	<i>Ensiformis</i>
<i>Coronilla</i>	<i>Varia</i>
<i>Hedysarum</i>	<i>Coronarum</i>
<i>Lathyrus</i>	<i>Cicera, ciliolatus, hirsutus, ochrus, odoratus, sativus</i>
<i>Lespedeza</i>	<i>Cuneata, striata, stipulacea</i>
<i>Lotus</i>	<i>Corniculatus, subbiflorus, uliginosus</i>
<i>Lupinus</i>	<i>Albus, angustifolius, luteus</i>
<i>Medicago</i>	<i>Arborea, falcata, sativa, scutellata, rigidula, truncatula</i>
<i>Melilotus</i>	<i>Albus, officinalis</i>
<i>Onobrychis</i>	<i>Viciifolia</i>
<i>Ornithopus</i>	<i>Sativus</i>
<i>Prosopis</i>	<i>Aaffinis, alba, chilensis, nigra, pallida</i>
<i>Pueraria</i>	<i>Phaseoloides</i>
<i>Trifolium</i>	<i>Alexandrinum, alpestre, ambiguum, angustifolium, arvense, agrocicerum, hybridum, incarnatum, pratense, repens, resupinatum, rueppellianum, semipilosum, subterraneum, vesiculosum</i>
Grass forages	
<i>Andropogon</i>	<i>Gayanus</i>
<i>Agropyron</i>	<i>Cristatum, desertorum</i>
<i>Agrostis</i>	<i>Stolonifera, tenuis</i>
<i>Alopecurus</i>	<i>Pratensis</i>
<i>Arrhenatherum</i>	<i>Elatius</i>
<i>Dactylis</i>	<i>Glomerata</i>
<i>Festuca</i>	<i>Arundinacea, gigantea, heterophylla, ovina, pratensis, rubra</i>
<i>Lolium</i>	<i>Hybridum, multiflorum, perenne, rigidum, temulentum</i>
<i>Phalaris</i>	<i>Aquatica, arundinacea</i>
<i>Phleum</i>	<i>Pratense</i>
<i>Poa</i>	<i>Alpina, annua, pratensis</i>
<i>Tripsacum</i>	<i>Laxum</i>
Other forages	
<i>Atriplex</i>	<i>Halimus, nummularia</i>
<i>Salsola</i>	<i>Vermiculata</i>

Criteria for identification of priority crops in the CAC region

	Crop \ Criterion	Crops important for food security	Collection availability	Primary center of origin	Secondary center of origin	Long-term conservation	Regeneration	Characterisation/evaluation	Distribution	Safety duplication
1.	Wheat	All countries	All countries	X		-	X	X		
2.	Grapevine	All countries, except Kazakhstan	All countries, except Kazakhstan	X		X	X	X	X	X
3.	Apple	All countries	All countries, except Armenia and Georgia	X		X	X	X	X	X
4.	Lucerne	All countries	All countries, except Turkmenistan	X		-				
5.	Apricot	Armenia, Kazakhstan, Tajikistan, Turkmenistan, Uzbekistan	All countries, except Georgia and Kyrgyzstan	X		X	X	X	X	-
6.	Chick pea	Azerbaijan, Georgia, Kyrgyzstan, Tajikistan, Uzbekistan	Armenia, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan	X		-				
7.	Cotton	Uzbekistan, Tajikistan, Turkmenistan, Azerbaijan, Tajikistan	Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, Azerbaijan		X					
8.	Melons	Azerbaijan, Tajikistan, Turkmenistan, Uzbekistan	Azerbaijan, Tajikistan, Turkmenistan, Uzbekistan		X	-	X	X	X	-
9.	Pistachio	Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan	Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan	X		X	X	X	X	X
10.	Pomegranate	Azerbaijan, Tajikistan, Turkmenistan, Uzbekistan	Armenia, Azerbaijan, Tajikistan, Turkmenistan, Uzbekistan	X		X	X	-	X	-
11.	Pea	Georgia, Kyrgyzstan, Tajikistan	Armenia, Georgia, Kyrgyzstan, Tajikistan	X						

	Crop / Criterion	Crops important for food security	Collection availability	Primary center of origin	Secondary center of origin	Long-term conservation	Regeneration	Characterisation/evaluation	Distribution	Safety duplication
12.	Lentil	Azerbaijan, Tajikistan	Armenia, Azerbaijan, Georgia, Tajikistan	X						
13.	Tomato	Azerbaijan, Georgia, Kyrgyzstan, Tajikistan, Uzbekistan	Armenia, Azerbaijan, Kyrgyzstan, Uzbekistan		X					
14.	Maize	Azerbaijan, Georgia, Kyrgyzstan, Tajikistan	Azerbaijan, Georgia, Kyrgyzstan, Tajikistan, Uzbekistan		X					
15.	Barley	Armenia, Azerbaijan, Kyrgyzstan	Armenia, Azerbaijan, Kyrgyzstan	X						
16.	Sugar Beet	Kyrgyzstan, Azerbaijan, Turkmenistan	Azerbaijan, Kyrgyzstan, Armenia		X					
17.	Beans	Armenia, Azerbaijan, Georgia	Armenia, Azerbaijan, Georgia		X					
18.	Soya Bean	Georgia, Kyrgyzstan, Tajikistan	Georgia, Kyrgyzstan, Uzbekistan							
19.	Pear	Turkmenistan	Azerbaijan, Turkmenistan, Uzbekistan		X	X	X	X	X	-
20.	Figs	Azerbaijan, Turkmenistan	Azerbaijan, Turkmenistan	X		X	X	X	X	-
21.	Rice	Georgia, Tajikistan, Turkmenistan, Uzbekistan	Uzbekistan, Tajikistan, Turkmenistan		X					
22.	Olive	Azerbaijan, Turkmenistan	Azerbaijan, Turkmenistan		X	-	-	-	-	-
23.	Citrus	Azerbaijan, Georgia, Tajikistan	Azerbaijan, Georgia		X					
24.	Walnut	Kyrgyzstan		X		-	-	□	-	-
25.	Potato	Armenia, Georgia, Kyrgyzstan, Tajikistan, Uzbekistan			?					
26.	Leguminous									

Ex situ collections of five priority crops in CAC region:

Crop	Country	Holding institute	Number of accessions
Wheat	Azerbaijan –	Research Institute of Farming	1419
	Armenia –	Genebank of the National Academy of Sciences of Armenia	220
	Georgia –	Research Institute of Farming named after Lomouri	213
	Kazakhstan –		18238
	Kyrgyzstan –	Research Institute of Agriculture	37
	Tajikistan –	Kyrgyz Research Institute of Agriculture	959
	Turkmenistan – Uzbekistan –	Republican National Center of Genetic Resources Research Institute of Grain Crops Uzbek Research Institute of Plant Industry	5628 5362
Grapevine	Azerbaijan –	Research Institute of Viticulture and Wine-making	510
	Armenia –		80
	Georgia –	Institute of Horticulture, Viticulture and Wine-making	380
	Kazakhstan –	Research Institute of Horticulture, Viticulture and Wine-making	0
	Kyrgyzstan –	Absent	43
	Tajikistan –	State Commission on Variety Testing	41
	Turkmenistan – Uzbekistan –	Research Production Center “Bogparvar” Garrygala Science & Production Center of Genetic Resources Uzbek Research Institute of Plant Industry	1010 1524
Apple	Azerbaijan –	Research Institute of Horticulture and Subtropical Crops	185
	Georgia –	Research Institute of Horticulture, Viticulture and Wine-making	60
	Kazakhstan –	Pomological gardens	1334
	Kyrgyzstan –	Kyrgyz Research Institute of Agriculture	37
	Tajikistan –	Research Production Center “Bogparvar”	12
	Turkmenistan –	Garrygala Science & Production Center of Genetic Resources	137
	Uzbekistan –	Uzbek Research Institute of Plant Industry	308
Lucerne	Azerbaijan –	Institute of Genetic Resources	179
	Armenia –	Genebank of the National Academy of Sciences of Armenia	87
	Georgia –	Research Institute of Farming named after Lomouri	225
	Kazakhstan –	Shalkar Agricultural Experimental Station	338
	Kyrgyzstan –	Kyrgyz Research Institute of Livestock, Veterinary and Pastures	78
	Tajikistan –	Republican National Center of Genetic Resources	70
	Turkmenistan – Uzbekistan –	Research Institute of Farming Research Institute of Cotton Breeding and Seed Production	1 6800

Apricot	Azerbaijan –	Research Institute of Horticulture and Subtropical Crops	22
	Georgia –	Research Institute of Horticulture, Viticulture and Wine-making	20
	Kazakhstan –	Pomological Gardens	72
	Kyrgyzstan –	Botanical Gardens	1
	Tajikistan –	Research Production Center “Bogparvar”	180
	Turkmenistan –	Research Institute of Farming	20
	Uzbekistan –	Uzbek Research Institute of Plant Industry	429

Criteria for identification of priority *ex situ* collections for long-term support within the Regional Strategy

- State-owned collections and collections in the public domain;
- Collections containing materials of high economic value for local population, crop wild relatives, endemics and rare genotypes;
- Collections with no safety duplication;
- Collections under the threat of extinction;
- Collections containing accessions with specific properties/qualities and from specific environmental conditions;
- Collections meeting the eligibility criteria for support set out by the Global Trust (those having effective links with users, or legalized status, or obligations for long-term and rational conservation and cooperation, or providing easy access to materials, or possessing trained staff, organized management system, and adequate facilities and equipment);
- Collections with wide ecogeographical coverage of PGR;
- Collections with accessions readily accessible, available for exchange and complying with quarantine safety rules;
- Collections having passport data for the conserved materials
- Collections holding accessions of the crops listed in Annex I of IRPGRFA.