

# COUNTRY REPORT ON THE STATE OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

## UZBEKISTAN



**Pilot Testing of the National Information Sharing  
Mechanism, on the Global Plan Action Implementation  
in Uzbekistan**

**FINAL COUNTRY REPORT**

Report compiled by  
Institute of Genetics and Plant Experimental Biology  
and produced with support from IPGRI



Tashkent, August 2004

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# KEY CONTRIBUTORS TO THE NISM PILOT TESTING PROCESS

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6.	Karpenko Yu.A.	Dr., Scientific Secretary	Uzbek Research Institute of Forestry
7.	Yakubov M.D.	Mr., Researcher	Institute of Genetics and Plant Experimental Biology, AS RUZ

## B. Participating institutions and contact persons

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		Pratov U.P.	Dr., Head of Department
4.	Uzbek Research Institute of Plant Industry	Abdullaev F.Kh.	Dr., Head of PGR Documentation Unit
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		Karpenko Yu.A.	Dr., Scientific Secretary
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		Dorokhova E.A.	Dr., Senior Scientist
7.	Uzbek Research Institute of Vegetable, Melon Crops and Potato	Abbasov A.M.	Dr., Deputy Director on Science
8.	Uzbek Research Institute of Cotton Breeding and Seed Growing	Saidaliev Kh.	Dr., Head of Department
9.	Uzbek Research Institute of Sericulture	Khalmatov D.	Dr., Deputy Director on Science
10.	Gulistan State University	Kushiev Kh.	Dr., Head of Department
11.	Samarqand Agricultural Institute named F.Khodjaev	Astanakulov T.E.	Dr., Head of Department
12.	Scientific Production Organization "Ecoles"	Kaimov A.K.	Dr., Head
13.	Uzbek Research Institute of Rice	Jumanov Z.	Dr., Deputy Director on Science
14.	Tashkent State Agrarian University	Gafurova L.A.	Dr., Pro-rector on Science
15.	Gallya-Aral Branch of Andijan Research Institute of Cereal and Grain Legume Crops in Irrigated Lands	Ziyadullaev Z.	Dr., Deputy Director on Science

# INTRODUCTION



## 1.1 Background

The Republic of Uzbekistan is located in the Central Asia and has rich potential of cultivated Plant Genetic Resources and their wild relatives. Uzbekistan occupies the territory of 448.84 thousand km<sup>2</sup> and on natural climatic and soil conditions it is divided on 3 zones: Northern, Central and Southern.

Agriculture is the main branch in the Republic. Varieties of the most important for the region crops are developed in the Republic and widely grown in agriculture production and in farms. All this promoted development of agriculture and increase in food products.

Different crop plants occupy area about 44 457.9 thousand ha, there are: Total farming area - 27 667.4 thousand ha, arable land - 4 486.0 thousand ha, mowing - 109.6 thousand ha, pasture - 22 532.2 thousand ha.

Forests occupy area 9.1 million hektars. National Parks and State Reserves occupy area 818 thousand in hektars.

For realization of "Convention about Biodiversity" and 20 Activities of "Global Plan" the national strategy on Conservation of Biodiversity and agriculture development were worked out.

The country report on Plant Genetic Resources (PGR) was submitted for discussion in 1995 at PGR Regional Meeting and was sent to FAO. Among 150 countries Uzbekistan was signed the Global Plan Action (GPA), approved on the Leipzig Conference (June 1996, Germany) on Plant Genetic Resources for Food and Agriculture (PGRFA).

In 2001 the report of Uzbekistan on *in situ* preservation of crop wild relatives in which the review of PGR status was submitted in FAO. Since 1996 each two years the report of the country has represented by the National Coordinator at Meeting of Steering Committee of Central Asian and Trans-Caucasian Network on Plant Genetic Resources (CATCN-PGR).

Collection holders and experts on PGR from 11 institutes represented the information and 9 tables for the report. It was necessary to systematize the available data on PGR for creation of information system.

## 1.2 Overview

The project: «National Information Sharing Mechanism (NISM) on implementation of the Global Plan Action (GPA) for Plant Genetic Resources for Food and Agriculture (PGRFA) in Uzbekistan» began in 2004. Objectives of the project are in definition of indicators and reporting format of GPA performance, definition and distribution of the information and development of NISM on PGRFA.

The main goals for NISM development:

- Involving stakeholders in process of GPA performance estimation;
- Approbation of indicators for GPA monitoring in Republic;
- Computerization and generalization of the major data for development of the information sharing mechanism on national, and, in the subsequent, on international level.

The Institute of Genetics and Plant Experimental Biology (IGPEB) of Academy of Science of Republic of Uzbekistan (AS RUZ) is acted as the Coordinating Center within the framework of PGR network organized in 1996 and National Program on conservation and use of PGR organized at the Center of Science and Technologies (CST) in 1997. The network includes Scientific Research Institutes and Universities, different state structures.

In February 2004 translation of indicators and reporting format into Russian was carried out, and also the partners participating in performance of 20 activities of the Global Plan Action on PGRFA are determined; a number of institutes and establishments which have collected available information in an electronic form are involved in process of NISM development work; knowledge of new program work of key experts in institutes are trained and raised; it is developed a framework for gathering, managing and sharing important information on PGRFA.

The first Meeting on the given project was been held in March 2004 in Tashkent. Partners participating in work on PGRFA in the country and also representatives Academy of Sciences RUz, Ministry of Agriculture and Water Resources (MAWR), State Committee of Nature Protection (Goskompriroda), Main Department of Forestry (Glavuprleskhos) were determined.

At the Meeting they were informed about objectives and goals of the Project on NISM for PGRFA. Also acquaintance with system application was held and CD of Betaversion 1.2 of the computer program was given to participants for filling. During carrying out of the Meeting the group on NISM was officially created and the National Focal Point (NFP) on performance of the given project was appointed. During the period from March till July carried out work coordination with stakeholders and the general tables, keys, managements on application and also CD with the software were given to participants. They were trained to carry out installation, to fill in the questionnaire and to return data NFP. The data from partners were given by August. Work on the data generalization was finished by the middle of August.

Also individual technical support for partners was carried out by consultations, negotiations and teamwork on a computer, visiting establishments and phone dialogue.

Thus, activity on the project was carried out from February till August 2004.

The data on the project were given by 11 statkeholders. They and other institutions were invited to the second Meeting in the middle of August 2004.

The report contains the resume on activity of the pilot project and review of activity of PGRFA status in Uzbekistan, based on the information collected during the project NISM implementation.

# PARTICIPATING STAKEHOLDERS, THEIR ROLES AND RESPONSIBILITIES

## 2.1 List of stakeholders

15 partners-organizations in existing Network on PGR were selected. All partners have computers; some of them have e-mail (Table 1).

TABLE 1

### List of stakeholders

	Acronyms	Institution name	ID
1.	NUUz	National University of Uzbekistan named Mirzo Ulugbek	S-235-1
2.	SPC "Botanika"	Scientific Production Centre "Botanika"	S-235-2
3.	TSAU	Tashkent State Agrarian University	S-235-3
4.	IGPEB	Institute of Genetics and Plant Experimental Biology	S-235-4
5.	SamAI	Samarqand Agricultural Institute named F.Khodjaev	S-235-5
6.	GSU	Gulistan State University	S-235-6
7.	UzRIF	Uzbek Research Institute of Forestry	S-235-7
8.	UzRIVMCP	Uzbek Research Institute of Vegetable, Melon Crops and Potato	S-235-8
9.	UzRIPI	Uzbek Research Institute of Plant Industry	S-235-9
10.	UzRICBSG	Uzbek Research Institute of Cotton Breeding and Seed Growing	S-235-10
11.	GABARICGLCIL	Gallya-Aral Branch of Andijan Research Institute of Cereal and Grain Legume Crops in Irrigated Lands	S-235-13
12.	SPO "Ecoles"	Scientific Production Organization "Ecoles"	S-235-14
13.	UzRIHVWM	Uzbek Research Institute of Horticulture, Viticulture and Wine Making named R.R.Shreder	S-235-15
14.	UzRIS	Uzbek Research Institute of Sericulture	S-235-16
15.	UzRIR	Uzbek Research Institute of Rice	S-235-17



## 2.2 Participating Stakeholders: their roles and responsibilities

Actort	Roles and responsibilities
National Working Group-NWG	<ul style="list-style-type: none"> <li>• Definition of partners for project involvement</li> <li>• Review and definition of partners' needs, provision of partners by the necessary managements</li> <li>• Control of work with partners</li> <li>• Mobilization of necessary resources for the project performance</li> <li>• Definition of directions for GPA-implementation</li> <li>• Definition of strategy for partners' activity, NISM priority for GPA-implementation</li> <li>• Development of work plan and NISM budget</li> <li>• Provision of public awareness and state organizations about activ-ity of the project on NISM</li> </ul>
National Focal Point	<ul style="list-style-type: none"> <li>• Organization of working group on the project in National Steer-ing Committee</li> <li>• Provision of technical management during work on the project</li> <li>• Definition of lacks and ways of their decision</li> <li>• Development of connection between different state organizations, ministries and departments</li> <li>• Control of information, received from partners</li> </ul>
National SHs	<ul style="list-style-type: none"> <li>• Collection and input of available data and their presentation to National Focal Point (NFP)</li> <li>• Participation in seminars and presentation of the necessary mate-rials</li> <li>• Organization of working groups, taking part in activity on NISM for PGRFA project performance in institutions</li> </ul>

Professional skills of personnel are different.

The following organizations-partners were registered in NISM program but data are not presented: Tashkent State Agrarian University (S-235-3), Gallya-Aral Branch of Andijan Research Institute of Cereal and Grain Legume Crops in Irrigated Lands (S-235-13), Uzbek Research Institute of Rice (S-235-17).

## 2.3 Responsibilities of stakeholders

<b>ID:</b>	S-235-4
<b>Organization:</b>	Institute of Genetics and Plant Experimental Biology (IGPEB)
<b>Local name:</b>	Genetika va O'simliklar Eksperimental Biologiyasi Instituti (GO'EBI)
<b>Parent organization:</b>	Academy of Sciences of Republic of Uzbekistan
<b>Address:</b>	702151, P.O. Yukori-Yuz, Kibray district, Tashkent region, Uzbekistan
<b>Phone:</b>	(998-71)- 264-23-90
<b>Fax:</b>	(998-71)- 264-22-30
<b>E-mail:</b>	biotech@uzsci.net
<b>Collection composition:</b>	Cotton- 5070 accessions, soy-bean- 130 accessions
<b>Total accessions:</b>	5200 accessions



**ID:** S-235-9

**Organization:** Uzbek Research Institute of Plant Industry (UzRIPI)

**Local name:** O'zbekiston O'simlikshunoslik Ilmiy-Tadqiqot Instituti (O'zO'ITI)

**Parent organization:** Uzbek Scientific-Production Center of Agriculture (UzSPCA)

**Address:** 702134, P.O. Botanika, Kibray district, Tashkent region, Uzbekistan

**Phone:** (998-71)- 264-23-74

**Fax:** (998-71)- 264-23-74

**Collection composition:** Wheat (9277), barley (2572), oat (645), triticale (675), maize (2200), rice (773), sorghum (653), millet (24), african millet (31), buckwheat (39), chick-pea (1055), pea (18), bean (16), mung-bean (377), soybean (20), vetch (7), cow pea (122), pigeon pea (70), lablab (10), faba bean (1), rye-grass (66), reed fescue (54), amaranth (54), orchard grass (28), wheat grass (12), alfalfa (343), sweet clover (88), clover (176), milk vetch (3), trigonella (40), saifoin (1), summer cypress (3), coronilla (15), Dakota vetch (9), couch grass (3), cotton (4763), cotton (29), peanut (1438), sesame (1334), crown flax (232), safflower (430), sunflower (38), lallemantia (32), kenaf (202), jute (116), hemp mallow (184), okra (190), crotalaria (75), mallow (35), jojoba (74), guizontia (2), guayule (10), sprague (5), teasel (7), stevia (1), mandragora (1), distichlis (1), onion (106), garlic (205), tomato (546), pepper (49), egg-plant (44), carrot (125), winter radish (83), garden radish (154), turnip (19), table beet (38), sugar beet (105), parsnip (4), swede (1), cabbage (104), lettuce (121), dill (61), parsnip (12), celery (46), spinach (2), potato (105), sweet potato (2), Jerusalem artichoke (2), basil (8), coriander (9), nigella (4), anise (1), caraway (6), fennel (4), artichoke (2), melon (957), water melon (805), pumpkin (926), cucumber (11), gourd (22), luffa (18), apple tree (300), pear (330), quince (90), peach (346), plum (341), apricot (580), cherry (69), sweet cherry (180), grape (1580), strawberry (194)

**Total accessions:** 37396 accessions

**ID:** S-235-2

**Organization:** Scientific-Production Centre "Botanika" (SPC "Botanika")

**Local name:** "Botanika" Ilmiy Ishlab-Chiqarish Markazi (IICM "Botanika")

**Parent organization:** Academy of Sciences of Republic of Uzbekistan

**Address:** 700143, F.Khodjaev str., 32, Tashkent city, Uzbekistan

**Phone:** (998-71)- 162-70-65, 162-70-85

**Fax:** (998-71)- 162-79-38

**E-mail:** post@botany.org.uz

**Collection composition:** Food plants: banana, palm-tree, hawthorn, apple-tree, pecan, persimmon, apricot, sweet cherry, walnut; fodder plants: alfalfa, maize, barley, sainfoin; medicine plants: radiola, ahilla, mandragora, sage, taliketrum, valeriana; introduced plants; herbarium sheets (1400000)

**ID:** S-235-7

**Organization:** Uzbek Research Institute of Forestry (UzRIF)

**Local name:** O'zbekiston O'rmon Xo'jaligi Ilmiy-Tadqiqot Instituti (O'zO'XITI)

**Parent organization:** Uzbek Scientific-Production Center of Agriculture (UzSPCA)

**Address:** 702017, P.O.Darkhan, Tashkent district, Tashkent region, Uzbekistan

**Phone:** (998-71)- 125-72-32

**Fax:** (998-71)- 125-71-80

**E-mail:** nii@les.org.uz

**Collection composition:** Walnut (114), pistachio (39)

**Total accessions:** 153 accessions of walnut and pistachio

**ID:** S-235-15  
**Organization:** R.R.Shreder Uzbek Research Institute of Horticulture, Viticulture and Wine Making named R.R.Shreder (UzRIHVWM)  
**Local name:** R.R.Sheder Nomli O'zbekiston Bog'dorchilik, Uzumchilik va Vinochilik Ilmiy-Tadqiqot Instituti (O'zBUVITI)  
**Parent organization:** Uzbek Scientific-Production Center of Agriculture (UzSPCA)  
**Address:** 702174, P.O. Shura-bazar, Tashkent district, Tashkent region, Uzbekistan  
**Phone:** (998-71)- 224-24-42  
**Fax:** No  
**Collection composition:** Apple-tree (320), pear (188), quince (55), apricot (250), peach (203), sweet cherry (75), cherry (28), myrobalan plum (40), plum (61), lemon (11), orange (12), mandarine (11), grape-fruit (13), strawberry (35), raspberry (12), currant (40), pomegranate (62), persimmon (60), fig-tree (95), walnut (81), almond (53), hazel (118), pistachio (8), grape (727), kipkan (1)  
**Total accessions:** 2559 accessions of 25 crops

**ID:** S-235-8  
**Organization:** Uzbek Research Institute of Vegetable, Melon Crops and Potato (UzRIVMCP)  
**Local name:** O'zbekiston Sabzavot-Poliz Ekinlari va Kartoshka Ilmiy Tadqiqot Instituti (O'zSPEKITI)  
**Parent organization:** Uzbek Scientific-Production Center of Agriculture (UzSPCA)  
**Address:** 702003, P.O. Kock-saray, Tashkent district, Tashkent region, Uzbekistan  
**Phone:** (998-71)- 139-94-61  
**Fax:** No  
**Collection composition:** Onion (10), table beet (15), cabbage (8), sweet pepper (10), melon (339), cucumber (18), carrot (7), tomato (54), egg-plant (5)  
**Total accessions:** 466 accessions of 9 crops

**ID:** S-235-1  
**Organization:** Mirzo Ulugbek National University of Uzbekistan (NUUz)  
**Local name:** Mirzo Ulug'bek nomli O'zbekiston Milliy Universiteti (O'zMU)  
**Parent organization:** Ministry of Highest and Secondary Education (MHSE)  
**Address:** 700174, VUZ gorodok, Tashkent, Uzbekistan  
**Phone:** (998-71)- 248-18-08  
**Fax:** No  
**Collection composition:** Cotton genetic collection (500), cotton cyto-genetic collection (441)  
**Total accessions:** 941 cotton accessions

**ID:** S-235-5  
**Organization:** Samarqand Agricultural Institute named F.Khodjaev (SamAI)  
**Local name:** F.Ho'jaev nomli Samarqand Qishloq Xo'jalik Instituti (SamQXI)  
**Parent organization:** Ministry of Highest and Secondary Education (MHSE)  
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**Fax:** (36662)- 34-07-86  
**E-mail:** sam@uzpak.uz  
**Web-page:** www.samai.uzpak.uz  
**Collection composition:** Potato- 1223 accessions  
**Total accessions:** 1223 accessions of potato



<b>ID:</b>	S-235-16
<b>Organization:</b>	Uzbek Research Institute of Sericulture (UzRIS)
<b>Local name:</b>	O'zbekiston Ipakchilik Ilmiy-Tadqiqot Institute (O'zIITI)
<b>Parent organization:</b>	Association "Uzbek ipagi"
<b>Address:</b>	700055, Ipakchi str., 1, Shaikhantakhur district, Tashkent city, Uzbekistan
<b>Phone:</b>	(998-71)- 49-04-56, 49-07-66
<b>Fax:</b>	(998-71)- 249-07-66
<b>Collection composition:</b>	Mulberry-tree- 222 accessions
<b>Total accessions:</b>	222 accessions of mulberry-tree
<b>ID:</b>	S-235-10
<b>Organization:</b>	Uzbek Research Institute of Cotton Breeding and Seed Growing (UzRICBSG)
<b>Local name:</b>	O'zbekiston Go'za Seleksiyasi va Urug'chiligi Ilmiy-Tadqiqot Insti tute (O'zG'SUITI)
<b>Parent organization:</b>	Uzbek Scientific-Production Center of Agriculture (UzSPCA)
<b>Address:</b>	702147, P.O. Salar, Kibray district, Tashkent region, Uzbekistan
<b>Phone:</b>	(998-71)- 263-89-69
<b>Fax:</b>	(998-71)- 263-89-69
<b>E-mail:</b>	cottonbr@tkt.uz
<b>Collection composition:</b>	Cotton (12048), alfalfa (7073) and breeding alfalfa collection (3000)
<b>Total accessions:</b>	22121 accessions of cotton and alfalfa
<b>ID:</b>	S-235-6
<b>Organization:</b>	Gulistan State University (GSU)
<b>Local name:</b>	Guliston Davlat Universiteti (GDU)
<b>Parent organization:</b>	Ministry of Highest and Secondary Education (MHSE)
<b>Address:</b>	707000, Gulistan town, Syrdarya region, Uzbekistan
<b>Phone:</b>	(3672)- 25-02-75, 25-41-89
<b>Fax:</b>	(3672)- 25-40-42
<b>E-mail:</b>	kushiev@mail.ru
<b>Collection composition:</b>	Wheat (1750), triticale (7), cotton (8), sorghum (10) and safflower (10)
<b>Total accessions:</b>	1785 accessions of 5 crops
<b>ID:</b>	S-235-14
<b>Organization:</b>	Scientific Production Organization "Ecoles" (SPO "Ecoles")
<b>Local name:</b>	Ilmiy ishlab chiqarish birlashmasi "Ecoles" (IICHB "Ecoles")
<b>Address:</b>	702017, P.O. Darkhan, Tashkent district, Tashkent region, Uzbekistan
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<b>Fax:</b>	(998-71) 125-71-80
<b>E-mail:</b>	nii@les.org.uz

# OVERVIEW OF THE GPA IMPLEMENTATION

## 3.1 Comments to priorities 1-20

Activity on implementation GPA activities is carried out in Uzbekistan. Governing bodies, ministries, departments, scientific research institutes, farmer associations and the non-governmental organizations take part in this process.

### 3.1.1 *In situ* conservation and development

#### **Priority Activity Area 1.**

##### **Surveying and inventorying plant genetic resources for food and agriculture**

The work on PGRFA inspection and inventories is carried out in Republic under control of the State Committee of Nature Protection and Main Department of Forestry. Grain, leguminous, technical, olive, vegetable and fruit crops wild relatives grow in Uzbekistan. Expeditions are carried out annually and wild species are involved into collections of institutes for preservation. 9 State Reserves, 2 National Parks and also 9 Preserves are available in the Republic. There is The National Program on *ex situ* and *in situ* conservation in that various departments participate. A number of the laws in Republic is directed for reduction of biodiversity loss. Last years the international projects are carried out according to threat to species in *in situ*, local knowledge utilization for assistance to development of additional strategy and methodology on conservation.

#### **Priority Activity Area 2.**

##### **Supporting on-farm management and improvement of plant genetic resources for food and agriculture**

There is a system of seed-growing and their supply to farmers in the republic. Farmers play the important role for agricultural production improvement. Scientific researches are carried out in parallel to works on production conditions, assistance to experiments farmers is rendered. There are training courses that helps to varieties improvement during production. To increase knowledge of conservation during production and plants improvement the projects with the international organizations are carried out. PGRFA management actions and conservation are carried out. The important role is allocated to Genebank and PGR conservation in collections in some scientific institutes of Republic.

#### **Priority Activity Area 3.**

##### **Assisting farmers in disaster situations to restore agricultural systems**

The existing system of seed-growing and their distribution allows to operatively provide farmers with seeds of adapted crop varieties after acts of God. Local forms and varieties of different crops for food and agriculture are kept in SRI collections.

#### **Priority Activity Area 4.**

##### **Promoting *in situ* conservation of wild crop relatives and wild plants for food production**

Work on increasing of PGR importance is carried out. In given guideline 11 projects are implemented in Republic for the period of 1999-2004 (Table 2). Activity on planning and *in situ* conservation of wild relatives of agricultural crops and wild plants for the food is carried out by the responsible organizations. Available State Reserves and National Parks support crop wild relatives conservation. Work under UNEP GEF project on crop wild relatives and work on increase of PGR importance are carried out in Republic.

TABLE 2

**Most important collecting projects recorded under the NISM on GPA**

Years	Project name	Agency/Abbreviation
On-going	Floristic expeditions collecting herbaria and seed materials	SPC "Botanica"
On-going	Restoration degraded pastures, yantak and saxaul growths of Southwest Kyzyl Kum	SPC "Botanica"
On-going	Inter-governmental project on biodiversity conservation in Western Tiyan-Shan	SPC "Botanica"
1998	Cereals and Grain Legumes Collection	UzRIPI
1999	Survey and Collection of Vegetables Crops in Uzbekistan	CWANA/98/004
2000	Collection of local and wild populations of cereals, grain legumes and fodders in the territory of the North Tajikistan	SPC "Botanica"
2000	Enhancing the use of Melon Genetic Diversity in Uzbekistan through strengthening on-farm and <i>in situ</i> conservation aspects	CWANA/2000/02
2000-2002	Use and Conservation of <i>Pyrus L.</i> Genetic Diversity in Central Asia	CWANA/2000/03
2001-2004	Inter-governmental project on biodiversity conservation in Western Tiyan-Shan	SPC "Botanica"
2002-2005	Selection of perspective forms and cultivars of walnut their study and bookmark of collection cultures for development base untrimmed nut production	UB-ARS-01 (A)-2002
2003-2006	Revealing of high-yielding varieties and forms nut-fruits breeds, building on their basis of collection crops and interchange by breeding material	UB-ARS-16

**3.1.2 Ex situ Conservation****Priory Activity Area 5.****Sustaining existing *ex situ* collections**

Within the framework of State Scientific Technical Program (SSTP) listed PGRFA reproduction and preservation is carried out. Also this work is carried out on the inter-national projects with USDA, ICARDA and others. Reconstruction Genebank in UzRIPI (S-235-9) for improvement of PGRFA conservation is carried out in last years and funds for storehouse's reconstruction in three institutes are given. In scientific research institutes information on PGRFA is collected and its documentation is carried out in three institutes. Access to the information is available. Actions on the National Information Sharing Mechanism creation are undertaken information exchange in given pilot project.

**Priory Activity Area 6.****Regenerating threatened *ex situ* accessions**

Periodic regeneration of samples including threatened varieties, especially on priority crops is necessary. The identification of samples and scheduled subculture of collected samples in various SRI by existing technologies is carried out. The development of regeneration methods of difficult propagating varieties for their conservation is carried out. Restoration of samples viability is also carried out with the international organizations within the framework of projects. Unfortunately, it is observed losses of samples in result of seeds unviability because of old reproduction and insufficient financing of this work.



**Priory Activity Area 7.****Supporting planned and targeted collecting of plant genetic resources for food and agriculture**

The development of collecting methods and systematic PGRFA collection is carried out according to the purposes and the obligations stated in Convention on Biological Diversity (CBD) and determined priorities. The special attention is paid to collection of threatened varieties and rare and disappearing species are brought in Red List of Republics. The collected material fills up collections and is kept in SRI. Plant Genetic Resources for Food and Agriculture (PGRFA) coordination in Republic is carried out in frameworks of the State Scientific Technical Program, in which a number of scientific institutes take part. Co-expeditions with international organizations on PGRFA collecting for new valuable samples enrichment of collections in SRI are carried out (Table 3, 4).

TABLE 3

**Collecting missions on the territory of Uzbekistan**

Years	Region	Crops	Accession number
	Surkhandariya	Hawthorn, apple-tree, pear, persimmon, walnut	
	Surkhandariya	Yantak, sage-brush, ferula	
	Bukhara, Khorezm, Karakalpakistan	Yantak, wormwood, saxaul, salsola	220
	Bukhara, Khorezm, Karakalpakistan	Garbala, saltwort, anabazis, ferula	600
1998	Fergana valley, Tashkent, Jizzakh, Samarkand	Wheat (70), barley (31), aegilops (32), vigna (9), lentil (1), alfalfa (1), pigeon pea (1), chickpea (58), lupin (1), triticale (2)	206
1999	Fergana valley, Tashkent, Samarkand, Bukhara, Surkhandariya, Kashkadarya, Khorezm, Karakalpakistan	Onion (31), garlic (4), coriander (17), basil (18), nigella (12), dill (11), parsley (2), hyssop (1), fennel (2), caraway (2), carrot (15), pepper (23), melon (27), water melon (9), pumpkin (2), cucumber (1), garden radish (3), winter radish (4), turnip (9), cabbage (4), lettuce (1), tomato (1), eggplant (4), sweet potato (2), potato (1), beet (4), bean (7), soy-bean (1), maize (1), millet (1), rice (1), sorghum (1), peanut (2), sunflower (3), sesame (1)	292
2000	Andijan, Namangan, Tashkent, Syrdarya, Bukhara, Samarkand, Khorezm, Karakalpakistan	Melon	91
2000	Fergana valley, Tashkent, Jizzakh, Samarkand	Wheat (38), barley (27), rye (12), goat-grass (16), triticale (1), bean (14), chick pea (8), faba-bean (7), pea (4), lentil (2), vetch (5), clover (5), clover creeping (3), sweet clover (1), meadow grass (3), hedgehog, flax oil (2)	150
2001-2004	Tashkent, Namangan	Walnut, almond, apple-tree, pear, alycha, hawthorn	15000
2001-2004	Tashkent, Namangan	Clover, sainfoin, barley, vetch, ferula	8000
2001-2004	Tashkent, Namangan	Milfoil, <i>origanum</i> , <i>zyziphira</i> , parpi, barberry, immortelle	
2002-2005	Tashkent, Jizzakh	Walnut	87
2003-2006	Tashkent	Walnut	32

TABLE 4

**Collecting missions in the territory of Uzbekistan and neighboring countries**

Years	Country	Crops	Accession number
2000-2002	Uzbekistan (Tashkent, Syrdarya, Surkhandarya, Kashkandarya), Kyrgyzstan (Jalalabad, Osh), Turkmenistan (Balkan)	Pear (64), almond (8), plum (3), alycha (12), apple-tree (1), pomegranate (1), fig (1), grape (1), magolepka (1), hawthorn (2), watermelon (3)	96

**Priory Activity Area 8.****Expanding *ex situ* conservation activities**

Strategy on management and development of *ex situ* conservation technology in Republic develops during last three years. Work on modernization of storehouses of PGRFA seeds was livened up. Reconstruction of UzRIPI Genebank (S-235-9), where intermediate term storage of seeds with use of modern technologies was carried out and reconstruction of three another storehouses was planned. Regular repair and substorage of collections, duplication and dispatch of PGR seeds is carried out in Botanical Garden of SPC "Botanica" (S-235-2). The estimation of needs on conservation of other crop plants varieties for food and agriculture is carried out by the responsible organizations. The public awareness on PGRFA conservation is carried out by books edition, publications of articles, display on TV and translation by radio of Republic.

**3.1.3 Utilization of plant genetic resources****Priory Activity Area 9.****Expanding the characterization, evaluation and number of core collections to facilitate use**

The scientific institutes of the Republic keeping PGRFA have many years' experience in germplasm characterization and estimation using suitable techniques. However, the most part of the information is not in electronic form. For last three years the electronic database on some collections of crops is created in UzRIPI (S-235-9) and the database on cotton, pistachio and walnut is created in IGPEB (S-235-4) AS RUz and in UzRIF (S-235-7) respectively. And also works on inputing of data into computer are started in SPC "Botanica" (S-235-2) AS RUz, UzRICBSG (S-235-10) and UzRIS (S-235-16). Characterization of crops is carried out on several directions and includes nameplate data about a sample, biological features, morphological traits, economic valuable traits and others, which allow to carry out a comparative estimation for valuable samples revealing. For improvement of sample characterization the newest crop descriptors and also modern methods of estimation using genetic markers are used last years. Planning and realization of work on germplasm characterization and estimation is carried out at active participation of the National Program and in CATCN-PGR frameworks by training the young staff on training courses, their training in International Centers (ICARDA, CIMMYT, IPGRI, ILRI and others).

**Priory Activity Area 10.****Increasing genetic enhancement and base-broadening efforts**

The work on improved crop varieties creation is carried out in the Republic. Broadening of genetic base of agricultural crops is carried out by use of traditional methods of breeding, application of genetic engineering modern methods and biotechnology.

Methodologies of genetic improvement on the basis of the international cooperation on different directions are used.

**Priory Activity Area 11.****Promoting sustainable agriculture through diversification of crop production and broader diversity in crops**

Subspecies and crop varieties that is traditionally used in breeding programs are not always enable for improvement of desirable valuable traits. In connection this new species and varieties are involved in breeding. Also work on creation of new lines and synthetic varieties is carried out in SRI. Investigations on virus-free potato obtaining are carried out by biotechnology method. For including of wider crops *spectrum* introduction of nonconventional crops and diversification of plant growing is carried out.



**Priory Activity Area 12.****Promoting development and commercialization of under-utilized crops and species**

Some vegetable, fruit and olive species are inadequately used for production and processing, however they have potential and promote maintenance of food safety. Such crops require attention and broadening their researches.

**Priory Activity Area 13.****Supporting seed production and distribution**

The system of seed production in Republic includes a number of organizations that is responsible for seeds propagation and realization. The institutes-originators of varieties are engaged in primary seed production of super-elite and elite seeds. Seed propagation of the 1 and 2 reproductions is carried out in seed-producing farms. The largest distributors of seed material and vegetative-propagating seed material in the Republic are «Uznavuruglari», «Uzdon» and «Uzkartoshka», «Uzmevasabzavotkholding» respectively. Private and foreign firms are also interested in increasing of seeds quantity of wide varieties *spectrum*. Seed production of 50 agricultural crops is conducted (Table 5).

TABLE 5

**Supporting Seed Production and Distribution**

Crop/Crop group	Seeds, tho t
Cereal crops	323.8
Grain legume crops	0.16
Fodder crops	4.70
Maize and groat crops	3.20
Cotton	129.00
Oil-bearing crops	0.86
Vegetable and melon crops	87.3
Fruit crops and grape	-
<b>Total</b>	<b>549.02</b>

Now more than 50 agricultural crops are grown in Republic on the irrigated area more than 4 million in hectares (Table 6).

Provision of farmers by new varieties seeds is carried out after their inclusion in State Register. Problems at varieties propagation are connected with high cost price of seed. It is difficult to propagate some local varieties enough for full provision of farmers needs. In SSTP frameworks a number of projects on various agricultural crops seed production pathways perfection is carried out. It is carried out cooperation with foreign firms on provision of Republic by seeds of necessary varieties.

TABLE 6

**Growth area proportion - Crop group summary in 2003**

Crop/Crop group	Planted area, tho. ha			Arable area proportion, %
	in all	including		
		Irrigated	Dry	
Cereal crops	1 619.09	1 272.26	346.83	39.5
Grain legume crops	11.28	5.25	6.03	0.3
Fodder crops	316.47	300.76	15.71	7.7
Maize and groat crops	160.20	160.14	0.06	3.8
Industrial crops	1 445.00	1 427.47	17.53	35.0
Vegetable and melon crops	237.66	233.51	4.15	5.8
Fruit crops and grape	319.70	309.90	9.80	7.9
<b>Total</b>	<b>4 109.40</b>	<b>3 709.29</b>	<b>400.11</b>	<b>100.0</b>

**Priory Activity Area 14.****Developing new markets for local varieties and “diversity-rich” products**

Many farmers continue to grow local varieties and realize their production in the local markets. By this way distribution of local disappearing varieties is supported. Also there is increase tendency of crops variety cultivation. The system of varieties registration provides application and documentation of institute-originator after they completed competitive variety testing in State Commission on Variety Testing of Agricultural Crops (GSI). After three-year state variety testing at value establishment variety is included in State Register of admitted for cultivation varieties in Republic or areas, and the certificate for new variety, which can be patented, is brought. At provision foreign varieties by organizations the right of the country from which the given variety was introduced is kept and it is zoned in Republic under the former name. In last years a lot of introduced varieties of wheat, potato, tomato, cucumber and other crops were included into State Register.

**3.1.4 Institutions and capacity building****Priory Activity Area 15.****Building strong national programs.**

The State Scientific Technical Program has status of the National Program. Cooperation between all organizations concerning planning, agriculture, land reforms and environment protection is carried out. This work at the National level coordinated to regional and international activity on PGRFA.

**Priory Activity Area 16.****Promoting networks for plant genetic resources for food and agriculture**

Since 1997 Central Asian and Trans-Caucasian Network on PGR activity is carried out (CATCN-PGR) and a number of cooperating organizations and scientific research institutes is involved in it. Work in network is carried out in different directions: organization of expeditions on plant collecting, *in situ* and *ex situ* PGR conservation, germplasm exchange, studying and collecting of characteristics, documentation, trainings, work under collaborative projects.

**Priory Activity Area 17.****Constructing comprehensive information systems for plant genetic resources for food and agriculture**

PGRFA databases are formed in three institutes of Republic: UzRIPI (S-235-9), UzRIF (S-235-7) and IGPEB AS RUz (S-235-4), from which UzRIPI has the greatest quantity of the data. On the basis of modern methodology and technologies conservation, collecting and processing of existing data and information into convenient for use form are carried out. Work in projects cooperation is also carried out.

**Priory Activity Area 18.****Developing monitoring and early warning systems for loss of plant genetic resources for food and agriculture**

The reasons of genetic erosion are different and measures for their monitoring, development of information transfer mechanism for responsible experts are conducted. In some institutes doublet collections are created. The estimation of genetic erosion is carried out within international projects UNEP GEF, IPGRI framework.

**Priory Activity Area 19.****Expanding and improving education and training**

In cooperation with CATCN-PGR and National Program training of experts on various courses is regularly carried out. There is a need of educational and training activity broadening, especially for the young staff.

**Priory Activity Area 20.****Promoting public awareness of the value of plant genetic resources for food and agriculture conservation and use**

Distribution of the information on PGRFA value and roles of scientists, breeders, farmers and communities in PGRFA conservation and improvement is carried out in Republic by means of TV, radio, press. On the basis of cooperation with the international state and nongovernmental organizations opportunities for the subsequent joint kinds of activity on PGRFA are defined.



# HIGHLIGHTS OF THE FINDINGS FROM THE DATA GATHERING, ANALYSES AND REPORTING

## 4.1 GPA related projects

For last 5 years work under 71 project was carried out in Republic, 44 projects of them are proceed now, including: 7 projects on in *in situ* conservation; 9 projects on in *ex situ* conservation; 20 projects on studying genefund, allocation of initial material for breeding and creation of new varieties of various crops; 2 projects on seed production; 5 projects on improvement of cultivation technology; 1 project on capacity building.

## 4.2 *In situ* conservation and development

There are 9 Reserves and 2 National Parks in Uzbekistan and their total area is 818 tho ha (Table 7). They are situated in different natural and climatic zones of the Republic and their vertical zonality reaches - 3 500 meters above sea level. Vegetation of Reserves and National Parks is presented by wild species of different families with total size of 8 090 species. Fruit, nut-fruited plants and medicinal herbs predominate among them. State Reserves and National Parks are under control State Committee of Nature Protection and Main Department of Forestry. State Reserves and National Parks are under control State Committee of Nature Protection and Main Department of Forestry.

TABLE 7

### The extent of protected areas in Uzbekistan

Reserves and National Parks	Year of formation	Area, tho. ha		Number of growing plant species
		in all	including forest	
<b>State Reserves</b>				
Chatkal Mountain Forest Biospherical Reserve	1947	45.7	6.6	1 060
Zaamin Mountain Juniper Reserve	1960	10.5	4.2	700
Guissar Mountain Juniper Reserve	1983	80.9	12.2	870
Kizil-kum Reserve	1971	10.1	5.1	120
Baday-tugai Reserve (KKAR)	1971	6.5	3.9	640
Surkhan Reserve:				
• Aral-Paigambar	1971	3.1	0.9	150
• Kuguitan	1987	24.6	-	800
Nurata Reserve	1975	17.8	2.5	650
Zeravshan Reserve	1975	2.4	0.9	300
Kitab Mountain Geological Reserve	1979	5.4	2.8	800
<b>Total</b>		<b>206.0</b>	<b>39.1</b>	
<b>National Parks</b>				
Zaamin National Park	1978	24.1	12.1	1 000
Ugam-Chatkal State Natural National Park	1990	574.6	56.4	1 000
<b>Total</b>		<b>598.7</b>	<b>68.5</b>	
<b>In all</b>		<b>804.7</b>	<b>107.6</b>	

Priority crops for conservation are grain, leguminous, vegetable and fruit, which wild relatives grow in Uzbekistan. For last 7 years 11 expeditions on inspection and PGRFA collecting are carried out in 4 Central-Asian republics. 4 basic scientific institutes of Republic that have experience in PGR collecting participated in it (Table 8).

TABLE 8  
Collecting missions documented in the NISM on GPA (Interaction 1)

ID inst	Title	Acronym	Year	Participating countries
1	2	3	4	5
S-235-2	Floristic expeditions collecting herbaria and seed materials	SPC "Botanica"	On-going	UZB
S-235-2	Restoration degraded pastures, yantak and saxaul growth of Southwest Kyzyl Kum	SPC "Botanica"	On-going	UZB
S-235-2	Inter-governmental project on biodiversity conservation in Western Tiyan-Shan	SPC "Botanica"	On-going	UZB
S-235-9	Cereals and Grain Legumes Collection	UzRIPI	1998	UZB
S-235-9	Survey and Collection of Vegetables Crops in Uzbekistan	CWANA/98/004	1999	UZB
S-235-9	Collection of local and wild populations of cereals, grain legumes and fodders in the territory of the North Tajikistan	UzRIPI	2000	UZB, TJK
S-235-9	Enhancing the use of Melon Genetic Diversity in Uzbekistan through strengthening on-farm and <i>in situ</i> conservation aspects	CWANA/2000/02	2000	UZB
S-235-9	Use and Conservation of <i>Pyrus L.</i> Genetic Diversity in Central Asia	CWANA/2000/03	2000-2002	UZB, KGZ, TKM
S-235-2	Inter-governmental project on biodiversity conservation in Western Tiyan-Shan	SPC "Botanica"	2001-2004	UZB
S-235-7	Selection of perspective forms and cultivars of walnut their study and bookmark of collection cultures for development base untrimmed nut production	UB-ARS-01 (A)-2002	2002-2005	UZB
S-235-7	Revealing of high-yielding varieties and forms nut-fruits breeds, building on their basis of collection crops and interchange by breeding material	UB-ARS-16	2003-2006	UZB

The most areas of inspection have a high priority on *in situ* conservation. The most significant reasons of PGR degradation and priority areas for surveying and inventorying are determined. In support of farm management of PGRFA the project with IPGRI proceeds. The large problem is impossibility of fast propagation of varieties adapted to local conditions and insufficient financing. Work on wild relatives will be carried out during 2004-2008 in framework of UNEP GEF project in cooperation with Armenia, Shri-Lanka, Madagascar and Bolivia.



### 4.3 *Ex situ* conservation

Germplasm conservation is carried out in scientific institutes of Republic. Seed and vegetative-propagating collections are available. Seed collections are kept in UzRIPI Genebank and usual storehouses with uncontrollable temperature conditions. UzRIPI (S-235-9) has the greatest quantity of collections and number of samples. The largest cotton collections are concentrated in UzRICBSG (S-235-10) and IGPEB (S-235-4), alfalfa - in UzRICBSG (S-235-10), potato - in SamAI (S-235-5) (Table 9).

TABLE 9

#### Overview of existing *ex situ* PGRFA collections

ID	Institution	Number of crops	Number of accessions in regular PGRFA collection		
			Total	of it propagated	
				Vegetatively	Generatively
S-235-9	Uzbek Research Institute of Plant Industry	102	37 396	4 039	33 357
S-235-10	Uzbek Research Institute of Cotton Breeding and Seed Growing	2	22 091	-	22 091
S-235-4	Institute of Genetics and Plant Experimental Biology of AS RUz	2	5 200	-	5 200
S-235-1	National University of Uzbekistan named Mirzo Ulugbek	1	941	-	941
S-235-2	Scientific-Production Center «Botanica» of AS RUz	-	-	-	-
S-235-15	Uzbek Research Institute of Horticulture, Viticulture and Wine Making named R.R.Shreder	24	2 494	2 494	-
S-235-8	Uzbek Research Institute of Vegetable, Melon Crops and Potato	9	466	-	466
S-235-5	Samarkand Agriculture Institute named F.Khodjiev	1	1 223	1 223	-
S-235-16	Uzbek Research Institute of Sericulture	1	222	222	0
S-235-7	Uzbek Research Institute of Forestry	2	153	153	-

The analysis of projects shows, that most of them are carried out on *ex situ* conservation (9 projects) and studying of genefund (20 projects).

Samples kept in collections are presented basically by varieties; there are also local ancient varieties, forms and hybrids in insignificant quantity.

Valuable material with improved features are presented for breeding. Stored samples are characterized basically on agrobiological characteristics: morphological traits, biological features and economic-valuable properties. However, almost 95% of the information is not in the electronic form and it is necessary to conduct this work the next years. Molecular methods of investigations are applied basically in small amount on cotton. The material with the improved characteristics is significant for breeding.

### 4.4 Use of genetic resources

There are base collections of wheat and cotton in Republic, however it is necessary to enrich them by new varieties. There are also collections of other food crops in SRI, but they need significant broadening by germplasm quantity. Because of finance lack this work is limited.

On many crops samples from genefund, available in SRI are used for complex estimation, allocation of initial material and creation of new high-quality varieties of various crops. Now this work is carried out by 20 projects and includes grain, leguminous, olive, vegetable, fruit and berry crops, cotton. Projects on developing and marketing local varieties are necessary. Projects on seed production include practically the main crops for food, however not all varieties of these crops are covered with the given projects.

The main reasons hindering from distribution of seeds are: bad adaptation to various environmental conditions at cultivation in different zones of the Republic, insufficient quantity of seeds from the maximum reproductions, the high price for seeds, remoteness from the consumer, insufficient conditions of seeds storage, and other reasons.

#### 4.5 Institution and capacity building

In Republic the Center of Science and Technologies carries out a management of the State Scientific and Technical Programs. SSTP-17 is the National Program in which work on PGRFA is submitted. Goskompriroda and Glavuprleshoz carries out the activity connected with *in situ*. The Ecology Committee together with other organizations carries out environment protection. The Cabinet of Ministers of the Republic of Uzbekistan supervises the whole work.

13 institutes where germplasm of various agricultural crops is kept are responsible on PGRFA.

PGRFA documentation is started only in three institutes using ICARDA and IPGRI systems. And there is still no information exchange between institutes, which is extremely necessary for an overall performance.

Genetic erosion of PGRFA takes place in the Republic and for its decrease and preventions it is necessary the following: acceptance of measures on improvement of ecological conditions and land tenure, regular inspection and inventory *ex situ* PGRFA, monitoring of PGRFA collections, development of measures for genetic erosion prevention. For this purpose increase of education level, training of the personnel, use of the newest technologies and cooperation with the international organizations are necessary. Financing for carrying out of all complexes of these actions is also necessary.

It is necessary to held trainings, to more inform public on PGRFA value, to strengthen a role of the nongovernmental organizations.

There are lack of finance and qualified staff, necessity of trainings.

There is a necessity of carrying out of trainings (Table 10).

TABLE 10

#### List of training subjects for Stakeholders

Stakeholder	Training topic (International language)	Level
NUUz	Utilization of the Cytogenetic collection for molecular mapping of cotton genome	Regional
	Utilization of the Genetic collection in quality genetic sources the major traits for research of structure of cotton genome and utilization in breeding process	Regional
UzRICBSP	Conservation, study, documentation and utilization of plant genepool	Regional
UzRIS	Documentation of PGRFA	Regional
	Genetic mapping of mulberry-tree local cultivars	Regional
	Forecasting of efficiency of cultivars at early stage of breeding process	Regional
SPC "Botanica"	Introduction, acclimatization, collecting, conservation, study and documentation of PGRFA	Regional
IGPEB	Documentation of plant genetic resources	National
	Study and conservation of plant genetic resources	National
SamAI	Conservation, study, biogeotechnology and documentation	National
UzRIPI	Documentation of plant genetic resources	National
	Metodology of collecting and conservation of PGRFA	Regional

Data inputs during pilot project in the Republic of Uzbekistan iterate 1 that is given in the Table 11



**TABLE 11**  
**Overview of number of records added by participating stakeholders into the common tables and in some tables of the questionnaire**

INSTITUTE	INSTAB	PERTAB	PROTAB	CULTAB	ARETAB	SYSTAB	REFTAB	AGRTAB	Q1	Q68	Q98	Q112	Q150	Q215	Q243	Q245	Total
IGPEB	5	31	10	6	-	1	21	-	-	5	-	5	6	2	1	5	98
UzRIPI	46	94	58	573	15	1	125	11	-	102	5	26	573	2	1	10	1642
SPC «Botanica»	10	25	13	-	8	-	5	-	2	5	7	5	-	1	-	-	81
NUUZ	5	3	7	-	2	-	15	1	-	1	-	2	-	2	-	2	40
UzRICBSG	5	49	15	13	1	-	46	-	-	7	-	7	13	1	-	7	164
UzRIS	4	14	4	9	1	-	7	-	-	1	-	1	9	1	-	1	52
SamAI	3	1	3	4	-	-	4	-	-	1	-	1	4	1	-	1	23
UzRIHVWM	8	10	7	33	-	-	60	-	-	26	1	6	33	1	-	6	191
UzRIVMCP	7	29	6	95	-	-	38	-	-	9	-	4	95	1	-	5	289
UzRIF	9	11	4	-	5	1	30	-	2	2	2	-	-	-	1	-	67
GSU	-	3	2	-	-	-	-	-	-	5	-	5	-	2	-	5	22
SIO «Ecoles»	8	4	3	-	-	-	7	-	-	-	-	-	-	-	-	-	22
<b>Total</b>	<b>110</b>	<b>274</b>	<b>132</b>	<b>733</b>	<b>32</b>	<b>3</b>	<b>358</b>	<b>12</b>	<b>4</b>	<b>164</b>	<b>15</b>	<b>62</b>	<b>733</b>	<b>14</b>	<b>3</b>	<b>42</b>	<b>2691</b>

Note: Table 11 does not include all answers included in the Report Format

INSTAB	Table "Organization"	Q1	PGRFA survey and inventory
PERTAB	Table "Contact Person"	Q68	Ex-situ collection, held in organizations
PROTAB	Table "Project"	Q98	Collecting missions of PGRFA
CULTAB	Table "Cultivar"	Q112	Characterization and evaluation of germplasm
ARETAB	Table "Area"	Q150	Number of local cultivated varieties
SYSTAB	Table "Information Systems"	Q215	Topics of training programs
REFTAB	Table "Reference"	Q243	Information system used in organizations
AGRTAB	Table "Agreement"	Q245	Regenerating of ex-situ accessions

# ACHIEVEMENTS, CONSTRAINTS AND SUGGESTIONS OF IMPROVING THE NATIONAL INFORMATION SHARING MECHANISM



For the period of work under the given project the following results were achieved:

- Participants of 20 activities of the Global Plan Action on PGRFA are determined.
- A number of institutes and organizations which have collected the available information in electronic format were involved in process on NISM development. However, it is still required to input a lot of information into computers.
- Key experts in institutes on work with new program was trained and their knowledge were improved.
- Cooperation between partners became stronger.
- During the pilot project performance a framework for collecting, managing and sharing important information on PGRFA was developed.

## 5.1 Utility of indicators and reporting format

*Reporting Format* and NISM indicators are well enough structured for presentation of required answers on 20 GPA areas.

The most of partners complained wrong translation of questions and variants of answers. In this connection additional carrying out of advisory works with partners was required. Also a lot of time was required for establishment of communications on the information in *Common Tables*. Though some partners would answer some questions planned for NFP better, it was not possible because of the project of NISM system. Hence, there were blanks in some critical areas in cases when NFP had no the fact data. In partners' opinions *Reporting Format* limits number of the answers required from partners, as it is very specific to spent activity in organizations-partners. There are cases when partners carry out identified types of activity in the institutions, but the information about it is not covered with NISM system.

Search of other means of information connection in *Common Tables* is necessary. *Reporting Format* should allow access of all partners to all questions.

## 5.2 Utility of the computer application

The computer program is convenient enough for use by the user. *Common Tables* are well structured to carry out conservation and utilization especially important PGRFA, connected with GPA activity. The documents enclosed in computer program are very useful for references. The use instruction especially promoted the offer of help on computer functionalities.

Some partners lacked computer systems, and available computers of some partners were unsuitable because of high requirements of NISM for computer program. Partners noted it is required more time for necessary data input because computer memory is insufficient. Loading of many pages of the program requires a lot of time, while efficiency of actions of input and editing of the data is limited.

In most cases only the contact person of establishment answered on *Reporting Format*, and in some cases, they had no detailed required data and answered the questions partially.

Abilities of the computer program data analysis are also very low and limited only for functions of search and export. The computer program has not been fully completed in the beginning, and different versions were received in various stages of process. Also it required more time for viewing and change of already entered data in NISM program. It is

necessary to note that received last version (Last-version 3.4) is most advanced and increased efficiency of functionalities of work with the program.

It is necessary to help partners-holders of large PGRFA collections with the given project in providing with modern computers. It is necessary to have the arrangement on the indicator of association, connected functions of report in computer program. It considerably would help with creation of report status for GPA performance. The computer program should be reconsidered and edited by NFP before the beginning of process on performance of the given project. By this way the National partners will be ready before some expected achievements.

### **5.3 Usefulness of the guidelines and background materials provided**

Directive materials were useful in regulation of process on project implementation. The help and management from Regional Office of IPGRI-Tashkent were especially very useful during the project implementation.

Partners noted that the information on indicators and *Reporting Format* very bulky and difficult for fast generalization and data analysis. Primary training and practical work for NFP on the computer program were inadequate. The main principles of preparation of the final report were not detailed, especially under the data analysis and provision of the report that complicated preparation of the report. Participation at national working meetings of FAO representatives NISM developers would be desirable; it would be the most useful for performance of the given project. But, it is necessary to note, that representative of Czech Republic in this Global Project rendered all-round aid during two National Meetings.

The supporting establishments should demonstrate the indicator connected to the data analysis and report.

### **5.4 Strength and weakness of the technical assistance received**

Involving of the National partners-holders PGRFA was useful to increase a level of national partnership on PGRFA conservation and utilization between different institutions of the country. Creation of NISM will allow to systematize and analyze more accelerated data and to carry out cooperation on information exchange in national, regional and international levels, which will provide effective PGRFA utilization.

The process was originally concerned with many doubts mainly connected with lack, peculiar institutional properties of NISM. Some partners should nevertheless estimate all the full value of gathering and exchange of the information.

Involving of a plenty of participants is necessary for maintenance of large obligations and responsibility. A lot of efforts should be spent for demonstration of NISM full value for GPA implementation in countries-partners of the project.

## NEXT STEPS AND FUTURE PLANS

For implementation of the GPA activity by Uzbekistan and NISM creation in partner-institutions it is necessary the data gathering, analysis and their input into computer on the following directions:

1. PGRFA Inspection and inventory
2. Assistance to PGRFA conservation under production conditions and improvement
5. The maintenance of existing *ex situ* collections
9. Broadening of works on characterization, estimation and increase of key collections, for their use improvement
13. Assistance in seed production and distribution
15. Development of strong National programs
17. Creation of all-round information systems on PGRFA
18. Development of monitoring systems and the preliminary prevention of PGRFA disappearance
19. Broadening and improvement of educational and training activity

Subsequently there will be also a differentiation of duties between the partners, which are responsible for identified GPA implementation activity. It is necessary to develop the project for improvement of review and also to design Web-site.



