



RESEARCH
PROGRAM ON
Dryland Systems

15 August - 31 December 2015

Establishment of a seed system platform to supply farmers with high quality planting material of temperate fruit trees in Uzbekistan within CGIAR Research Programme on Dryland Systems in Central Asia

Final report on the project of Bioversity International

Food security and better livelihoods
for rural dryland communities

SUMMARY

12-month's report for CRP 1.1 (2015)

Cluster: System productivity improvement

Sub-Cluster: Establish a seed system platform compatible with existing agro-ecological environments to supply farmers with high quality seed and planting materials so as to improve livelihoods, food security and incomes of smallholders

2.4 Production of quality planting material of local fruit tree varieties by the farmers

Activity: Support to farmers' production of quality planting material in Central Asia

Outcome: Female and male farmers/stakeholders (inc.youth) awareness, skills and knowledge increased

Output 1: 20 Farmers (10 women and 10 men) selected for production of quality planting material of local fruit trees varieties (report).

Output 2: Production of quality planting material of local fruit trees varieties

Findings of survey mission on assessment of existing fruit trees planting material production system and identification linkages planting material suppliers and fruits producers in Fergana Province in Uzbekistan conducted by Uzbek Research Institute of Horticulture, Viticulture and Wine-making on 28 August -13 September 2014 demonstrated the following constrains in the system:

- Farmers' lack of knowledge on planting material demand in horticulture sector of Uzbekistan.
- Farmers' lack of awareness of new fruit trees varieties, developed by formal breeding system.
- Lack of certified planting material ensuring quality planting material.

To fill in these gaps in seed system of fruit trees and supplying small holder famers with quality planting material it was agreed with national partners to strengthen the existing seed system through trainings of farmers on technologies of fruit trees multiplication, linking farmers – nursery keepers with mother plantations of research institutes and matrix orchards of farmers for improving their access to grafting material of fruit trees diversity, linking planting material suppliers with production farmers.

In order to support farmers in production of high quality planting material of fruit trees adapted to water-scarce conditions of farming in Ferghana province, Khorezm province and Karakalpakstan the following activities were implemented in the period of 15 August -10 December 2015:

1. Surveys led by scientists of Uzbek Research Institute of Plant Industry and Uzbek Research Institute of Horticulture, Viticulture and Wine-making were conducted to:

- a) Evaluate on farm fruit trees diversity adapted to drought, salinity and other environment stresses (as severe frosts in spring 2015) to be enhanced and multiplied.
 - b) Assess existing fruit trees planting material production system and support access of farmers to well adapted genetic material of fruit trees.
 - c) Identify existing linkages among planting material suppliers and fruits producers and specific gaps to be addressed by the project.
 - d) Select farmers for production of high quality planting material of local fruit trees varieties and link them with smallholder farmers - fruits producers.
2. Trainings and round table discussions were organized to increase knowledge and skills of farmers in production of quality planting material of fruit trees varieties adapted to environmental stresses of their production systems.
 3. Leaflets and web-site stories were produced and disseminated to facilitate linkages between researchers, suppliers of quality planting material and fruits producing farmers and enhance information sharing among them.

63 fruit tree planting material suppliers were surveyed in Ferghana (32 suppliers) and Aral Sea (31 suppliers) Action Sites to assess diversity of fruit trees multiplied there. Survey results demonstrated availability of diverse portfolio of fruit trees with farmers which included 49 varieties of apricot, 29 varieties of apple, nine varieties of grape, six variety of pomegranate and seven variety of pear. More diversity of fruit trees was observed in Aral Sea Action Site which is conditioned with severe soil and climate conditions there. 66 varieties of apple, apricot, grape, pear and pomegranate are grown by farmers in Khorezm and Karakalpakstan (Aral Sea Action Site) of which 91% is represented by local varieties of these crops. In Fergana Action Site 43 varieties of apple, apricot, pomegranate, pear and grape are multiplied and only 67% of them are of local origin. This data proves the concept that farmers need more diversity to cope with harsh stress factors of environment as soil salinity, spring frosts and water scarcity which are main characteristics of Aral Sea Action Site. Observations also demonstrated strong resistance of local fruit tree varieties to soil salinity (22 varieties), spring frosts (31 varieties) and drought (22 varieties). Despite of high diversity of fruit trees cultivated in farmers' orchards and multiplied in their tree nurseries not all surveyed farmers produced planting material of good quality and that put under the risk sustainable production of fruits producing farmers. In order to ensure production and easier access of smallholder farmers to quality planting material 23 key farmers – suppliers of quality planting material of fruit trees were selected in two action sites. These farmers' role is to provide trainings and share knowledge and experience with other farmers on selection of fruit tree varieties adapted to harsh soil and climate conditions in two action sites, production of quality sapling of fruit trees. The main criteria applied in the selection of key farmers were: 1) willingness of farmers to use their nurseries as demonstration sites for trainings in production of planting material; 2) knowledge and skills of farmers in multiplication of fruit trees; 3) readiness to broaden portfolio of fruit trees varieties and crops multiplied in their nurseries; 4) willingness of farmers to learn and apply technologies and skills ensuring quality

planting material. Due to the budget cut the selected number of farmers for production of planting material of local varieties of fruit trees was reduced from 30 farmers to 10 in each action site. So, 13 farmers – nursery keepers, including 4 female farmers were selected in Fergana Province of Uzbekistan to produce planting material of local varieties of apple, apricot, pomegranate and grape and 10 – in Aral Sea Action Site including 6 female farmers. Two leaflets with list of names, contact details of 23 key farmers- producers of quality planting material of the above fruit crops in two action sites were published to easier access of farmers-fruits producers to quality planting material. The list also contains name of fruit tree varieties multiplied by key nursery keepers. Leaflets on traditional knowledge of eight farmers-champions in production quality planting material were produced to disseminate their experience on coping with main stress factors of local environment in Fergana and Aral Sea Action Sites as soil salinity, drought and spring frosts. Blog stories to publicize the project results among the broad audience including national researchers, farmers and policy makers were published in Russian and English: <http://cacilm.org/articles/detail/591> and <http://www.cacilm.org/en/articles/detail/592> In order to strengthen the linkages between suppliers of planting material and fruits growing farmers, to establish collaboration among all groups of stakeholders dealing with fruit tree diversity management, increase knowledge of farmers on quality planting material production technologies **training workshops and round table discussions** with participation of researchers, including crop breeders, and famers both nursery keepers and fruits growers were organized on 5 September, 10, 15 and 17 November 2015 where **45 male and 26 (37%) female farmers participated**. These round tables helped farmers and researchers to exchange their knowledge and experience on production of quality planting material of fruit trees, agree specific functional traits which new fruit tree crops and varieties should possess to withstand future environment constrains. Farmers were also trained on technologies of multiplication and cultivation of fruit trees in salinity affected soils and water scarce environment of the action sites. Reseachers from from department of fruit and berry crops and grape of Uzbek Research Institute of Plant Industry and Uzbek Research Institute of Horticulture, Viti-culture and Wine-making, noted that soil salinity, snowless winters and low temperatures in winter strongly influence the propagation technology of fruit trees in Karakalpakstan, Khorezm and Fergana Provinces. Under these stress climate and soil conditions, selection of proper rootstocks, time of trees planting, soil preparation techniques for establishment of fruit tree nursery, etc. are very important. Special attention was paid to specific aspects of fruit tree and grape propagation in the conditions of soil salinity and drought (Aral Sea Action Site) and water scarcity (Fergana Action Site). Farmers learnt which criteria should be applied for selection of fruit tree and grape varieties for multiplication in nurseries. Farmers also gained knowledge on fruit tree nursery management technologies, including establishment of mother orchards of seedling rootstocks, of clonal rootstocks, grafts, nursery of seedlings, I-st and II-nd fields of the nursery. Farmers expressed interest in technology of seeds harvesting and stratification for growing seedling rootstocks. It was emphasized that location of site where the seeds of fruit trees for rootstocks and date of their harvesting is very important to produce quality rootstocks. Farmers also learnt on the procedure of planting material cerification in Uzbekistan: how to obtainin certificate of quality; what is

quality standards, ISO international standards, national standards (GOST, OST), identification, name of standards used in fruit tree planting material production; procedure on certification of planting material, obtaining certificate in a state-approved format, protecting the interests of the holder of the quality certificate; national agencies authorized to determine quality, issue of quality certificates, protecting rights of farmers in the production of quality products.

As a result of all these efforts in 2015 partner farmers in **Karakalpakstan and Khorezm (Aral Sea Action Site), suppliers of quality planting material of fruit trees, produced and distributed 311,000 saplings of target fruit crops** including 144,000 saplings of apple, 92,000 – of apricot, 50,000 – of grape, 12,000 - of pear and 2,000 – of pomegranate and 11,000 – of other crops. **In Fergana Action Site in 2015 418,000 saplings of fruit trees and grape were produced**, including 91,000 saplings of apple, 118,000 – of apricot, 143,000 – of grapevine, 43,000 – of pear, 7,500 – of pomegranate and 15,500 – of other fruit trees.

The produced planting material was distributed among farmers in neighbour villages, districts, provinces and even outside the country – to Kazakhstan, Russia, Kyrgyzstan and Tajikistan.

Three databases are established based on the gathered data (datasets are available upon request):

1. Database on suppliers of quality fruit tree planting material suppliers (23 farmers).
2. Database on suppliers of fruit tree planting material suppliers (63 farmers)
3. Database on assessment of resistance of fruit tree diversity (75 varieties) to stress factors of environment as soil salinity, drought and spring frosts.

Maps on geographic distribution of planting material produced by 23 quality saplings suppliers and location of fruit tree nurseries surveyed in both action sites were also developed (Maps are attached to the report). Scientific paper will be produced next year on system of fruit tree planting material production and supply in Uzbekistan based on the gathered data.

Report with detailed information on the above results produced within the project are provided below according to the work plan and terms of reference for Letter of Agreement (LOA) #15HQ120 signed between Uzbek Research Institute of Plant Industry and Bioersivity International on "Establishment of a seed system platform to supply farmers with high quality planting material of temperate fruit trees within CGIAR Research Programme on Dryland Systems in Central Asia".

REPORT

Characterization of natural climatic conditions in the project sites

Climatic conditions have a strong effect on plants development, including fruit trees. Project sites are located in Aral Sea Action Site - Sarapayan village of Khanka District and Yukori Bog village of Urgench district in Khorezm province, and in Shurahon village of Turtkul district in Karakalpakstan, Uzbekistan. In Fergana Action site the project site is located in Mustakillik village of Kuva district, Ferghana province, Uzbekistan.

Ferghana province (Fergana Action Site). The climate in Ferghana province is continental. Since the province is protected with the mountain ranges from the cold air intrusion, the weather is highly stable in winter. For this reason, the winters are mild, but the summers are hot. The average air temperature in January is -3.2°C, and +28°C in July. The minimum air temperature in January is -23°C and maximum temperature is +46°C.

Climate aridness is determined by low rainfall, which ranges from 100 mm to 270 mm per year. Horticulture and viticulture in Ferghana province are possible only under irrigation.

Return frosts, though rare in the Ferghana Valley as compared to other regions of Uzbekistan, often have devastating affect on trees resulting in their irregular fruiting.

A certain part of the cultivated land is affected with soil salinity to varying degrees. Compared to other regions of the country, conditions in Ferghana province are more favorable for the development of horticulture and viticulture. But the resistance of agricultural crops, including fruit trees, to environmental stress factors such as drought, soil salinity, late spring frosts is very important.

Karakalpakstan and Khorezm province (Aral Sea Action Site). The climatic conditions of the Karakalpakstan and Khorezm province dramatically differ from those of Ferghana province. The growing and frost-free periods are shorter here by 10-19 days and is 194-208 days. The average air temperature in January is -4.9 - 5.0°C and +28.9°C in July. The maximum temperature reaches +44°C, while the minimum falls in winter to -32°C. Precipitation is low - from 80 to 110 mm per year. Summers are hot and dry, and winters are cold without snow. The probability of return frosts in spring is higher than in Ferghana Valley.

Conditions of the Republic of Karakalpakstan and Khorezm province are characterized with very sharp continentality and aridness. Almost all cultivated land is affected with salinity to varying degrees, as well as the water for crops irrigation. All these factors strongly affect the development of horticulture and viticulture in the region.

A specific local portfolio of fruit trees and grapevine has formed in this severe climate and soil conditions. Drought, salt and spring frosts resistance are the most important biological traits of fruit tree varieties grown in the region.

Activity 1. Support farmers in production of high quality planting material of fruit trees adapted to water-scarce conditions of farming in Ferghana province, Khorezm province and Karakalpakstan.

Sub-activity 1.1. Evaluate on farm fruit trees diversity adapted to drought, salinity and other environment stresses (as severe frosts in spring 2015).

Karakalpakstan and Khorezm province. In Karakalpakstan and Khorezm province farmers propagate 66 varieties of fruit trees, including 18 varieties of apple, 8 – of pear, 36 – of apricot and 4 – of grapevine (Annex 1). Most intra-specific diversity is represented within apricot (36 varieties) and apple (18 varieties). People selection paid great attention to these fruit trees due to their high economic value in livelihood of local people and great plasticity and adaptation capacity to the stresses of local environment. Only 7.5% and 1.5% of multiplied apple, pear, apricot and grapevine varieties are represented by introduced and modern breeding ones respectively while local varieties of these fruit crops consist 91%. Grape is also wide spread crop and at least one two plants of grapevine could be found in every household.

This great diversity of fruit crops differs in terms of maturation time of their fruits and use.

Uzbekistan has a unique diversity of local fruit trees and grapevine. Most fruit trees and grape varieties propagated by farmers are traditional local varieties developed and selected by generations of farmers for centuries. These varieties are well adapted to local conditions, characterized by high quality of their fruits and high productivity, allowing them to successfully compete with improved and introduced varieties of fruit trees and grapevine.

Observations conducted with participation of farmers during surveys of farmers' orchards and vineyards in the villages of Shurakhan in Turtkul district, U. Jumaniyazov in Beruni district, Navoi in Ellikkala district of Karakalpakstan and villages of Sarapayan in Khanka district, Ak Altyn and Yukori Bog in Urgench district, Karvak and Tamadurvadik in Khazarasp district in Khorezm province allowed to identify varieties of fruit trees and grapevine resistant to adverse environmental stresses. So, local apple varieties as Maysky, Shur olma, Shoyi olma, Muz olma, Khazaraspsky letniy and Khazaraspsky zimniy; apricot varieties as Kand uruk, Kizil Kandak, Sarik Kandak, Kizil uruk, Iris, Kuzgi, Nukul, Djavzaki, Jambil; pear varieties as Nashvati, Khon Nashvati, Khon nok, and Yurt nok are distinguished for their resistance to soil salinity and drought. All varieties of grapevine propagated by farmers in their nurseries were found to be moderately drought resistant. Resistance of fruit crops to spring frosts is an important economic trait. Local varieties of apple as Yozgi, Kishki, Kizil olma, Kand olma, Khazaraspsky letniy, Khazaraspsky zimniy, Shur olma, Kutir olma and, introduced apple varieties as Golden Delicious, Renet Simirenko demonstrated their resistance to spring frosts. More than half of the 36 of apricot varieties or 61% multiplied by farmers in nurseries in Khorezm province and Karakalpakstan, are resistant to spring frosts. Resistance to spring frosts of local varieties of pear and grapevines is moderate. Resistance of fruits tree and grapevine varieties, produced in tree nurseries by farmers in Karakalpakstan and Khorezm province to the main stress factors of local environment such as soil salinity, drought and spring frosts is provided in Annex 2 to this report.

Diversity of fruit trees in Aral Sea action site mainly consists of local varieties well adapted to local environment conditions. They are resistant to soil salinity, drought, late spring frosts and regularly produce high yield of fruits.

Ferghana province. In the Ferghana province tree nurseries and orchards in Kuva district were surveyed, where farmers propagate and cultivate 43 varieties of

fruit trees and grapevine, including 14 varieties of apple, 6 – of pear, 10 – of apricot, 7 – of grapevine, and 6 – of pomegranate. The list of identified varieties is provided in Annex 3. Number of multiplied fruit trees diversity in Ferghana Province is 35% less than in Aral Sea Action Site. Local varieties represents only 67% of multiplied diversity while varieties of modern breeding and introduced ones are 6.9% and 20.9% respectively. We can see that in Ferghana Action Site portion of introduced and modern breeding diversity is 2.6-2.7 times more than in Aral Sea Action Site. By total number of multiplied apple and pear varieties there is almost no difference among two action sites but in terms of their origin considerable difference is observed. In Ferghana Action site 50% of apple and pear varieties are of modern breeding or introduced and included in the State Register of Released Varieties. The multiplied diversity of fruit trees is mainly aimed on meeting internal and outside market demands which requires fruits for transportation on long distances. There are many popular among customers apple varieties as Golden Delicious, Reinette Simirenko, Borovinka Tashkentsakaya, Zolotoye Graima, Star crimson; pear varieties as Willimas, Lesnaya krasatitsa, Dilafruz, apricot varieties as Subhani, Isfarak, Kandak, Yubilynoye Novoiy. These varieties are not adapted to soil and climate of Aral sea action site. These varieties except apple varieties Golden Delicious, Reinette Simirenko and pear variety – Lesnaya krasavitsa suffer from soil salinity, a common challenge in Aral Sea area.

In terms of drought resistance the following varieties of apple are distinguished in Ferghana Valley: Kizil olma, Namangan olma, Namangan kirmizi and Kizil taram olma. Kizil olma, Renet Simirenko, Kizil taram olma apple varieties were found to be moderately resistant to soil salinity. Apple varieties as Kizil olma, Renet Simirenko and Namangan olma are the most resistant to spring frosts. In Ferghana province, climate conditions are more favourable for the cultivation of subtropical fruit trees as pomegranate and fig. Farmers grow only local varieties of pomegranate there because they are moderately tolerant to soil salinity with average resistance to spring frosts. Stress resistance of assessed fruits trees and grapevine cultivated in Ferghana province is provided in Annex 4.

Sub-activity 1.2. Assess existing fruit trees planting material production system

Production of fruit trees planting material in Uzbekistan is one of the elements of national system of crop breeding, varieties testing, multiplication and introduction into agriculture production system. Success of production of fruit trees planting material depends on the joint work of all these elements described below.

Government agencies which are engaged in development of new crops submit the improved plant varieties to the State Commission for Crops Variety Testing (SCCVT) where varieties are tested at variety test plot located in different regions of Uzbekistan with different soil and climate conditions.

In case if the improved crop variety passes test successfully it is included in the State Register of Released Agricultural Crop Varieties recommended for planting in the territory of Uzbekistan. Registration in the State Register provides formal permission to propagate new crop variety.

Formal system of development and multiplication of new plants includes the following phases:



Therefore, all public institutions of Uzbekistan propagate varieties of agricultural crops, including fruit and grapes, registered in the State Register of Released Agricultural Crop Varieties recommended for cultivation and propagation on the territory of the Republic of Uzbekistan. This system does not cover commercial farms and individual farmers who propagate crop varieties of their choice.

In Karakalpakstan and Khorezm province planting material of fruit trees and grapevine are grown by branches and research stations of national scientific institutions, which run breeding programs on these crops, by tree nurseries of forestry enterprises, commercial farms and by individual farmers in their home orchards.

In Uzbekistan, public institutions, which have nurseries for production of fruit trees and grapevine planting material, include:

- Karakalpak branch of Research Institute of Horticulture, Viticulture and Wine-Making after M. Mirzaev (RIHVW after M. M. Mirzaev);
- Khorezm Research Experimental Station of Research Institute of Horticulture, Viticulture and Wine-Making after M. Mirzaev;
- Ferghana Research Experimental Station of Research Institute of Horticulture, Viticulture and Wine-Making after M. Mirzaev (RIHVW after M. M. Mirzaev);
- Botanical Garden after A. Timur of Institute of Flora and Fauna Genefund (Gene Pool) of the Academy of Sciences of the Republic of Uzbekistan;
- Karakalpak Research Station of the Republican Center of Ornamental Gardening and Forestry (RSPCOGF);
- Karakum Research Station of the Republican Center of Ornamental Gardening and Forestry (RSPCOGF);
- Kokand Research Station of the Republican Center of Ornamental Gardening and Forestry (RSPCOGF);
- Forestry enterprises of the Main Department of Forestry under the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan:
 - Nukus forestry enterprise;
 - Chimbay forestry enterprise;

- Khorezm forestry enterprise;
- Turtkul forestry enterprise;
- Beruniy forestry enterprise;
- Ellikkala forestry enterprise;
- Ferghana forestry enterprise;
- Kokand forestry enterprise;
- Andijan forestry enterprise;
- Namangan forestry enterprise.

All public institutions of Uzbekistan propagate varieties of agricultural crops, including fruit trees and grapevine, included in the State Register of agricultural crops allowed for cultivation and propagation on the territory of Uzbekistan. It should be noted that forestry enterprises of the Main Department of Forestry produce saplings of fruit crops in a very limited amount.

Karakalpakstan and Khorezm province. Annually, more than 380,000 saplings are produced in Karakalpakstan and Khorezm province, including 148,000 saplings of apple, 110,000 – of apricot, more than 100,000 – of grapevine and 20,000 of other fruit trees. There are 16 commercial nurseries and 15 individual farmers, main producers of fruit trees and grapevine planting material were identified in Karakalpakstan and Khorezm province (Annex 5).

Analysis of the current situation of production of fruit trees and grapevine planting material in Karakalpakstan and Khorezm province showed that of 66 varieties of apple, pear, apricot and grapes, propagated in project sites nurseries, only 6 varieties of these crops, or 9.1% are included in the State Register. The remaining 45% or 88 varieties, including 15 apple varieties, 7 - pear, 21 - apricot and 2 grapevine varieties are local (farmer) varieties and are not included in the State Register.

Private sector, both commercial nurseries and individual farmers, mainly propagate local varieties of fruit trees and grape, as they are in very high demand by farmers- fruit growers. This high demand for local fruit tree and grape varieties is due to their better adaptive capacity to severe and diverse environment conditions in Uzbekistan. List of fruit trees and grape varieties, propagated by commercial nurseries and individual farmers in the project sites in Karakalpakstan and Khorezm province is provided in Annex 5.

In 2015 partner farmers in Karakalpakstan and Khorezm, producers of quality planting material of fruit trees, produced and distributed 311,000 saplings of target fruit crops including 144,000 saplings of apple, 92,000 – of apricot, 50,000 – of grape, 12,000 - of pear and 2,000 – of pomegranate and 11,000 – of other crops.

Ferghana province. In Ferghana province 8 commercial nurseries and 22 individual farmers, propagating planting material of fruit trees and grape were identified (Annex 6).

In Ferghana province commercial nurseries and individual farmers also prefer to propagate local varieties of fruit trees and grape, as demand for them is very high again due to their good adaptation to local soil and climate conditions.

In Ferghana province 520,000 saplings of fruit trees and grape, including 160,000 saplings of apple, 130,000 – of apricot and about 200,000 saplings of grape

and other fruit crops are produced annually. In 2015 partner nursery keepers in Fergana Action Site produced 418,000 saplings of fruit trees and grape, including 91,000 saplings of apple, 118,000 – of apricot, 143,000 – of grapevine, 43,000 – of pear, 7,500 – of pomegranate and 15,500 – of other fruit trees.

The produced planting material was distributed among farmers from neighbour village, provinces and even outside the country – to Kazakhstan. Geographic coverage of distributed fruit trees planting material is showed at Map 2.

Sub-activity 1.3. Identify existing linkages among planting material suppliers and fruits producers and specific gaps to be addressed by the project.

According to survey results, farmers growing saplings of fruit trees and grapes, in most cases, work independently. There is no district or province level organization networking nursery keepers. Each supplier of planting material works independently. When deciding on crop varieties and amount of saplings to be produced, the nursery keepers are guided by demand for planting material of the previous year. Therefore, lack or overproduction of planting material is common in tree nursery management. There is almost no connection between fruit tree breeders in scientific institutions and nursery keepers. This leads to the lack of awareness of nursery keepers and fruit growing farmers about new varieties of fruit trees developed by breeding programmes of national research institutions.

Exchange of information on fruit tree varieties, new technologies of growing saplings among nursery keepers, fruit growers and scientific institutions is very weak.

In general, purchase or exchange of fruit trees and grape planting material is made between familiar farmers. Therefore, fruit growers are often self-supplying planting material of fruit trees, or purchase saplings in nurseries of co-villagers and in neighbour villages. Sometimes, farmers buy saplings in local market, where quality and varietal identity of saplings is not guaranteed.

In order to strengthen the linkages between suppliers of planting material and fruits growing farmers, to establish collaboration among all groups of stakeholders dealing with fruit tree diversity management round table discussions with participation of researchers, including crop breeders, and famers both nursery keepers and fruits growers were organized on 10, 15 and 17 November 2015 where 71 farmers including 26 female farmers participated. These round tables also helped farmers and researchers to agree specific functional traits which new fruit tree crops and varieties should possess to withstand future environment constrains.

Sub-activity 1.4. Select farmers for production of high quality planting material of local fruit trees varieties.

As a result of the comparative assessment, we selected 23 nurserymen, including two farmers in Karakalpakstan, 8 in Khorezm province and 13 in Fergana province, who have the relevant skills and knowledge, and grow high-quality planting material of fruit trees and grape. Of these, 9 or 45% are female farmers (Annex 7). These farmers are crucial in exchange of knowledge and skills, demonstration of technologies, ensuring production of quality planting material of fruit trees and grape.

The following criteria were used for selection of these champion farmers:

- Broad knowledge and good skills of the farmer on production of quality saplings of fruit trees and grape;
- Willingness of farmers to use their nurseries as demonstration sites for trainings in production of planting material;
- Readiness to broaden portfolio of fruit trees varieties and crops multiplied in their nurseries
- Links with other nursery keepers and planting material suppliers as well as with farmers – fruits producers;
- Good reputation as a supplier of quality saplings of fruit trees and grape among fruit growers and other nursery keepers;
- Active participation and exchange of experience at workshops, trainings and round table discussions.
- Willingness of farmers to learn and apply technologies and skills ensuring quality planting material.

Some farmers have extensive knowledge of traditional methods of propagation of fruit crops. These methods have been developed by the local population with account of local conditions and ensure highly positive result. The dissemination of these methods will increase the quantity and improve the quality of seedlings.

Of the selected farmers, Satlikov Bayramdurdy from the Republic of Karakalpakstan, Bakhodir Yusupov, Kazakova Bekpashsha, Abdullaeva Sapargul, Karimova Malika, Sobirova Gulzoda from the Khorezm province annually grow from 20,000 to 35,000 seedlings of fruit crops and grapes, which meet the requirements of quality.

They actively participated in all activities of the project and share their experiences on propagation of fruit trees: selection of mother plants for grafting, technology of rootstock growing, marketing and other issues important for profitable fruit trees saplings production.

Farmers participated in training workshops and round table discussions visited their nurseries and improved knowledge on propagation of fruit trees.

Two leaflets with list of names, contact details of 23 key farmers- producers of quality planting material of the above fruit crops in two action sites were published to easier access of farmers-fruits producers to quality planting material. The list also contains name of fruit tree varieties multiplied by key nursery keepers.

Sub-activity 1.5 Increase knowledge and skills of farmers in production of quality planting material of fruit trees varieties adapted to environmental stresses of their production systems (organize trainings and round table discussions)

In order to improve the knowledge and skills of farmers on the cultivation of high-quality planting material of fruit trees and grape training workshop for farmers on "Cultivation of fruit trees and production of their planting material in stressful environment conditions of Karakalpakstan" was conducted on September 5, 2015 in Shurahon village in Turtkul district in Karakalpakstan. 14 planting material suppliers, including 4 (29%) female suppliers from Karauzyak, Beruni, Ellikkalla and Turtkul districts of Karakalpakstan participated in the workshop (Annex 8).

Farmers were trained on technologies of multiplication and cultivation of fruit trees in salinity affected soils in Karakalpakstan. Dr. K.I. Baimetov and P.T. Nazarov, researcher from department of fruit and berry crops and grape of Uzbek Research Institute of Plant Industry, noted that soil salinity, snowless winters and low temperatures in winter strongly influence the propagation technology of fruit trees in Karakalpakstan. Under these stress climate and soil conditions, selection of proper rootstocks, time of trees planting, soil preparation techniques for establishment of fruit tree nursery, etc. are very important. Special attention was paid to specific aspects of fruit tree and grape propagation in the conditions of Karakalpakstan. Farmers learnt which criteria should be applied for selection of fruit tree and grape varieties for multiplication in nurseries. Farmers also gained knowledge on fruit tree nursery management technologies, including establishment of mother orchards of seedling rootstocks, of clonal rootstocks, grafts, nursery of seedlings, I-st and II-nd fields of the nursery.

Farmers expressed interest in technology of seeds harvesting and stratification for growing seedling rootstocks. It was emphasized that location of site where the seeds of fruit trees for rootstocks and date of their harvesting is very important to produce quality rootstocks. Farmers expressed during discussion their concern on access to quality seeds.

Farmer Mr. Shuhrat Arabov, head of the farm "Turtkulli Arabovlar" shared his experience on propagation and cultivation of grape in saline soils. He provided detailed information on time of harvesting and storage of grape cuttings before planting in the nursery, demonstrated techniques for preparing and planting grape cuttings, management of rooted cuttings in the nursery. He also noted that it is important to have a mother vineyard of grape varieties to obtain healthy cuttings for their further planting in the nursery. The farmers expressed interest in space arrangement of grape cuttings in nursery - single row, double row, row spacing, and other important issues in grape multiplication technology.

Farmer Mr. Kurbanboy Satlykov, head of the farm "Azizhon Shoyimardon", shared his knowledge on growing saplings of fruit trees and paid specific attention to technology of fruit trees multiplication in saline soils of Karakalpakstan.

Trainers brought to farmers' attention what type of land plots, fruit tree and grape varieties should be selected for establishment of orchards in salinity affected soils and specific practices on fruit trees management in Karakalpakstan. Training participants actively exchanged their views on these issues.

Farmers from the Karauzak district - Mambetniyazov K., Uzakbaev K. and Jumaniyazov R. also shared with the training participants challenges they are facing in growing fruit trees in their land and noted the need to maintain constant contact with experienced farmers participated in the workshop.

Training was organized in tree nursery of farmer Mr. Bayramdurdi Satlikov and fruit tree orchard of farmer Mr. Kurbanboy Satlikov, where participants got familiar with technology of production of fruit tree and grape planting material and orchard management in saline soils in Karakalpakstan. Program of the training workshop is provided in Annex 9.

On November 15, 2015 in the village of Sarapayan, Khanka district of Khorezm province a round table discussion was held on: "Peculiarities of growing high-quality planting material of fruit trees in saline soils of the northern regions of Uzbekistan." It was attended by 24 farmers, including 6 women from various districts of Khorezm province.

The speakers of the round table - Baimetov K.I., Nazarov P.T., Yusupov S. elaborated on the characteristics of soil and climatic conditions of Khorezm province. It is important to consider these factors of environment for selection of rootstocks. According to farmers Karimova M., Kazakova B. the best rootstock for apple, pear and apricot are the local forms of these crops. They are resistant to soil salinity and well withstand to snowless winters which are often in this area.

List of participants and program of round table is attached in Annex 10 and 11.

On November 17, 2015 in A. Durdiev village, Turtkul district, Karakalpakstan, a round table discussion was organized with farmers on "Peculiarities of growing high-quality planting material of fruit crops in saline soils of the northern regions of Uzbekistan." It was attended by 21 farmers from Turtkul, Beruni, Ellikkalla districts. Soil and climatic conditions of Karakalpakstan require a specific approach to propagation of fruit trees. Salinity level of soil and irrigation water, snowless winters strongly affect seed germination, plant growth and development there.

Participants of round table discussion expressed the opinion that all the activities carried out in the nursery should be aimed at neutralization of these negative factors effect on fruit tree saplings development. Farmers in Karakalpakstan also payed particular attention to selection of rootstocks. They believe that local varieties of fruit trees are most suitable for use as rootstocks in these conditions. Participants paid particular attention to the preservation of seeds in the first field of the nursery and grafted buds in the second field of the nursery from winter frosts. Farmers also exchanged their experience on space arrangement and intercropping in the first field of the nursery. List of participants and program of round table discussion is attached as Annex 12 and 13.

On November 10, 2015 in Mustakillik village, Kuva district of Ferghana province a round table discussion was held on "Growing of high-quality planting material of fruit crops adapted to the stress factors of Ferghana Valley." It was attended by 30 farmers – nursery keepers, including 11 female farmers. Farmers from Kuva, Ferghana, Alty-arik districts of Ferghana province attended this event. Topical issues on breeding fruit tree and grape varieties adapted to local conditions were discussed. Team leader Sh. Akhmedov briefed the participants on the goals and objectives of the project and described the soil and climatic conditions of Ferghana province and stressed the importance of selection of rootstocks, fruit tree varieties that are adapted to local conditions.

Scientist Zh. Kadirov in his statement briefed on the status of production of planting material in Fergana province. He mentioned that in most cases, farmers are not aware of the new varieties resistant to biotic and abiotic factors of the environment, and he elaborated on his experience of growing grapes seedlings. Farmers N. Mirzaakhmedova, F. Kholov N. Zhabborov spoke about the role of rootstocks for seed and stone fruit trees. Farmers shared their experience on use stone rootstocks for most varieties of apple, and use of dwarf rootstock M-9 as an intermediate part in the rootstock. In this case, dwarf trees with deep root system will be healthy and strong. Farmers M. Zokirov, U. Akhmadaliev and others exchanged their knowledge on criteria of selection quality fruit tree grafting material. Local official A. Teshabaev informed farmers on regional centers of seed standardization, metrology and certification in Ferghana province. Farmers B.

Kurbanov and F. Mirzaakhmedov expressed their willingness to sell certified planting material of fruit trees because they export it outside Uzbekistan. List of participants and program of round table is attached in Annex 14 and 15.

Sub-activity 1.6. Facilitate linkages between researchers, suppliers of quality planting material and fruits producing farmers through establishment an information sharing platform (leaflets, web-sites, sms messages, television and radio stories).

Information on farmers-champions in production of quality planting material of fruit trees and grape was collected during the survey missions in both action sites. Their knowledge, skills and experience in multiplication of fruit trees and grape planting material was documented. Based on these information leaflets on 8 farmers, including four female farmers were produced and disseminated among farmers – nursery keepers and fruit growers, fruit tree breeders and researchers to establish effective collaboration among them. For example, farmer Mr. Khuydaybergan Khodjiboev from U. Junamiyazov village, Beruniy District in Karakalpakstan has tree nursery of 0.25 ha where he multiplies local varieties of pear – Khon Nashvati and pomegranate – Yupka puchok. The latter is very well adapted to saline soil of Karakalpakstan and produces high yields of nutrient pomegranate fruits. Khuydaybergan grows sapling of fruit trees in wide beds – no less that 90 cm in width to prevent soil salinization. To protect his saplings from frosts he covers them only with reeds. He also grows saplings of local variety of apricot – Mayskiy transportabelniy which has high transportability capacity. Annually he produces 5,000 quality saplings of apple, apricot, pear, grapevine, pomegranate, fig and other crops. Young farmer Mr. Bairamdurdi Satlikov from A. Durdiev village in Turtkul District in Karakalpakstan uses mulch to protect the planted seeds of fruit trees from winter frosts and conserve soil moisture. He also like farmer Khuydaybergan Khodjiboev plants seeds in wide beds (90 cm). He uses apricot as a rootstock for peach saplings because of high drought resistance of apricot. Every year Bairamdurdi grows 25,000-27,000 quality saplings of fruit trees which find the demand even in neighbour Kazakhstan.

Data was also collected for development of Registry of local varieties of fruit trees and grape, adapted for soil and climate conditions of two action sites.

Activity 2. Ensure appropriate management and analysis of gathered data and reporting on research findings

Project team is continuously analysing the gather information and data. Two databases on: 1) database on evaluation data and images of assessed fruit trees varieties (75 varieties); and 2) database on farmers- quality planting material producers were established within the project in Excel format (23 farmers). Based on the gathered data three maps: 1) on fruit trees distribution is the project sites; 2) suppliers of planting material; and 3) geographical distribution of saplings produced by them have been developed (Annex 16 and 17) .

Fruit trees and grapevine varieties, multiplied in Karakalpakstan and Khorezm Province of Uzbekistan.

##	Crop	Variety name	Origin
Apple			
1		Avgustovskiy	Local
2		Besh Yulduz	Local
3		Besh Barmok	Local
4		Golden Delicious	Introduced
5		Yozgi	Local
6		Jeleznyak	Introduced
7		Kishki	Local
8		Kand olma	Local
9		Kizil olma	Local
10		Mayskiy	Local
11		Zolotoye Graima	Introduced
12		Renet Simirenko	Introduced
13		Khazaraspskiy letniy	Local
14		Khazaraspskiy zimniy	Local
15		Shur olma	Local
16		Shoyi olma	Local
17		Muz olma	Local
18		Kutir olma	Local
Pear			
1		Dilafruz	Modern breeding
2		Yozgi	Local
3		Kuzgi	Local
4		Lesnaya krasavitsa	Introduced
5		Nashvati	Local
6		Khon Nashvati	Local
7		Khon nok	Local
8		Yurt nok	Local
Apricot			
1		Ok uruk	Local
2		Iris	Local
3		Kuzgi	Local
4		Kand uruk	Local
5		Mayskiy	
6		Mayskiy beliy	Local
7		Mayskiy jeltiy	Local
8		Moyli uruk	Local
9		Subhani	Local
10		Nukul	Local
11		Shaftolisimon	Local
12		Khorazm Nukuli	Local
13		Erta pishar	Local

14		Mayskiy transportabelniy	Local
15		Djavzaki	Local
16		Djavzaki pozdny	Local
17		Ok payvandi	Local
18		Ok Kandak	Local
19		Sarik Kandak	Local
20		Kizil Kandak	Local
21		Kandak luchak	Local
22		Kizil uruk pozdny	Local
23		Jambil	Local
24		Mayskiy	
25		Yoltirok	Local
26		Mayskiy krupny	Local
27		Kizil uruk	Local
28		Djavzaki #1	Local
29		Kandak melkoplodny	Local
30		Nukul pozdny	Local
31		Ok pishar	Local
32		Nukul krupny	Local
33		Nukul moyli	Local
34		Kishki uruk	Local
35		Payvandi	Local
36		Nukul mayda	Local
Grape			
1		Kara Khusayne	Local
2		Mercedes	Local
3		Toyfi rozoviy	Local
4		Ok Khusayne	Local

Tolerance of fruit tree varieties, multiplied in Karakalpakstan and Khorezm Province to main stress factors of environment.

##	Crop and variety name	Soil salinity resistance			Drought resistance			Spring frosts resistance		
		Strong	Average	Low	Strong	Average	Low	Strong	Average	Low
Apple										
1	Avgustovskiy			+		+			+	
2	Besh Yulduz			+			+		+	
3	Besh Barmak			+			+		+	
4	Golden Delicious			+			+	+		
5	Yozgi		+			+		+		
6	Jeleznyak			+			+		+	
7	Kishki		+			+		+		
8	Kand olma		+			+		+		
9	Kizil olma			+		+		+		
10	Mayskiy	+			+			+		
11	Zolotoye Graima			+			+			+
12	Renet Simirenko		+				+	+		
13	Khazaraspskiy letniy	+			+			+		
14	Khazaraspskiy zimniy	+			+			+		
15	Shur olma	+			+			+		
16	Shoyi olma	+			+				+	
17	Muz olma	+			+			+		
18	Kutir olma	+		+			+			
Apricot										
1	Ok uruk		+			+		+		
2	Iris	+				+		+		
3	Kuzgi		+		+				+	
4	Kand uruk	+			+			+		

##	Crop and variety name	Soil salinity resistance			Drought resistance			Spring frosts resistance		
		Strong	Average	Low	Strong	Average	Low	Strong	Average	Low
5	Mayskiy beliy		+			+			+	
6	Mayskiy jeltiy		+			+		+		
7	Moyli uruk		+			+			+	
8	Subhani		+			+			+	
9	Nukul	+			+			+		
10	Shaftolisimon		+			+		+		
11	Khorazm Nukuli	+			+			+		
12	Erta pishar	+				+			+	
13	Mayskiy transportabelniy		+			+		+		
14	Djavzak	+			+			+		
15	Djavzak pozdny	+			+			+		
16	Ok payvandi		+			+			+	
17	Ok Kandak		+		+				+	
18	Sarik Kandak		+		+			+		
19	Kizil Kandak	+			+			+		
20	Kandak luchak	+			+				+	
21	Kizil uruk pozdny	+				+			+	
22	Jambil	+			+			+		
23	Mayskiy		+			+		+		
24	Yoltirok		+			+			+	
25	Mayskiy krupniy		+			+		+	+	
26	Kizil uruk	+			+					
27	Djavzaki #1		+			+			+	
28	Kandak melkoplodniy		+			+		+	+	
29	Nukul pozdny	+			+					
30	Ok pishar		+			+				
31	Nukul krupniy	+			+			+		

##	Crop and variety name	Soil salinity resistance			Drought resistance			Spring frosts resistance		
		Strong	Average	Low	Strong	Average	Low	Strong	Average	Low
32	Nukul ranniy	+			+			+		
33	Nukul moyli	+			+			+		
34	Kishki uruk		+		+			+		
35	Payvandi		+			+			+	
36	Nukul mayda	+			+			+		
Pear										
1	Dilafruz			+			+		+	
2	Yozgi		+			+		+		
3	Kuzgi		+			+		+		
4	Lesnaya krasavitsa			+			+		+	
5	Nashvati	+				+			+	
6	Khon Nashvati	+				+			+	
7	Khon nok	+				+			+	
8	Yurt nok	+				+			+	
Grape										
1	Kara Khusayne		+			+		+		
2	Mersedes		+			+		+		
3	Toyfi rozoviy		+			+		+		
4	Ok Khusayne		+			+		+		

Fruit trees and grapevine varieties, multiplied in Fergana Province of Uzbekistan.

##	Crop	Variety name	Origin
Apple			
1		Besh yulduz	Local
2		Golden Delicious	Introduced
3		Jeleznyak	Introduced
4		Kizil olma	Local
5		Zolotoye Graima	Introduced
6		Renet Simirenko	Introduced
7		Namangan olma	Local
8		Namangan kirmizi	Local
9		Kizil taram olma	Local
10		Star Crimson	Introduced
11		King David	Introduced
12		Borovinka Tashkentskaya	Modern breeding
13		Boyken	Introduced
14		Soh Guzali	Local
Pear			
1		Dilafruz	Modern breeding
2		Lesnaya krasavitsa	Introduced from Kazakhstan
3		Nashvati	Local
4		Kukon nok	Local
5		Tosh nok	Local
6		Williams	Introduced
Apricot			
1		Ok uruk	Local
2		Subhoni	Local
3		Ok Kandak	Local
4		Sarik Kandak	Local
5		Kizil Kandak	Local
6		Yubileyniy Novoi	Modern breeding
7		Shalah	Introduced
8		Ruhi Juvanon	Local
9		Isfarak	Local
10		Kandak	Local
Grape			
1		Kara Khusayne	Local
2		Mersedes	Local
3		Toyfi rozoviy	Local
4		Ok Khusayne	Local
5		Andijanskiy cherniy	Local
6		Kelin Barmok	Local
7		Rizamat	Modern breeding
8		Kattakurgan	Local
Pomegranate			

##	Crop	Variety name	Origin
1		Kizil anor	Local
2		Tuya tish	Local
3		Kazake anor	Local
4		Achik dona	Local
5		Kayum anor	Local
6		Kizil puchok	Local

Tolerance of fruit tree varieties, multiplied in Fergana Province to main stress factors of environment.

##	Crop and variety name	Soil salinity resistance			Drought resistance			Spring frosts resistance		
		Strong	Average	Low	Strong	Average	Low	Strong	Average	Low
Apple										
1.	Besh Yulduz			+		+			+	
2.	Golden Delicious			+			+		+	
3.	Jeleznyak			+			+		+	
4.	Kizil olma		+		+			+		
5.	Zolotoye Graima			+		+			+	
6.	Renet Simirenko		+			+		+		
7.	Namangan olma			+	+			+		
8.	Namangan kirmizi			+	+				+	
9.	Kizil taram olma		+		+				+	
10.	Star Crimson			+		+			+	
11.	King David			+			+		+	
12.	Borovinka Tashkentskaya			+			+		+	
13.	Boyken			+			+		+	
14.	Soh Guzali			+			+		+	
Pear										
1.	Dilafruz			+			+		+	
2.	Lesnaya krasavitsa			+			+		+	
3.	Nashvati		+			+			+	
4.	Kukon nok		+			+			+	
5.	Tosh nok		+			+			+	
6.	Williams			+			+		+	
Apricot										
1.	Ok uruk		+		+				+	
2.	Subhani		+		+			+		
3.	Ok Kandak			+	+				+	

##	Crop and variety name	Soil salinity resistance			Drought resistance			Spring frosts resistance		
		Strong	Average	Low	Strong	Average	Low	Strong	Average	Low
4.	Sarik Kandak			+	+				+	
5.	Kizil Kandak			+	+				+	
6.	Yubileyniy Novoi			+		+			+	
7.	Shalah			+			+		+	
8.	Ruhi Juvanon		+			+			+	
9.	Isfarak	+				+			+	
10.	Kandak		+			+			+	
Grape										
1.	Kara Khusayne		+			+			+	
2.	Mersedes		+			+			+	
3.	Toyfi rozoviy		+		+				+	
4.	Ok Khusayne		+		+				+	
5.	Andijanskiy cherniy			+		+			+	
6.	Kelin Barmak		+			+			+	
7.	Rizamat		+		+				+	
8.	Kattakurgan		+			+			+	
Pomegranate										
1.	Kizil anor		+			+			+	
2.	Tuya tish		+		+				+	
3.	Kazake anor		+				+		+	
4.	Achik dona		+				+		+	
5.	Kayum anor		+				+		+	
6.	Kizil puchok		+			+			+	

List of main suppliers of fruit tree planting material in Karakalpakstan and Khorezm Province

##	Name of farmer	Mail address	GPS coordinates	Crop	Variety name	Phone
1	Mr. Bayramdurdi Satlikov	Karakalpakstan, Turtkul District, A. Durdiev village, Farm "Azizhon Shoyimardon"	N 41 ⁰ 16 215 E 61 ⁰ 01 116	Apple	Mayskiy, Renet Simirenko, Kand olma, Golden Delicious, Yozgi Khazarasp, Besh yulduz	+ 99890-6506451
				Apricot	Mayskiy, Nukul, Iris, Kuzgi, Ok uruk, Shoftolisimon	
				Pear	Khon Nashvati, Lesnaya krasavitsa	
2	Mr. Rustam Khodjiboyev	Karakalpakstan, Beruniy District, U. Jumaniyozov village, Farm "Jumaniyozov – 67"	N 41 ⁰ 39 093 E 60 ⁰ 48 951	Apple	Yozgi Khazarasp, Kishki Khazarasp, Renet Simirenko	+ 99894-1413562
				Apricot	Mayskiy, Nukul, Mayskiy transportabelniy	
3	Mr. Shuhrat Arabov	Karakalpakstan, Turtkul District, Shurahon village, Farm "Tutkulli Arabovlar"	N 41 ⁰ 10 305 E 61 ⁰ 16 416	Apple	Renet Simirenko, Shur olma, Kishki olma, Avgustovskiy	+ 99891-3921507
				Apricot	Mayskiy, Nukul, Kand uruk, Yoltirok	
				Grape	Toyfi rozoviy, Ok Khusayne, Mercedes, Kara Khusayne	
4	Mr. Maksud Pirimbetov	Karakalpakstan, Beruniy District, U. Jumaniyozov village, Farm "Maksut	N 41 ⁰ 40 779 E 60 ⁰ 48 786	Apricot	Djavzak pozdny, Mayskiy Djavzak №1, Nukul, Ok payvandi	+ 99861-220 82 94

##	Name of farmer	Mail address	GPS coordinates	Crop	Variety name	Phone
		Tuka”		Apple	Yozgi olma, Kand olma, Kizil olma, Kishki olma, , Yozgi Khazarasp, Kishki Khazarasp	
5	Mr. Sahiy Urazimbay	Karakalpakstan, Beruniy District, U. Jumaniyozov village, Farm “Urazboy Jumaniyozov”	N 41 ⁰ 40 723 E 60 ⁰ 48 437	Apricot	Mayskiy, Ok uruk, Kizil uruk	+ 99861-352 96 93
				Apple	Shoyi olma, Yozgi olma	
6	Mr. Allohon Ayimbetov	Karakalpakstan, Turtkul District, Shurahon village, Farm “Ayimbetov Allahon”	N 41 ⁰ 29 515 E 61 ⁰ 01 693	Apricot	Kizil Kandak, Kandak luchak, Kandak melkoplodniy, Kizil uruk pozdniy	+ 99861-357 57 24
7	Mr. Allashukur Nazarov	Karakalpakstan, Turtkul District, Shurahon village, Farm “Nazarov Allashukur”	N 41 ⁰ 29 510 E 61 ⁰ 01 683	Apricot	Saruk Kandak, Kandak luchak, Kizil Kandak, Nukul pozdniy	+ 99861-797 74 07
8	Mr. Allohon Nurnazarov	Karakalpakstan, Turtkul District, Shurahon village, Farm “Nurnazarov Allohon”	N 41 ⁰ 29 986 E 61 ⁰ 01 596	Apricot	Mayskiy, Nukul, Ok pishar, Nukul jeltiy	+ 99861-357 57 24
9	Mr. Kupol Allabergenov	Karakalpakstan, Ellikkala District,	N 41 ⁰ 42 812 E 60 ⁰ 33 513	Apricot	Kizil uruk, Nukul, Mayskiy, Ok uruk	+ 99891-302 40 50

##	Name of farmer	Mail address	GPS coordinates	Crop	Variety name	Phone
		Navoi village, Farm "Hamro Allaberganov"		Apple	Kishki olma, Kishki Khazarasp, Renet Simirenko	
10	Mr. Bokhodir Ismoilov	Karakalpakstan, Ellikkala District, Navoi village, Farm "Ismoil Bobo"	N 41 ⁰ 46 978 E 60 ⁰ 55 520	Apricot	Nukul, Ok uruk, Yoltirok, Kizil uruk	+ 99861-371 58 96
				Apple	Golden Delicious, Shoyi olma	
11	Mr. Shuhrat Jumashev	Karakalpakstan, Ellikkala District, Navoi village, Dustlik, Farm "Khudaybergan Jumashev"	N 41 ⁰ 46 258 E 60 ⁰ 55 077	Apricot	Jambil, Ok uruk, Djavzaki, Djavzaki pozdny	+ 99861-352 87 79
				Apple	Renet Simirenko, Besh yulduz	
12	Mr. Rustam Matnazarov	Karakalpakstan, Ellikkala District, Navoi village, Mustakillik, Farm "Saidjon Shohruh"	N 41 ⁰ 43 298 E 60 ⁰ 57 293	Apricot	Mayskiy krupniy, Moyli uruk, Nukul, Ok uruk, Yoltirok	+ 99861-502 84 75
				Apple	Renet Simirenko, Besh yulduz, Kishki olma	
13	Mrs. Safargul Allaboeva	Karakalpakstan, Turtkul District, Shurahon village, Farm A. Durdiev	N 41 ⁰ 36 898 E 61 ⁰ 04 441	Apricot	Mayskiy, Yoltirok, Nukul krupniy, Sarik Kandak	
				Peach	Yoltirok, Lola	

##	Name of farmer	Mail address	GPS coordinates	Crop	Variety name	Phone
14	Mrs. Oltinoy Hakimbaeva	Karakalpakstan, Turtkul District, Shurahon village	N 41 ⁰ 28 019 E 61 ⁰ 03 048	Apricot	Subhoni, Ok uruk, Ok Kandak, Nukul	+99894-116 67 94
				Apple	Golden Delicious	
15	Mrs. Bekposhsha Rahmonova	Karakalpakstan, Turtkul District, Shurahon village	N 41 ⁰ 28 556 E 61 ⁰ 02 890	Apricot	Hasaki posdny, Nukul ranniy, Mayskiy, Ok pishar	+99890-734 28 88
16	Mrs. China Abdullaeva	Karakalpakstan, Turtkul District, Shurahon village	N 41 ⁰ 27 794 E 61 ⁰ 03 023	Apricot	Mayskiy beliy, Mayskiy jeltiy, Nukul, Sarik Kandak, Kech pishar	+99891-379 29 56
17	Mr. Bokhodir Yusupov	Khorezm Province, Khanka District, Sarypayan village, Farm "Sobirjon Yusupov"	N 41 ⁰ 16 318 E 60 ⁰ 54 513	Apple	Renet Simirenko, Zolotoye Graima, Yozgi Khazarasp, Kishki Khazarasp, Kutir olma	+ 99891-433 59 32
				Apricot	Erta pishar, Nukul, Mayskiy	
				Pomegranate	Mestniy Khorezmskiy	
18	Mr. Maksud Yusupov	Khorezm Province, Khanka District, Sarypayan village	N 41 ⁰ 29 992 E 60 ⁰ 43 426	Apple	Renet Simirenko, Golden Delicious, Besh barmok	+99891-999 84 07
				Apricot	Mayskiy, Nukul moyli	
19	Mrs. Rano Bekmetova	Khorezm Province, Khanka District, Sarypayan village, Farm "Bekmetov	N 41 ⁰ 16 318 E 60 ⁰ 54 513	Apple	Yozgi Khazarasp, Kishki Khazarasp, Renet Simirenko, Golden Delicious, Besh barmok	+99891-433 59 76

##	Name of farmer	Mail address	GPS coordinates	Crop	Variety name	Phone
		Kadamboy"				
20	Mrs. Gulzoda Sobirova	Khorezm Province, Urgench District, Ok oltin village	N 41 ⁰ 33 509 E 60 ⁰ 43 401	Apple	Besh barmok , Renet Simirenko, Golden Delicious, Kishki Khazarasp	+99891-426 46 74
				Apricot	Mayskiy, Nukul, Khorazm Nukuli	
21	Mrs. Bekposhsha Kozakova	Khorezm Province, Urgench District, Yukori bog village	N 41 ⁰ 34 340 E 60 ⁰ 43 076	Apple	Yozgi Khazarasp, Kishki Khazarasp, Renet Simirenko, Golden Delicious	+99890-578 39 60
				Apricot	Yogli uruk, Khorazm Nukuli	
22	Mr. Ikrom Sobirov	Khorezm Province, Urgench District, Yukori bog village	N 41 ⁰ 34 335 E 60 ⁰ 43 078	Apple	Renet Simirenko, Yozgi Khazarasp, Besh barmok	+99893-282 51 01
				Apricot	Khorazm Nukuli, Mayskiy moyli uruk	
23	Mrs. Sanamjon Karimova	Khorezm Province, Urgench District, Yukori bog village	N 41 ⁰ 34 311 E 60 ⁰ 43 080	Apple	Yozgi Khazarasp, Kishki Khazarasp, Renet Simirenko, Besh barmok	+99893-468 05 94
				Apricot	Mayskiy, Nukul, Kishki uruk	

##	Name of farmer	Mail address	GPS coordinates	Crop	Variety name	Phone
24	Mrs. Malika Karimova	Khorezm Province, Urgench District, Yukori bog village	N 41 ⁰ 34 322 E 60 ⁰ 43 086	Apple	Renet Simirenko, Yozgi Khazarasp, Kishki Khazarasp, Jeleznyak, Kand olma	+ 99894-116 67 94
				Apricot	Nukul, Moyli uruk, Kishki uruk	
25	Mrs. Sapargul Abdullaeva	Khorezm Province, Urgench District, Yukori bog village	N 41 ⁰ 34 309 E 60 ⁰ 43 084	Apple	Renet Simirenko, Golden Delicious, Besh barmok, Yozgi Khazarasp	+99894-116 67 94
26	Mr. Kalandar Matchonov	Khorezm Province, Khazarasp District, Karvak village, Farm "Bog"	N 41 ⁰ 16 925 E 61 ⁰ 09 415	Apricot	Kandak, Nukul, Payvandi, Yoltirok	+99862-513 15 80
27	Mr. Yusupboy Madamonov	Khorezm Province, Khanka District, Sarypayan village, Guliston, Farm "Akbar Yusupov"	N 41 ⁰ 29 416 E 60 ⁰ 41 328	Apricot	Nukul, Payvandi, Mayskiy, Erta pishar	+99862-399 66 27
28	Mr. Yuldosh Shokirov	Khorezm Province, Khazarasp District, Karvak village, Farm "Chochil Bobur"	N 41 ⁰ 15 979 E 61 ⁰ 09 795	Apricot	Ok uruk, Nukul jeltiy, Nukul mayda, Payvandi	+99862-513 15 80
				Apple	Karvak, Khazaraspskiy	
29	Mr. Sobir Bobojonov	Khorezm Province, Khazarasp District, Tamadurvadik village, Farm "Maryam	N 41 ⁰ 25 932 E 60 ⁰ 49 094	Apricot	Kuzda pishar, Nukul, Payvandi, Erta pishar, Yoltirok	+99862-518 31 56

##	Name of farmer	Mail address	GPS coordinates	Crop	Variety name	Phone
		Bahtiyor”				
30	Mr. Sobir Raimberdiev	Khorezm Province, Khazarasp District, Tamadurvadik village, Farm “Michuring Bogdorchiligi”	N 41 ⁰ 25 554 E 60 ⁰ 49 048	Apricot	Nukul, Nukul pozdniy, Yoltirok, Mayskiy, Kandak	+99862-518 31 56
31	Mr. Sadulla Otajanov	Khorezm Province, Khazarasp District, Karvak village, Farm “Otajanov Sadulla”	N 41 ⁰ 17 023 E 61 ⁰ 09 472	Apricot	Nukul, Payvandi, Mayskiy, Erta pishar	+99862-513 15 80

List of main suppliers of fruit tree planting material in Fergana Province

##	Name of farmer	Gender	Mail address	GPS coordinates	Crop	Variety name	Phone
1.	Mrs. Nilufar Abdurahimova	Female	Fergana Province, Kuva District, 186, Yangichek village	N 40° 30 348 E 71° 58 336	Apple	Renet Simirenko, Namangan olma, Kizil taram olma	+99890-5804653
					Pear	Nashvati, Lesnaya krasavitsa	
2.	Mrs. Omina Kirgizova	Female	Fergana Province, Kuva District, Namuna village	N 40° 29 871 E 71° 58 039	Apricot	Subhoni, Kandak, Yubileyniy Novoi	+99890-5804653
3.	Mr. Mahkamboy Zakirov	Male	Fergana Province, Kuva District, Mustakillik village	N 40° 30 501 E 72° 09 773	Apple	Kizil olma, Star Crimson, Besh yulduz, Renet Simirenko, Boyken	+ 99890-405 72 22
					Pear	Dilafruz, Kukon nok, Tosh nok	
					Apricot	Shalah, Kandak, Yubileyniy Novoi, Isfarak	
					Grape	Toyfi rozoviy, Rizamat, Ok Khusayne	
					Pomegrate	Kayum anor, Kizil puchok, Tuya tish, Achik dona, Kizil anor	
4.	Mr. Abdukahhor Siddikov	Male	Fergana Province, Fergana District,	N 40° 18 499 E 71° 40 499	Grape	Kelin Barmok, Rizamat, Ok	+ 99893-983 67 14

##	Name of farmer	Gender	Mail address	GPS coordinates	Crop	Variety name	Phone
			Okbilol village			Khusayne , Toyfi rozoviy, Mercedes, Andijanskiy cherniy	
5.	Mrs. Mavluda Ruzmatova	Female	Fergana Province, Kuva District, Gulistan village	N 40° 27 448 E 71° 55 286	Apple	Namangan kirmizi, Renet Simirenko, Golden Delicious, Boyken	+998 91-110 22 92
					Apricot	Isfarak, Subhoni, Ok uruk, Kandak	
6.	Mr. Abduvohid Bobohonov	Male	Fergana Province, Kuva District, Buzahor village	N 40° 29 283 E 71° 57 731	Apple	Zolotoye Graima, Golden Delicious	+ 99890-630 46 73
					Apricot	Isfarak, Kandak	
					Grape	Ok Khusayne	
7.	Mr. Yuldoshali Fozilov	Male	Fergana Province, Oltiariq District, 19, Yoshlarobod village	N 40° 22 609 E 71° 26 366	Apple	Renet Simirenko, Golden Delicious, Star Crimson, Jeleznyak, Kizil olma	+ 99891-398 72 75
					Apricot	Kandak, Yubileyniy Novoi, Isfarak, Ruhi Juvanon	
					Grape	Kelin Barmok, Kara Khusayne, Rizamat	
					Pomegrate	Kizil anor, Tuya tish, Kayum anor, Achik dona	

##	Name of farmer	Gender	Mail address	GPS coordinates	Crop	Variety name	Phone
8.	Mr. Hasahboy Karimov	Male	Fergana Province, Kuva District, Buzahor village	N 40° 29 305 E 71° 57 219	Apple	Boyken, Borovinka Tashkentskaya, Kizil olma, Namangan olma	+ 99890-272 02 89
					Apricot	Shalah, Yubileyniy Novoi	
					Grape	Ok Khusayne , Rizamat, Andijanskiy cherniy	
9.	Mr. Farruh Holog	Male	Fergana Province, Fergana District, Kaptarhona village, 301, Kamolot Str.	N 40° 17 388 E 71° 46 254	Apple	Soh guzali, King David, Borovinka Tashkentskaya, Golden Delicious	+ 99895-404 79 77
					Apricot	Shalah, Isfarak, Kandak, Ruhi Juvanon	
					Pear	Williams, Tosh nok, Nashvati	
10.	Mr. Borotali Kurbonov	Male	Fergana Province, Kuva District, Yangichkek village	N 40° 28 482 E 71° 58 120	Apple	Borovinka Tashkentskaya, Boyken, King David, Star Crimson, Besh yulduz	+ 99891-663 25 22
					Apricot	Yubileyniy Novoi, Kandak, Isfarak, Shalah	

##	Name of farmer	Gender	Mail address	GPS coordinates	Crop	Variety name	Phone
11.	Mr. Umarjon Ahmadaliev	Male	Fergana Province, Kuva District, Mustakillik village	N 40° 30 668' E 72° 05 857'	Pomegrate	Kizil puchok, Tuya tish	+99891-6548929
12.	Mr. Hayrullo Yodgorov	Male	Fergana Province, Fergana District, Okbilol village, 8, Sohikkor Str.	N 40° 18 361' E 71° 40372'	Grape	Ok Khusayne, Rizamat, Mercedes	+99893-6423073
13.	Mr. Numonjon Jabborov	Male	Fergana Province, Kuva District, Gulistan village, 17, Tinchlik	N 40° 28 485' E 71° 58 144'	Apple	Renet Simirenko, Boyken, Golden Delicious	277 36 48
14.	Mrs. Zarifa Madumarova	Female	Fergana Province, Fergana District, Okbilol village	N 40° 18 363' E 71° 40 815'	Grape	Ризамат, Хусайне белый, Andijanskiy cherniy	+ 99893-976 27 31
15.	Mrs. Feruza Mamatova	Female	Fergana Province, Kuva District, Buzahor village	N 40° 29 837' E 71° 57 997'	Apple	Namangan kirmizi, Golden Delicious, Renet Simirenko	+ 99891-122 99 29
					Pear	Tosh nok, Kukon nok	
16.	Mrs. Nilufar Mirzaahmedova	Female	Fergana Province, Kuva District, Gulistan village	N 40° 28 386' E 71° 58 303'	Apple	Jeleznyak, Boyken, Renet Simirenko	+99891-2368396
17.	Mr. Khodjiakbar Kurbonov	Male	Fergana Province, Kuva District, 20, Mustakillik village	N 40° 30 406' E 72° 09 949'	Pomegrate	Kayum anor, Kizil puchok, Tuya tish	+998 91-327 31 34
					Apple	Namangan olma, Kizil olma	
					Pear	Dilafruz, Tosh nok	

##	Name of farmer	Gender	Mail address	GPS coordinates	Crop	Variety name	Phone
18.	Mr. Abdulvafo Abdulhalilov	Male	Fergana Province, Fergana District, Okbilol village, 58, Gorbuva Str.	N 40° 18 582' E 71° 40 662'	Grape	Rizamat, Ok Khusayne	+998 94-396 83 76 (ч/з Рахмонов Хамиджон)
19.	Mrs. Sohiba Sattorova	Female	Fergana Province, Fergana District, Okarikobod village	N 40° 20 515' E 71° 40 987'	Grape	Andijanskiy cherniy, Каттакурган, Ризамат, Хусайне белый	+998 94-396 83 76 (ч/з Рахмонов Хамиджон)
20.	Mr. Humroli Yunisov	Male	Fergana Province, Kuva District, Namuna village	N 40° 29 508' E 71° 58 933'	Apple	Kizil taram olma, Kizil olma	+998 90-301 05 20
					Pear	Tosh nok, Kukon nok	
21.	Mrs. Malika Siddikova	Female	Fergana Province, Oltiarik District, Jurak village, 47, Sertut Str.	N 40° 21 955' E 71° 27 916'	Grape	Rizamat, Ok Khusayne	+998 90-536 93 04
22.	Mr. Ikromjon Mahmudov	Male	Fergana Province, Oltiarik District, Jurak village	N 40° 21 833' E 71° 26 587'	Grape	Rizamat, Kattakurgan, Mercedes	+99891-3284929
23.	Mrs. Zarifa Sulaymonova	Female	Fergana Province, Kuva District, Yangichek village	N 40° 28 660' E 71° 58 440'	Pear	Tosh nok, Kukon nok, Dilafruz	+99890-5613295
24.	Mrs. Khurshida Teshaboeva	Female	Fergana Province, Kuva District, Buzahor village	N 40° 29 826' E 71° 58168'	Apple	Renet Simirenko, Golden Delicious, Kizil olma	+ 99891-157 25 16
					Apricot	Isfarak, Kandak, Ruhi Juvanon	

##	Name of farmer	Gender	Mail address	GPS coordinates	Crop	Variety name	Phone
25.	Mrs. Mohichehra Toshpulatova	Female	Fergana Province, Kuva District, 47, Gulistan village	N 40° 28 860' E 71° 57 447'	Apple	Golden Delicious, Kizil taram olma, Jeleznyak, Renet Simirenko, Kizil olma	+99893-6432729
					Apricot	Kandak, Yubileyniy Novoi, Isfarak, Ruhi Juvanon	
26.	Mr. Avazbek Tuhliev	Male	Fergana Province, Oltiariq District, Jurak village	N 40° 24 074' E 71° 25 081'	Grape	Rizamat, Ok Khusayne	+99891-1283533
27.	Mr. Akbarali Khodjiboev	Male	Fergana Province, Fergana District, Yoshlarobod village, A. Temur Str.	N 40° 13 578' E 71° 45 183'	Apricot	Ok uruk, Isfarak, Ruhi Juvanon	+99891-1192211
28.	Mr. Farhod Ergashev	Male	Fergana Province, Kuva District, Akbarobod village, 47, Mezon Str.	N 40° 28 880' E 71° 55 197'	Apple	Renet Simirenko, Kizil olma, Namangan olma	+998 90-217 02 95
					Pear	Dilafroz, Tosh nok, Kukon nok	
29.	Mr. Mirzohid Nazirov	Male	Fergana Province, Oltiariq District, Jurak village	N 40° 21 781' E 71° 26 012'	Grape	Andijanskiy cherniy, Rizamat, Mercedes, Ok Khusayne	+99890-5603545
30.	Mr. Tolibjon Juraev	Male	Fergana Province, Kuva District, 67, Gulistan village	N 40° 29 240' E 71° 57 778'	Apple	Kizil olma, Namangan olma, Star Crimson, Golden Delicious	+99890-5311855

##	Name of farmer	Gender	Mail address	GPS coordinates	Crop	Variety name	Phone
31.	Maruf Sirojiddinov	Male	Fergana Province, Fergana District, Mehnatobod village	N 40° 13.038' E 71° 46.367'	Apple	Renet Simirenko, Kizil olma	99890-2905526
					Apricot	Isfarak, Kandak, Yubiliyniy Nonoiy	
32.	Shohista Kurbonova	Female	Fergana Province, Kuva District, Yangichek village	N 40° 28.482 E 71° 58.120'	Apple	Borovinka tashkentskaya, King David, Besh Yulduz, Boyken Star crimson	99891-6632522
					Apricot	Isfarak, Kandak, Yubiliyniy Nonoiy, Shalah	

Farmers, supplying quality planting material of fruit trees

##	Farmer name	Gender	Mail Address	Crop	Phone
Khorezm Province					
1	Bokhodir Yusupov	Male	Khorezm Province, Khanka District, Sarypayan village, Farm "Sobirjon Yusupov"	Apple Apricot Pomegranate	+ 99891-4335932
2	Ikrom Sobirov	Female	Khorezm Province, Urgench District, Yukori bog village	Apple Apricot	+99893-2825101
3	Bekposhsha Kozakova	Female	Khorezm Province, Urgench District, Yukori bog village	Apple Apricot	+99890-5783960
4	Malika Karimova	Female	Khorezm Province, Urgench District, Yukori bog village	Apple Apricot	+ 99894-1166794
5	Sanamjon Karimova	Female	Khorezm Province, Urgench District, Yukori bog village	Apple Apricot	+99893-4680594
6	Sapargul Abdullaeva	Female	Khorezm Province, Urgench District, Yukori bog village	Apple	+99894-1166794
7	Gulzoda Sobirova	Female	Khorezm Province, Urgench District, Ok oltin village	Apple Apricot	+99891-4264674
8	Rano Bekmetova	Female	Khorezm Province, Khanka District, Sarypayan village, Farm "Bekmetov Kadamboy"	Apple	+99891-4335976
Karakalpakstan					
1	Rustam Khodjiboyev	Male	Karakalpakstan, Beruniy District, U. Jumaniyozov village, Farm "Jumaniyozov – 67"	Apple Apricot	+ 99894-1413562
2	Bayramdurdi Satlikov	Male	Karakalpakstan, Turtkul District, A. Durdiev village, Farm "Azizhon Shoyimardon"	Apple Apricot Pear	+ 99890-6506451
Fergana Province					
1	Nilufar Abdurahimova	Female	Fergana Province, Kuva District, 186, Yangichek village	Apple Pear	

##	Farmer name	Gender	Mail Address	Crop	Phone
2	Omina Kirgizova	Female	Fergana Province, Kuva District, Namuna village	Apricot	
3	Mahkamboy Zakirov	Male	Fergana Province, Kuva District, Mustakillik village	Apple Pear Apricot Grape Pomegranate	+ 99890-4057222
4	Abdukahhor Siddikov	Male	Fergana Province, Fergana District, Okbilol village	Виноград	+ 99893-9836711
5	Mavluda Ruzmatova	Female	Fergana Province, Kuva District, Gulistan village	Apple Apricot	
6	Abduvohid Bobohonov	Male	Fergana Province, Kuva District, Buzahor village	Apple Apricot Grape	+ 99890-6304673
7	Yuldoshali Fozilov	Male	Fergana Province, Oltiariq District, 19, Yoshlarobod village	Apple Apricot Grape Pomegranate	+ 99891-3987275
8	Hasahboy Karimov	Male	Fergana Province, Kuva District, Buzahor village	Apple Grape	+ 99890-2720289
9	Farruh Holov	Male	Fergana Province, Fergana District, Kaptarhona village, 301, Kamolot Str.	Apple Apricot Pear	+ 99895-4047977
10	Borotali Kurbonov	Male	Fergana Province, Kuva District, Yangichek village	Apple Apricot	+ 99891-6632522
11	Shohista Kurbonova	Female	Fergana Province, Kuva District, Yangichek village	Apple Apricot	99891-6632522
12	Maruf Sirojiddinov	Male	Fergana Province, Fergana District, Mehnatobod village	Apple Apricot	99890-2905526
13	Numon Jabborov	Male	Fergana Province, Guliston District, Yangichek village	Apple	99890-2773648

LIST OF PARTICIPANTS

**TRAINING WORKSHOP FOR FARMERS
on “Growing fruit trees and planting material of fruit trees in Karakalpakstan”**

**Shurahon village, Turtkul District, Karakalpakstan
5 September 2015**

##	Name of participant	Gender	Contact details
1	Annabika Atakova	Female	Karakalpakstan, Turtkul District, A. Durdiev village
2	Kurbaniyaz Mambertniyazov	Male	Karakalpakstan, Karauzyak District, Karakul village
3	Shavkat Arabov	Male	Karakalpakstan, Turtkul District, Shurahon village
4	Kadamboy Sobirov	Male	Karakalpakstan, Turtkul District, Shurahon village
5	Oltinoy Hakimbaeva	Female	Karakalpakstan, Turtkul District, Shurahon village
6	Safargul Allaboeva	Female	Karakalpakstan, Turtkul District, Shurahon village, A. Durdiev village
7	Kirboy Uzokboyev	Male	Karakalpakstan, Karauzyak District, Karakul village
8	Rasul Jumaniyazov	Male	Karakalpakstan, Karauzyak District, Karakul village
9	Bayramdurdi Satlikov	Male	Karakalpakstan, Turtkul District, A. Durdiev village
10	Orzigul Annageldieva	Female	Karakalpakstan, Tutkul District, A. Durdiev village
11	Maksud Pirimbetov	Male	Karakalpakstan, Beruniy District, U. Jumaniyozov village
12	Bokhodir Ismoilov	Male	Karakalpakstan, Ellikkala District,

##	Name of participant	Gender	Contact details
			Navoi village, Dustlik
13	Shuhrat Jumashev	Male	Karakalpakstan, Ellikkala District, Navoi village, Dustlik
14	Kurbanboy Satlikov	Male	Karakalpakstan, Turtkul District, A. Durdiev village

**TRAINING WORKSHOP FOR FARMERS
on “Growing fruit trees and planting material of fruit trees in Karakalpakstan”**

**Shurahon village, Turtkul District, Karakalpakstan
5 September 2015**

PROGRAM

Time	Topic
8:00 - 8:30	<p>Welcoming the participants. Introduction of participants and workshop’s program.</p> <p><i>Dr. Karim Baymetov – Head of fruit, berry crops and grapevine department, Uzbek RI of Plant Industry.</i></p>
8:30 – 9:50	<p>Technologies of cultivation and multiplication of fruit trees and grapevine.</p> <ul style="list-style-type: none"> • Specific issues of fruit tree and grapevine multiplication • Criteria of selection and assessment of promising varieties of fruit trees and grapevine for multiplication • Establishment of fruit tree nursery • Structure of fruit tree nursery: <ul style="list-style-type: none"> - Mother orchard of seed rootstocks - Mother orchard of clonal rootstocks - Mother orchard of grafting material - Nursery garden of seedlings - 1-st field of nursery - 2-nd field of nursery <p><i>Dr. Karim Baymetov – Head of fruit, berry crops and grapevine department, Uzbek RI of Plant Industry.</i></p> <p>Discussion</p>
9:50 - 10:00	Break
10:00 – 11:00	<p>Rootstocks of fruit trees adapted to soil salinity in Karakalpakstan.</p> <ul style="list-style-type: none"> • Rootstocks selection: vigorous and dwarf rootstocks • Seed harvesting for rootstocks • Storage of seeds and their preparation for planting • Seed stratification – dates and duration • Dates for seed planting in nursery • Technology of saplings growing <p><i>Dr. Parhod Nazarov – Researcher at fruit, berry crops and grapevine department, Uzbek RI of Plant Industry..</i></p> <p><i>Mr. Bayramdurdi Satlikov – farmer-fruit trees grower.</i></p> <p>Discussion.</p>

11:00 – 12:00	<p>Multiplication and cultivation of grapevine in salinity affected soils in Karakalpakstan.</p> <ul style="list-style-type: none"> • Mother orchards of grapevine for producing healthy cuttings for multiplication • Storage of cuttings • Preparation and planting of cuttings • Establishment of grapevine nursery • Maintenance of grapevine nursery • Protection from pests and diseases <p><i>Farmer Mr. Shuhrat Arabov – Experienced farmer-grapes grower, Head of farm “Turtkulli Arabovlar”</i></p> <p>Discussion.</p>
12:00 – 13:00	Lunch
13:00 – 14:00	<p>Protection of fruit tree nursery and orchard from pests and diseases.</p> <p><i>Dr. Parhod Nazarov – Researcher of fruit, berry crops and grapevine department, Uzbek RI of Plant Industry.</i></p>
14:00 – 15:00	<p>Establishment and maintenance of orchards in salinity affected soils in Karakalpakstan.</p> <ul style="list-style-type: none"> • Selection of adapted fruit crops varieties • Selection of land plot for establishment of orchard • Agronomic practices of maintenance of orchards <p><i>Farmer Mr. B. Satlikov – Experienced farmer-fruits grower</i></p> <p>Discussion</p>
15:00 – 16:30	Visit to fruit tree nursery of farmer Mr. B. Satlikov
16:30 - 17:30	Visit to orchard of farmer Mr. K. Satlikov
17:30 – 18:00	Discussion and summarizing of workshop’s results.

LIST OF PARTICIPANTS

ROUND TABLE DISCUSSION WITH FARMERS on “Specific issues on fruit trees quality planting material production in salinity affected soils in northern regions of Uzbekistan”

15 November 2015

Sarapayan village, Khanka District, Khorezm Province

##	Name of participant	Gender	Contact details
1	Malika Karimova	Female	Khorezm Province, Urgench District, Yukori bog village
2	Bekposha Kozokova	Female	Khorezm Province, Urgench District, Yukori bog village
3	Ikrom Sobirov	Male	Khorezm Province, Urgench District, Yukori bog village
4	Sanamjon Karimova	Female	Khorezm Province, Urgench District, Yukori bog village
5	Safargul Abdullaeva	Female	Khorezm Province, Urgench District, Yukori bog village
6	Abdulla Turaev	Male	Khorezm Province, Khanka District, Sarapayan village
7	Urinboy Polvonov	Male	Khorezm Province, Khanka District, Sarapayan village
8	Shodmon Bekmetov	Male	Khorezm Province, Khanka District, Sarapayan village
9	Dilshod Bekmetov	Male	Khorezm Province, Khanka District, Sarapayan village
10	Hasan Ruzmetov	Male	Khorezm Province, Khanka District, Sarapayan village
11	Gulzoda Sobirova	Female	Khorezm Province, Urgench District, Ok oltin village
12	Alihon Nurumov	Male	Khorezm Province, Khanka District, Sarapayan village
13	Bohodir Yusupov	Male	Khorezm Province,

			Khanka District, Sarapayan village
14	Sobir Yusupov	Male	Khorezm Province, Khanka District, Sarapayan village
15	Bakhiyor Yusupov	Male	Khorezm Province, Khanka District, Sarapayan village
16	Abdulla Bekmetov	Male	Khorezm Province, Khanka District, Sarapayan village
17	Shohista Madaminova	Female	Khorezm Province, Khanka District, Sarapayan village
18	K. Rajapov	Male	Khorezm Province, Khanka District, Sarapayan village
19	Dilorom Karimova	Female	Khorezm Province, Khanka District, Sarapayan village
20	Alisher Sobirov	Male	Khorezm Province, Khanka District, Sarapayan village
21	Sadulla Otojonov	Male	Khorezm Province, Khanka District, Sarapayan village

**ROUND TABLE DISCUSSION WITH FARMERS
on “Specific issues on fruit trees quality planting material production in
salinity affected soils in northern regions of Uzbekistan”**

**15 November 2015
Sarapayan village, Khanka District, Khorezm Province**

PROGRAM

8:00 - 8:30	<p>Opening the round table. Introduction with participants and presentation of the program of the round table.</p> <p><i>Dr. Karim Baymetov – Head of fruit, berry crops and grapevine department, Uzbek RI of Plant Industry.</i></p>
8:30 – 9:50	<p>Propagation of fruit trees in saline soils.</p> <ul style="list-style-type: none"> • Characteristics of soil and climatic conditions of the Khorezm province. • Criteria for the selection and evaluation of the best varieties of fruit crops adapted to local soil and climatic conditions. • Organization and structure of the fruit nursery. <p><i>Dr. Karim Baymetov – Head of fruit, berry crops and grapevine department, Uzbek RI of Plant Industry.</i></p> <p>Discussion</p>
9:50 - 10:00	Break
10:00 – 11:30	<p>Selection of fruit crops rootstocks resistant to salinity and other environmental stress factors of Khorezm province.</p> <ul style="list-style-type: none"> • Selection of rootstocks • Technology of harvesting, storage and preparation of seed for sowing • Setting the time for sowing seeds in the first field of the nursery. • Seedlings growing technology. <p><i>Dr. Parhod Nazarov – Researcher of fruit, berry crops and grapevine department, Uzbek RI of Plant Industry.</i></p> <p>Discussion</p>
11:30 – 13:00	<p>Establishment of fruit tree nursery</p> <ul style="list-style-type: none"> • Specifics of plot preparation for establishing the fruit nursery • Crop rotation used. • Best predecessors for the fruit nursery

	<i>Dr. Karim Baymetov – Head of fruit, berry crops and grapevine department, Uzbek RI of Plant Industry.</i> Discussion.
13:00 – 14:00	Lunch
14:00 – 15:00	Specifics of agrotechnical measures carried out in the first and in the second fields of the nursery <i>Farmer Mr. S. Yusupov– Experienced farmer, head of "Sobirjon Yusupov" farm</i> Discussion
15:00 – 16:00	Protection of grafted seedlings from frosts during the winter. <i>Farmer Mr. S. Yusupov– Experienced farmer, head of "Sobirjon Yusupov" farm</i> Discussion.
16:00 – 17:00	Visit to fruit tree nursery of farmer Mr. S. Yusupov
17:00 – 17:30	Discussion and wrap-up of the round table.

LIST OF PARTICIPANTS

ROUND TABLE DISCUSSION WITH FARMERS on “Specific issues on fruit trees quality planting material production in salinity affected soils in northern regions of Uzbekistan”

17 November 2015

A. Durdiev village, Turtkul District, Karakalpakstan

##	Name of participant	Gender	Contact details
1	Rustan Hojiboev	Male	Karakalpakstan, Beruniy District, U. Jumaniyozov village
2	Shavkat Arabov	Male	Karakalpakstan, Turtkul District, Shurahon village
3	Zainab Haitnoyazova	Female	Karakalpakstan, Turtkul District, Shurahon village
4	Miyassar Nuratdinova	Male	Karakalpakstan, Turtkul District, Shurahon village
5	Anvar Arabov	Male	Karakalpakstan, Turtkul District, Shurahon village
6	Bayramdurdi Satlikov	Male	Karakalpakstan, Turtkul District, A. Durdiev village
7	China Abdullaeva	Female	Karakalpakstan, Turtkul District, Shurahon village
8	Oltonoy Hakimboyeva	Female	Karakalpakstan, Turtkul District, Shurahon village
9	U. Urazimbekov	Male	Karakalpakstan, Beruniy District, U. Jumaniyozov village
10	Bahodir Abdullaev	Male	Karakalpakstan, Beruniy District, U. Jumaniyozov village
11	Allahon Nurnazarov	Male	Karakalpakstan, Turtkul District, Shurahon village
12	Kurbanboy Satlikov	Male	Karakalpakstan, Turtkul District, Shurahon village
13	Safargul Allabaeva	Female	Karakalpakstan, Turtkul District,

			'A. Durdiev village
14	Karima Saburova	Male	Karakalpakstan, Turtkul District, Shurahon village
15	Ismoil Ibadullaev	Male	Karakalpakstan, Turtkul District, Shurahon village
16	Z. Holmuradova	Female	Karakalpakstan, Turtkul District, Shurahon village
17	Erkin Yuldashev	Male	Karakalpakstan, Beruniy District, U. Jumaniyozov village
18	U. Jumabaeva	Female	Karakalpakstan, Turtkul District, Shurahon village
19	Z. Oytimbetova	Female	Karakalpakstan, Turtkul District, Shurahon village
20	Ozoda Mamutova	Female	Karakalpakstan, Turtkul District, Shurahon village

**ROUND TABLE DISCUSSION WITH FARMERS
on “Specific issues on fruit trees quality planting material production in
salinity affected soils in northern regions of Uzbekistan”**

17 November 2015

A. Durdiev village, Turtkul District, Karakalpakstan

PROGRAM

8:00 - 8:30	<p>Opening the round table. Introduction with participants and presentation of the program of the round table.</p> <p><i>Dr. Karim Baymetov – Head of fruit, berry crops and grapevine department, Uzbek RI of Plant Industry.</i></p>
8:30 – 9:50	<p>Propagation of fruit crops in saline soils.</p> <ul style="list-style-type: none"> • Characteristics of soil and climatic conditions of the Republic of Karakalpakstan. • Criteria for the selection and evaluation of the best varieties of fruit crops adapted to local soil and climatic conditions. • Organization and structure of the fruit nursery. <p><i>Dr. Karim Baymetov – Head of fruit, berry crops and grapevine department, Uzbek RI of Plant Industry.</i></p> <p>Discussion</p>
9:50 - 10:00	Break
10:00 – 11:30	<p>Selection of fruit crops rootstocks resistant to salinity and other environmental stress factors in the Republic of Karakalpakstan.</p> <ul style="list-style-type: none"> • Selection of rootstocks • Technology of harvesting, storage and preparation of seed for sowing • Setting the time for sowing seeds in the first field of the nursery. • Seedlings growing technology. <p><i>Dr. Parhod Nazarov – Researcher of fruit, berry crops and grapevine department, Uzbek RI of Plant Industry.</i></p> <p>Discussion</p>
11:30 – 13:00	<p>Establishment of fruit tree nursery</p> <ul style="list-style-type: none"> • Specifics of plot preparation for establishing the fruit nursery • Crop rotation used. • Best predecessors for the fruit nursery

	<p><i>Dr. Karim Baymetov – Head of fruit, berry crops and grapevine department, Uzbek RI of Plant Industry.</i></p> <p>Discussion</p>
13:00 – 14:00	Lunch
14:00 – 15:00	<p>Specifics of agrotechnical measures carried out in the first and in the second fields of the nursery</p> <p><i>Farmer Mr. B. Satlikov– Experienced farmer, head of "Azizkhon Shoyimardon " farm</i></p> <p>Discussion</p>
15:00 – 16:00	<p>Protection of grafted seedlings from frost during the winter.</p> <p><i>Farmer Mr. B. Satlikov– Experienced farmer, head of "Azizkhon Shoyimardon " farm</i></p> <p>Discussion</p>
16:00 – 17:00	Visit to the fruit tree nursery of farmer Mr. B. Satlikov.
17:00 – 17:30	Discussion and wrap-up of the round table.

LIST OF PARTICIPANTS

ROUND TABLE DISCUSSION WITH FARMERS on “Production of fruit trees quality planting material adapted to stress factors of Fergana valley as drought and spring frosts”

10 November 2015

Mustakillik village, Kuva District, Fergana Province

##	Name of participant	Gender	Contact details
1.	Nilufar Abdurahimova	Female	Fergana Province, Kuva District, Yangichek village
2.	Malika Babahanova	Female	Fergana Province, Kuva District, Buzahor village
3.	Mahkamboy Zakirov	Male	Fergana Province, Kuva District, Mustakillik village
4.	Hasahboy Karimov	Male	Fergana Province, Kuva District, Buzahor village
5.	Omina Kirgizova	Female	Fergana Province, Kuva District, Yangichek village
6.	Borotali Kurbonov	Male	Fergana Province, Kuva District, Yangichek village
7.	Shohista Kurbonova	Female	Fergana Province, Kuva District, Yangichek village
8.	Muhamadali Madumarov	Male	Fergana Province, Fergana District, Okbilol village
9.	Feruza Mamatova	Female	Fergana Province, Kuva District, Buzahor village
10.	Nilufar Mirzaahmedova	Female	Fergana Province, Kuva District, Gulistan village

11.	Mavluda Ruzmatova	Female	Fergana Province, Kuva District, Gulistan village
12.	Sohiba Sattorova	Female	Fergana Province, Fergana District, Okarikobod village
13.	Abdukahhor Siddikov	Male	Fergana Province, Fergana District, Okbilol village
14.	Zarifa Sulaymonova	Female	Fergana Province, Kuva District, Yangichek village
15.	Yuldoshali Fozilov	Male	Fergana Province, Oltiariq District, Jurak village
16.	Khurshida Teshaboeva	Female	Fergana Province, Kuva District, Buzahor village
17.	Mohichehra Toshpulatova	Female	Fergana Province, Kuva District, Gulistan village
18.	Avazbek Tuhliev	Male	Fergana Province, Oltiariq District, Jurak village
19.	Akbarali Khodjiboev	Male	Fergana Province, Fergana District, Yoshlarobod village
20.	Pahlovan Holmatov	Male	Fergana Province, Kuva District, Buzahor village
21.	Farruh Holor	Male	Fergana Province, Fergana District, Kaptarhona village
22.	Farhod Ergashev	Male	Fergana Province, Kuva District, Akbarobod village
23.	Humroli Yunusov	Male	Fergana Province, Kuva District, Namuna village
24.	Abdulvafo Abdulhalilov	Male	Fergana Province, Fergana District,

			Okbilol village
25.	Umarjon Ahmadaliev	Male	Fergana Province, Kuva District, Mustakillik village
26.	Hayrullo Yodgorov	Male	Fergana Province, Fergana District, Okbilol village
27.	Numonjon Jabborov	Male	Fergana Province, Kuva District, Gulistan village
28.	Tolibjon Juraev	Male	Fergana Province, Kuva District, Gulistan village
29.	Rusatm Ismoilov	Male	Fergana Province, Fergana District, Logon village
30.	Adham Kayumov	Male	Fergana Province, Fergana District, Vodil village

ROUND TABLE DISCUSSION WITH FARMERS
on “Production of fruit trees quality planting material adapted to stress factors
of Fergana valley as drought and spring frosts”

11 November 2015
Mustakillik village, Kuva District, Fergana Province

PROGRAM

9:00 – 9:30	<p>Opening and introduction with the round table participants. <i>Shuhrat Akhmedov – Researcher, Fruit Trees Department, Research Institute of Horticulture, Viticulture and Wine-Making.</i> <i>Farmer, Mr. A.Teshabaev – Experienced farmer, planting material supplier.</i></p>
9:30 – 11:30	<p>Technology of growing and propagation of fruit crops and grapes.</p> <ul style="list-style-type: none"> • Criteria for the selection and evaluation of the best varieties of fruit crops for propagation. • Promising varieties of fruit crops and grapes for propagation in the arid regions of Ferghana province • Organization of fruit nursery • Structure of fruit nursery • Selection of rootstocks for fruit crops • Harvesting of cuttings for grafting in the stool-bed • Grafting of fruit crops seedlings (pomaceous and stone fruits) • Harvesting grape cuttings for propagation • Specifics of care for grafts in the nursery • Criteria for determining the quality of seedlings • Pests and diseases management measures in the stool-bed and fruit nursery <p><i>Dr. Zh.Kodirov - Researcher, Fruit Trees Department.</i></p>
11:30– 12:30	<p>Quality of planting material of fruit crops and grapes in arid regions of Ferghana province.</p> <ul style="list-style-type: none"> • Pomaceous and stone crops seedlings quality criteria • Grape seedlings quality criteria • Testing to determine the varietal characteristics in the nursery • Standards imposed to quality seedlings of fruit crops <p><i>Dr. Zh.Kodirov - Researcher, Fruit Trees Department.</i> <i>Farmer, Mr. A.Teshabaev – Experienced farmer, planting material supplier.</i></p>
12:30– 14:00	Lunch
14:00– 16:30	<p>Certification of fruit crops planting material</p> <ul style="list-style-type: none"> • Introduction to the certification of fruit crops and grapes planting materials

	<ul style="list-style-type: none"> • Information about obtaining certificate of quality • Quality standards, ISO international standards, state and industry standards (GOST, OST), identification, name of the standards used in nursery keeping • Certification of planting material, obtaining certificate in a state-approved format, protecting the interests of the holder of the certificate of quality • Organizations determining the quality, granting certificates of quality, protecting the rights of farmers in the production of quality products <p><i>Dr. Zh.Kodirov - Researcher, Fruit Trees Department.</i></p> <p><i>Farmer, Mr. A.Teshabaev – Experienced farmer, planting material supplier.</i></p>
16:30– 17:30	<p>Wrap-up of the round table. Conclusion.</p> <p><i>Shuhrat Akhmedov – Researcher, Fruit Trees Department, Research Institute of Horticulture, Viticulture and Wine-Making.</i></p> <p><i>Farmer, Mr. A.Teshabaev – Experienced farmer, planting material supplier.</i></p>

Map 1. Location of quality fruit tree planting material suppliers in Fergana and Aral Sea Action Sites



Map 2. Geographical distribution of quality planting material of fruit trees produced in Fergana and Aral Sea Action Sites

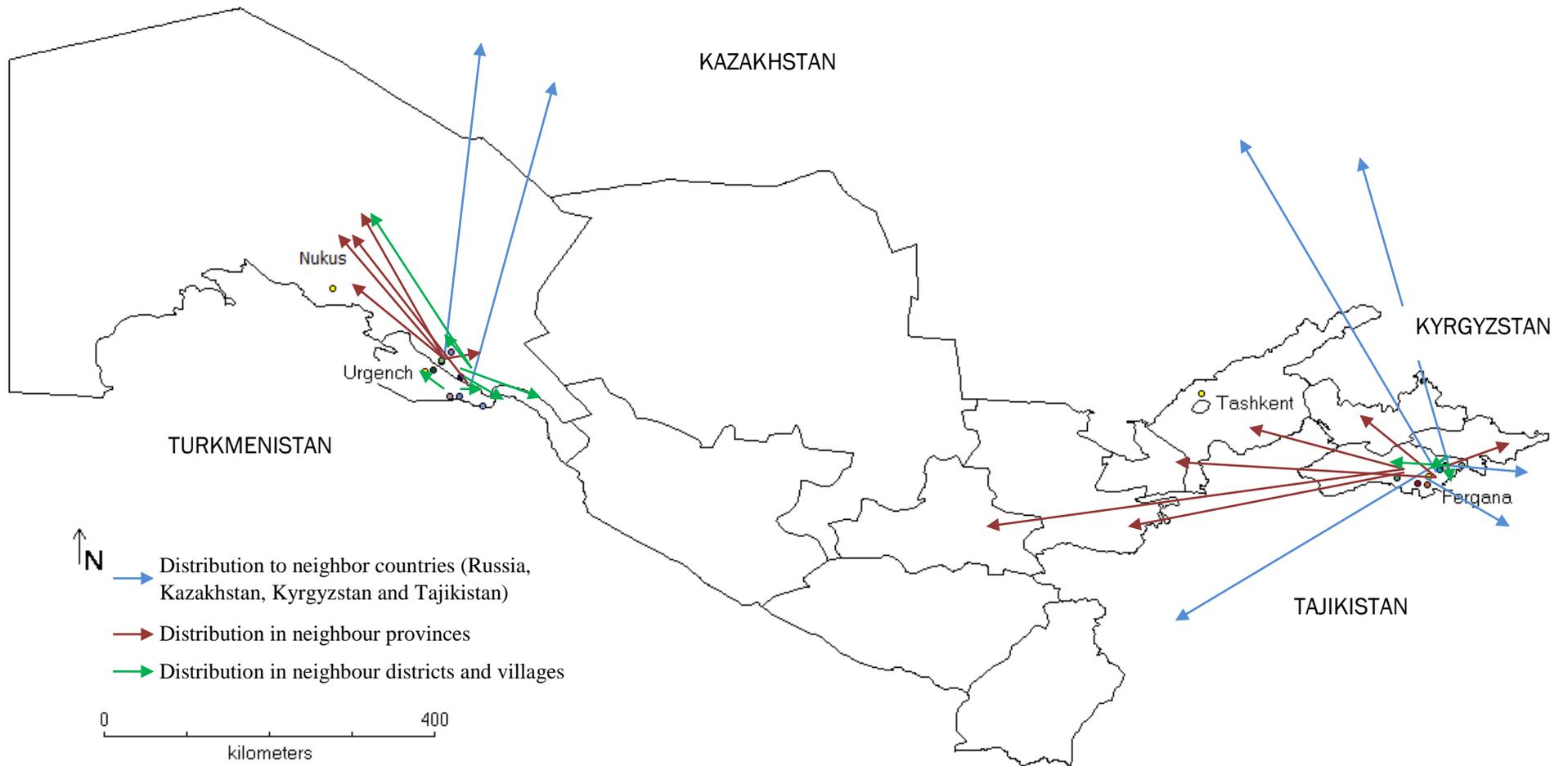




Fig.1 Local apple variety – Khazaraspskiy zimniy in the orchard of farmer Mrs. Rano Bekmetova (Sarapayan village, Khanka District, Khorezm Province)



Fig.2. Local apricot variety – Jambil in the orchard of farmer Mr. Shuhrat Jumashv (Navoiy village, Ellikkala District, Karakalpakstan)



Fig. 3. Mother vineyard of grape varieties of farmer Mr. Rustam Khojiboev (U. Jumaniyozov village, Turtkul District, Karakalpakstan)



Fig 4. Apple tree nursery of farmer Mrs. Bekposha Kozakova (Yukori bog village, Urgench District, Khorezm Province)



Pic.5 Young people are eager to learn fruit tree grafting technologies at apricot nursery of Farmer Mr. Bayramdurdi Satlikov – a farmer champion on local fruit tree diversity conservation (A. Durdiev Village, Turtkul District, Karakalpakstan).



Fig 6. Apricot saplings grafted with local variety Nukul Khorezmskiy in nursery of farmer Mrs. Malika Karimova (Yukori bog village, Urgench district, Khorezm Province)



Fig. 7 Farmer Mr. Kurbonboy Satlikov demonstrating to farmers technology on pruning of apple saplings (A. Durdiev village, Turtkul District, Karakalpakstan)



Fig. 8 Mulching of apple seeds planted in rootstock nursery of farmer Mr. Bayramdurdi Satlikov (A. Durdiev village, Turtkul District, Karakalpakstan)



Fig. 9. Tree nursery of farmer Mr. Ilhomjon Egamberdiev who grows planting material of apple varieties – Rene Simirenko, Namangan olma and Eshon olma.



Fig. 10. Tree nursery of farmer Mr. Habibullo Boydadaev who grows saplings of apple varieties – Kizil olma, Eshom olma, Namangan kirmizi, Kandil sinap and apricot varieties – Subhoni, Ruhi Juvanon, Kandak.



Fig. 11. Round table discussion with farmers in Fergana.



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