



RESEARCH
PROGRAM ON
Dryland Systems



Summary Report

Workshop on
the CGIAR Collaborative Research and Capacity Building Program
for the Development of Sustainable and Resilient Agricultural Production
in Central Asia

“Innovations for Improving Drylands in Central Asia”



Innovations for Improving Drylands in Central Asia
Collaborative Research and Capacity Development Program
December 14 - 15, 2016. Tashkent, Uzbekistan, City Palace Hotel.

14-15 December 2016
Tashkent, Uzbekistan

1. Background

Water scarcity, irrigation induced salinity, increasing land degradation and climate variability causing extreme events of heat, drought, and frost and pest epidemics pose significant threats in achieving food and nutrition security in Central Asia. Land degradation adversely affects soil fertility and crop yields. It reduces biodiversity resulting in declining crop and livestock productivity, escalates production and rehabilitation costs, reduces farm incomes, livelihoods of the people and ultimately threatens food security. Hence land degradation and climate change perspectives provide a strong case for action to address the key threat to food security in the region. Sustainable management of natural resources through enabling policy are key to address these environmental challenges. Solutions to some of the challenges could be achieved over short period whereas others might need long-term, intra-regional and inter-regional strategy and efforts.

2. General information on workshop

- A regional workshop on “Innovations for improving drylands in Central Asia” was organized on 14-15 December 2016 in Tashkent, Uzbekistan to report the recent findings from the research activities conducted by ICARDA and other CGIAR and non-CGIAR Centers and national collaborators within the framework of CGIAR Research Program on Dryland Systems (CRP-DS). The research activities conducted in Central Asia during the past four years under funding support by the Russian Federation were primary focus of the workshop.
- There were 62 participants from Uzbekistan, Tajikistan, Kazakhstan, Kyrgyzstan, Russia, and from International Agricultural Research Centers and donor organizations (List of participants in *Annex 1*).
- The workshop was conducted in five different sessions (Agenda in *Annex 2*). There were 23 scientific presentations during the workshop. The presentations are available [here](#).
- Scientific presentations were followed by group discussion where the participants made critical analyses of the innovations ready to be moved to pilot and out-scaling stages to reach wider groups of end-users. The participants of the group discussions also identified key areas for future research besides identifying potential avenues of resource mobilization.
- The donor organizations present in Tashkent outlined their current activities and funding priorities in Uzbekistan.

3. Major outputs of the workshop

The major innovations presented during the workshop are listed below:

- Stress tolerant crop varieties offer wide options for improving land and water productivity and improve food and nutritional security.
 - New winter wheat varieties tolerant to drought, heat, salinity, frost and yellow rust
 - New spring wheat varieties tolerant to heat, drought and salinity
 - Drought and heat tolerant varieties winter barley
 - Early maturing drought and heat tolerant varieties of chickpea
 - Salinity, heat and drought tolerant varieties of halophytes
 - Heat and drought tolerant varieties of vegetable
 - Salinity, frost and heat tolerant varieties of fruit trees
- Water management technologies that saves water
 - Evapotranspiration based scheduling saves 30 to 35% water compared to farmers’ traditional method of irrigation without reductions in yield of cotton and wheat. At present farmers are applying approx. two doses of irrigation more than the crop water requirement and yields are close to the potential

- Controlled drainage can save surface water use from 45 to 50%, and result in reduction of the drainage outflows near to a target value of 10 - 15%.
- Conservation agriculture practices to save resources and diversify cropping systems for higher land and water productivity and better soil health
 - Locally modified prototype of no-till drill machine
 - Innovative crop rotation with food and fodder crops
- Livestock and rangeland management
 - Ultrasound pregnancy diagnosis in goats
 - Culling of sterile goats and sheep to speed up breeding
 - Culling of unproductive female goats before winter to save on supplementary feed
 - Options to produce traditional high quality dairy products
 - Options to diversify dairy processing
 - Mapping and monitoring of grassland using time-series satellite data
 - Small Ruminant Rapid Value Chain Analysis
- ELD Initiative in Central Asia to assess ecosystem services
 - Potential options for improvement of the situation towards the sustainable use of lands and other natural resources
 - Management of different ecosystems (e.g. water basins)
- Geoinformatics
 - Geoinformatics based characterization and quantification of agro-ecosystems at farm to landscape scales
 - Multi-year knowledge-base of land use, crop types, crop productivity, water use efficiency, crop rotation, trends, pattern, magnitude, yield gaps, degradation, and hotspots
- Innovation Platform
 - Mobile application for agribusiness
- Capacity building
 - Capacity of 1565 people (men -69%; women -31%) strengthened

4. Further needs to be addressed

- Land and water management
 - Temperature effect on soil biochemistry
 - Integrated geoinformatics analysis to target SLM
 - Bio-diagnostics/indications of soil degradation
 - Effect of non-traditional crops on soil
 - Climate extreme monitoring and advisory (risk mapping for stress, droughts)
- Improved germplasm and seed systems and Crop diversification
 - High yielding varieties of cereals, legumes with tolerance to multiple biotic and abiotic stresses
 - Production of high quality seed and planting materials
 - Application and adoption of conservation. agricultural practices
 - Promote legumes (food, fodder, vegetable legumes accordingly) in wheat-cotton rotational scheme
 - Agroforestry promotion – crops and fruit/trees produced in combination
 - Study and promote Indigenous knowledge

- Crop-Livestock integration
- Livestock and rangeland improvement
 - Determination of animal breeding farms resilient to climate change
 - Impact of climate change adaptation and productivity of farm animals
 - Preservation and improvement of the gene pool of domestic farm animals
 - Development of breeding management systems at households and farm levels
 - Development of mini equipment for processing of raw materials and livestock feed
- Socio-economic and policy research
 - Climate change (socio-economic analysis)
 - Activities to ensure balanced diet for population
 - Price shocks for agricultural products
 - Urbanization and labor migration
 - Addressing land degradation

Acknowledgements

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For more information (Press release, Presentations, and other documents), please visit the CGIAR Program website: <http://cac-program.org>

Annex 1 - List of participants

#	Name	Position/Institution	Country	E-mail address
1.	Prof. Botirjon Sulaymonov	Deputy Minister of Agriculture and Water Resources Director General of Uzbek Scientific Production Center of Agriculture Rector of Tashkent State Agrarian University	Uzbekistan	iim@qsxv.uz
2.	Mr. Mirjamshid Murtalibov	Head of International Relations and Investment Uzbek Scientific Production Center of Agriculture Ministry of Agriculture and Water Resources of the Republic of Uzbekistan	Uzbekistan	mirjamshid@mail.ru
3.	Mr. Abdukholik Mukhtorov	Director Division of International Relations Research Institute of Agricultural Economics	Uzbekistan	jahongir4@mail.ru
4.	Ms. Farida Yusupova	Researcher Research Institute of Agricultural Economics Tashkent State Agrarian University Ministry of Agriculture and Water Resources of the Republic of Uzbekistan	Uzbekistan	
5.	Prof. Amir Amanov	Director Uzbek Research Institute of Plant Industry	Uzbekistan	uzripi@yandex.ru
6.	Mr. Diyor Juraev	Deputy Director of Kashkadarya Branch of the Andijan Research Institute of Cereal and Legume Crops	Uzbekistan	urugchilik@mail.ru
7.	Mr. Aybek Aminov	Deputy Minister of Agriculture and Water Resources of the Republic of Karakalpakstan	Karakalpakstan	qqr@qsxv.uz
8.	Mr. Davletbay Sultanov	Deputy Hokim of Chimbay district	Karakalpakstan	nazarov.b@umail.uz
9.	Mr. Seydulla Dosbergenov	Deputy Hokim of Karauzak district	Karakalpakstan	davletiyarov.a@umail.uz
10.	Dr. Esbosin Sadikov	Director Karakalpak scientific research institute of agriculture	Karakalpakstan	esbosin64@mail.ru
11.	Mr. Bakhitbay Aybergenov	Consultant Karakalpak Research Institute of Farming	Karakalpakstan	aybahit@rambler.ru
12.	Mr. O'rman Kho'janov	Chairman of the livestock cooperative "40 Let Karakalpakstana"	Karakalpakstan	
13.	Ms. Yulduzoy Djumaniyazova	Agronomist and Junior modeler Urgench State University/KRASS NGO	Uzbekistan	yulduz.d@gmail.com
14.	Prof. Nazar Ibragimov	Cotton Research Institute	Uzbekistan	nazar.ibragimov@mail.ru
15.	Mr. Maraimjon Mirzaliev	Hydraulic Engineer Kodyrjon Azamjon Water Users Association	Uzbekistan	
16.	Dr. Nasrullo Bobokulov	Director Uzbek Research Institute of Karakul Sheep Breeding and Desert Ecology	Uzbekistan	Uzkarakul30@mail.ru
17.	Prof. Lazizakhon Gafurova	Head of AgroEcoBioTechnology center Department of Soil Science National University of Uzbekistan named after M.Ulugbek	Uzbekistan	glazizakhon@yandex.ru
18.	Ms. Gulchekhra Khasankhanova	Head of soil-reclamation department, «UZGIP» Institute (former «Uzgipromeliiovodkhoz»)	Uzbekistan	
19.	Mr. Makhkamboy Zokirov	Farmer of Kuva district	Uzbekistan	
20.	Dr. Saidjamol Saidov	Vice President Tajik Academy of Agricultural Sciences	Tajikistan	tanzila.e@gmail.com ; taskhn@mail.ru
21.	Mr. Kamol Sultanov	Chairman, Somgar Experimental station Tajik Academy of Agricultural Sciences	Tajikistan	ravshan0372@mail.ru

22.	Mr. Rustamboy Abduljalilov	Head Agricultural Department of Babajan Gafurov district	Tajikistan	ravshan0372@mail.ru
23.	Dr. Matazlim Kosimov	Director of the Sugd branch of Tajik Livestock Research Institute	Tajikistan	Matazlim@rambler.ru
24.	Dr. Aigul Abugalieva	Head of Unit Research Institute of Farming and Crop Production	Kazakhstan	kiz_abugalieva@mail.ru
25.	Dr. Abdirakhman Ombayev	Director of Kazakh SRI on Livestock and Forage	Kazakhstan	givotnovodstvo@mail.ru
26.	Dr. Chortonbaev Tyrgoot	Vice-Rector Kyrgyz National Agrarian University	Kyrgyz Republic	kau.icc@gmail.com
27.	Prof. Asanbek Azhibekov	Head of Department Kyrgyz National Agrarian University	Kyrgyz Republic	caniks@mail.ru knau-info@mail.ru
28.	Dr. Pavel Krasilnikov	Head of Land Resources Department Eurasian Center for Food Security	Russian Federation	pavel.krasilnikov@gmail.com
29.	Dr. Ram Sharma	Head of the PFU/CGIAR Program for CAC and the Regional Coordinator/Breeder ICARDA-TASHKENT	Uzbekistan	r.c.sharma@cgiar.org
30.	Dr. Vinay Nangia	Agricultural Hydrologist, ICARDA-RABAT	Morocco	V.Nangia@cgiar.org
31.	Dr. Usman Awan Khalid	Groundwater Hydrologist, ICARDA-CAIRO	Egypt	u.k.awan@cgiar.org
32.	Dr. Chandrashekhar Biradar	Principal Scientist, Head-Geoinformatics Unit, ICARDA-AMMAN	Jordan	c.biradar@cgiar.org
33.	Ms. Marthe Wens	CRP Dryland Systems, ICARDA-AMMAN	Jordan	marthe.wens@cgmel.org
34.	Dr. Keser Mesut	Coordinator, ICARDA-ANKARA	Turkey	M.Keser@cgiar.org
35.	Mr. Rustam Ibragimov	Deputy Head of Representative Office, ICARDA-TASHKENT	Uzbekistan	r.ibragimov@cgiar.org
36.	Dr. Aziz Nurbekov	Project Regional Coordinator, ICARDA-TASHKENT	Uzbekistan	a.nurbekov@cgiar.org
37.	Dr. Akmal Akramkhanov	Project Manager - Knowledge Management in CACILM II, ICARDA-TASHKENT	Uzbekistan	a.akramkhanov@cgiar.org
38.	Mr. Makhmud Shaumarov	Research Field Coordinator, ICARDA-TASHKENT	Uzbekistan	m.shaumarov@cgiar.org
39.	Mr. Nariman Nishanov	Project Research Field Coordinator, ICARDA-TASHKENT	Uzbekistan	n.nishanov@cgiar.org
40.	Dr. Botir Dosov	Consultant, Innovation Platform Coordinator, ICARDA-TASHKENT	Uzbekistan	b.dosov@cgiar.org
41.	Dr. Ravza Mavlyanova	Regional Coordinator World Vegetable Center (WorldVeg)	Uzbekistan	ravza.mavlyanova@worldveg.org r.mavlyanova@cgiar.org
42.	Mr. Rashid Azimov	Scientific Field Coordinator Bioversity International Tashkent	Uzbekistan	r.azimov@cgiar.org
43.	Dr. Kristina Toderich	Regional Head International Center for Biosaline Agriculture (ICBA)	Uzbekistan	k.toderich@cgiar.org
44.	Dr. Hasan Boboev	Post-Doctoral Fellow International Center for Biosaline Agriculture (ICBA)	Uzbekistan	hasan83@yahoo.com
45.	Mr. Oytur Anarbekov	Senior Research Officer/ Programmatic activities coordination International Water Management Institute (IWMI)	Uzbekistan	o.anarbekov@cgiar.org
46.	Mr. Kakhramon Djumaboev	Senior Research Officer International Water Management Institute (IWMI)	Uzbekistan	k.djumaboev@cgiar.org
47.	Mr. Mansur Abduraimov	Coordinator National Water Partnership of Uzbekistan	Uzbekistan	mansurzbz@mail.ru
48.	Dr. Kamiljon Akramov	Research Fellow International Food Policy Research Institute (IFPRI)	USA	k.akramov@cgiar.org
49.	Dr. Alisher Tashmatov	Executive Secretary	Uzbekistan	a.tashmatov@cgiar.org
50.	Mr. Oydin	Program Coordinator	Uzbekistan	oydin.sattarov@giz.de

	Sattarov	GIZ Office Tashkent		
51.	Mr. Umid Nazarkulov	“Reducing Pressures on Natural Resources from Competing Land Use in Non-Irrigated Arid Mountain, Semi-Desert and Desert Landscapes of Uzbekistan” Project National Technical Coordinator UNDP in Uzbekistan	Uzbekistan	umidjan.nazarkulov@undp.org
52.	Mr. Suleyman Kiziltoprak	Head of Uzbekistan office TIKA	Uzbekistan	s.kiziltoprak@tika.gov.tr
53.	Mr. Ivan Prokopenko	Second Secretary Embassy of Russian Federation in the Republic of Uzbekistan	Uzbekistan	tashkent@mid.ru
54.	Mr. Sohib Akramov	Regional Water Sector Program Officer Embassy of Switzerland in Uzbekistan	Uzbekistan	sohib.akramov@eda.admin.ch
55.	Ms. Zhakenova Saltanat	CAREC Environmental Management program leading specialist - Kazakhstan	Kazakhstan	szhakenova@carececo.org
56.	Mr. Nurmukhammad Akmalov	Assistant Islamic Development Bank, Uzbekistan office	Uzbekistan	uzbekistan@isdb.org
57.	Mr. Sherzod Kattakhodjaev	Coordinator Green Business Platform	Uzbekistan	sherzod.kattakhodjaev@mail.ru
58.	Ms. Dilfuza Zakirova	ACTED office in Uzbekistan	Uzbekistan	dilfuza.zakirova@acted.org
59.	Dr. Lucy Petheram	ACTED Country Representative – Kyrgyzstan	Kyrgyzstan	lucy.petheram@acted.org
60.	Mr. Shavkat Rakhmatullaev	Project Management Specialist (Natural Resources, Agriculture and Environment) USAID Uzbekistan Country Office	Uzbekistan	srakhmatullaev@usaid.gov
61.	Mr. Akmal Abdurakhmanov	Director BIO AGRO INNOVATION INVEST	Uzbekistan	akmal_co@mail.ru
62.	Dr. Khilola Akhmedova	Project leader Social Research Institute under the Cabinet of Ministers of the Republic of Uzbekistan	Uzbekistan	institute@ist.uz

Annex 2 – Workshop Agenda

Wednesday, 14 December 2016

08:30 – 09:00	Registration
Session 1:	Introductory Session (Co-chairs: Prof. Botirjon Sulaymonov and Dr. Pavel Krasilnikov) Rapporteur: Nariman Nishanov
09:00 – 09:05	Welcome statement by the Host Country
09:05 – 09:10	Welcome statement by the Eurasian Center for Food Security (ECFS)
09:10 – 09:20	Welcome statement and introduction of workshop
09:20 – 09:30	Status of agricultural research in Uzbekistan – Narkul Hushmotov
09:30 – 09:45	ECFS Presentation – Pavel Krasilnikov
09:45 – 10:45	Statement from donor organizations about funding opportunities (5 min. each): (WB, EU, SDC, IDB, ADB, GIZ, USAID, UNDP, JICA, FAO, TIKA, AFD)
10:45 – 11:00	Inside Out: Research and Development Projects' Monitoring, Evaluation & Learning (MEL) – CRP-Dryland Systems - Marthe Wens
11:00 – 11:30	Group Photo and Coffee/tea break
11:30 – 11:45	Sustainable land management options for Central Asia – Akmal Akramkhanov
11:45 – 12:00	Geoinformatics in agroecosystem analysis and advisory in Central Asia – Chandrashekhar Biradar
Session 2:	Results from the field sites (5 minutes presentation/statement) (Co-chairs: Dr. Ram Sharma and Dr. Amir Amanov) Rapporteur: Aziz Nurbekov
12:00 – 13:00	Karakalpakstan, Fergana (Kuwa district), Khorezm, Khujand (Sugd district) Ministry of Agriculture and Water Resources of Karakalpakstan – Aybek Aminov Bobojon Gafurov district – Rustamboy Abdujalilov Tajik Academy of Agricultural Sciences – Saidjamol Saidov Khorezm Rural Agricultural Support Services (KRASS) – Yulduz Djumaiyazova Kuwa Water Users' Association, Fergana – Maraimjon Mirzaliev Sugd branch of Tajik Livestock Research Institute – Matazim Kosimov Uzbek Karakul Research Institute – Nasrullo Bobokulov Kuwa district – Makhkamboy Zokirov
13:00 – 14:00	Lunch break
Session 3:	Climate resilient technologies (Co-chairs: Dr. Saidjamol Saidov and Dr. Abdirakhman Ombayev) Rapporteur: Tulkun Yuldashev
14:00 – 14:15	Climate resilient crop varieties – Amir Amanov
14:15 – 14:30	Livestock and rangeland improvement – Barbara Rischkowsky/Makhmud Shaumarov
14:30 – 14:45	Customized Weather-based Irrigation Scheduling Decision Support System to Improve Water-use Efficiency in Uzbekistan – Vinay Nangia
14:45 – 15:00	Potential of conjunctive water use as a best management practice for irrigated areas of Uzbekistan – Usman Awan
15:00 – 15:15	Conservation agriculture – Aziz Nurbekov
15:15 – 15:30	Economics of Land Degradation in Central Asia: Quantifying Expected Losses Today to Prevent Resource Impairment in Future – Nariman Nishanov
15:30 – 15:45	Innovation platform – Botir Dosov
15:45 – 16:00	Coffee/tea break
16:00 – 16:15	Ensuring Better Livelihoods through Improved Year-round Vegetable Production – Ravza Mavlyanova

- 16:15 – 16:30 Implementing Integrated Multicultural Production Systems to improve Food Security in marginal environments – Kristina Toderich
- 16:30 – 16:45 Overview of IWMI-CA’s research and its application to mitigate impact of climate change in Central Asia – Oytur Anarbekov
- 16:45 – 17:00 Local fruit trees diversity for coping with climate change, land degradation, improving nutrition and livelihoods in Central Asia – Rashid Azimov
- 17:00 – 17:15 Opportunities for collaboration with IFPRI on socio-economic, policy, and nutrition related issues – Kamiljon Akramov
- 17:15 – 18:00 General discussion**
- 19:00 – Reception**

Thursday, 15 December 2016

Session 4:

Opportunities for collaborations

(Co-chairs: Dr. Tyrgoot Chortonbaev and Dr. Aigul Abugalieva)

Rapporteur: Shukhrat Amanov

- 08:30 – 08:45 Public-private partnership for technology adoption – Akmal Abdurakhmanov
- 08:45 – 09:00 Collaboration with Crop Husbandry Institute Kazakhstan – Aigul Abugalieva
- 09:00 – 09:15 Collaboration with Kyrgyz National Agrarian University – Chortonbaev Tyrgoot
- 09:15 – 09:30 Developing Winter Wheat germplasm and its impact for Central Asia – Mesut Keser
- 09:30 – 09:45 Opportunities for collaboration with CAREC within WB initiative CAMP4ASB – Saltanat Zhakenova
- 09:45 – 10:00 CACAARI cooperation with international organizations on research for development continuum – Alisher Tashmatov

10:00 – 10:30

Coffee break

10:30 – 13:00

Group discussion (Technology adoption and further needs)

Group 1: Land and water management.

Moderator: Dr. Pavel Krasilnikov Reporter: Dr. Akmal Akramkhanov

Group 2: Improved germplasm, seed systems and cropping system diversification

Moderator: Dr. Aigul Abugalieva Reporter: Mr. Shukhrat Amanov

Group 3: Livestock and rangeland improvement

Moderator: Dr. Nasrullo Bobokulov, Reporter: Mr. Makhmud Shaumarov

Group 4: Socio-economic and policy

Moderator: Dr. Kamiljon Akramov, Reporter: Mr. Nariman Nishanov

Crosscutting: gender, youth and capacity development, geoinformatics, climate change, resource mobilization

13:00 – 14:00

Lunch break

14:00 – 15:00

Presentations of group discussion

Session 5:

Conclusions and closure

(Co-chairs: Dr. Pavel Krasilnikov and Dr. Chandrashekhar Biradar)

Rapporteur: Akmal Akramkhanov

15:00 – 15:30

Review of key conclusions and recommendations

15:30 – 16:00

Closing remarks