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Newsletter #5

FAO-GEF Project: Integrated Natural Resources Management in Drought-prone and Salt-affected Agricultural Production Systems in Central Asia and Turkey (CACILM2)"

Acting together: the regional project extended for two more years

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The extraordinary Project Steering Committee Meeting of the CACILM-2 FAO-GEF regional project in November 2021 decided to extend the project's activities until November 2024. The implementation of some project areas had to be postponed due to the COVID-19 restrictions imposed both in the Central Asian region and around the world, .

However, the final report on the project's mid-term evaluation carried out under the GEF procedure in 2021 emphasizes significant achievements, primarily in the field of implementing efficient approaches to natural resource management.

This was the result of the multi-country partnership established within the project's framework, exchange of best practices, establishment of political, legal, and institutional mechanisms, as well as incentives for the transition to climate-smart agricultural technologies.

In addition to the evaluation of the project's effectiveness, a group of independent experts presented several recommendations that included strengthening the role of interdepartmental working groups in the process of project implementation in the region's countries, assessing the socio-economic benefits of new technologies' introduction, as well as analysis of income growth and food security of project beneficiaries at demonstration sites as a result of these approaches.

The Committee recommended continuing to support countries in the development of rural advisory services and strengthening partnerships with other international organizations.

Opening the Committee meeting, its Chairman Nurettin Tas, Director General of the General Directorate for Combating Desertification and Erosion of the Ministry of Agriculture and Forestry of Turkey, noted that the practices applied within the project framework contribute to restoration of degraded soils, and efficient use of water and other natural resources, thus they could not be more relevant today, when the intensity and impact of natural events caused by climate change are obvious to everyone.

It should be noted that it is only the project's implementation period that is extended, for the objective reasons of force majeure. The overall budget of the project remains the same.

The project's International Steering Committee includes representatives of National Partner Ministries from all Central Asian countries and Turkey.

Agricultural machinery obtained by research institutes from FAO will help to better adapt to climate change

The harsh conditions of climate change, a decrease in the amount of natural precipitation, the threat of drought and other natural

hazards complicate the task of ensuring food security for the population and well-being of farmers.

Therefore, strengthening of farmers' knowledge and skills in the use of drought- and salt-resistant crops, resource-saving agricultural techniques and approaches harmless to soil and water gains importance.

To perform on these tasks, CACILM-2, in close partnership with research and public organizations, trains farmers and, during special field days, transfers practical skills of farming in changing conditions.

The COVID-19 epidemic has complicated this work substantially, but the project employees and partners maintain the scope of this activity and continue to support farmers taking all protection measures.

"A significant component of the programme is aimed at strengthening relationships with partner organizations – research institutes and public associations," says Makhmud Shaumarov, CACILM-2 Regional Coordinator. "It is essential for us to build their capacity to adapt drought-resistant and saline crops, as well as to develop and widely spread such agricultural practices and approaches in Kazakhstan, which will enable farmers to withstand the challenges of climate change. For this purpose, we provide partners with agricultural equipment that will allow them to boost the efficiency of care for new plant species and disseminate the accumulated experience among farmers more successfully."

The rotary harrow, obtained last week by the Kazakh Scientific Research Institute of Animal Husbandry and Forage Production in Almaty, will be used for weed control, oxygen saturation and moisture retention in the soil both on pastures and arable land.

"We enjoy fruitful cooperation with the FAO-GEF CACILM -2 project in adapting forage production systems in Kazakhstan to climate change," Nurlan Tlevlesov, the Institute Director, said at the ceremony of equipment transfer. "This year's drought has demonstrated how relevant those tasks are for Kazakhstan," he added.

Last week, special equipment for soil cultivation was handed over to Ibray Zhakhayev Kazakh Rice Research Institute in Kyzylorda region.

"We will now be able to significantly expand the plots of drought- and salt-resistant crops, reduce water consumption while introducing essential minerals into the soil," said Zhanuzak Baymanov, Head of "Kyzylorda" Knowledge Center.

Conference dedicated to the World Soil Day in Kazakhstan

The World Soil Day on December 5, 2021, was celebrated under the theme "Halt soil salinization, boost soil productivity." The same appeal became the key message of a recent conference in the capital of Kazakhstan.

Photo: ©FAO, by Akmaral Sman

Soil is a critical resource and a vital part of the environment that produces most of the world's food.

Moreover, the soil forms a living environment for people providing essential ecosystem services that help to retain moisture, regulate the climate, maintain biological diversity, and capture ambient carbon.

However, soils are increasingly affected by various factors: population growth, climate change, deforestation, and irrational land use.

Approximately one third of the world's soil resources are degraded, and many governments are seeking opportunities for green transition, while the international community is looking for new ways of sustainable development.

"The world is facing numerous challenges today," said Makhmud Shaumarov, CACILM-2 Regional Coordinator, in his welcoming remarks to the conference participants. Climate change, global economic crises and reduced productivity of salinized, arid, and degraded lands lower the productivity of agriculture and food systems.

The CACILM project is one of the largest initiatives in the field of sustainable management of natural resources, and this conference provides a great platform for discussions on the most critical issues of preserving and improving soil fertility," he said.

Soil salinization leads to a significant drop in yields, and anthropogenic factors have already resulted in salinization of 760 thousand square kilometers across the globe. According to U.U. Uspanov Kazakh Research Institute of Soil Science and Agrichemistry, the area of saline and alkaline soils amounts to 111.6 million hectares, or 41 percent of the country's total territory.

For that reason, the World Soil Day theme this year was extremely relevant for Kazakhstan. The conference agenda considered the experience gained by the FAO-GEF project in pilot saline areas.

The agenda also covered were the role of soil surveys in agriculture, the practice of combating salinization and rehabilitation of degraded irrigated lands under the shortage of irrigation water and the performance of salt-resistant crops on saline soils, the impact of sustainable pasture management on soil resources, and other topics.

Recently updated maps of the country's salinized areas and the national geoportal with detailed soil characteristics were presented at the conference.

International and national experts, representatives of government agencies, academia, NGOs, and farmers' associations attended the conference both offline and online.

The World Soil Day is celebrated annually on December 5 to raise awareness about the crucial role of soils and promote sustainable use of soil resources thus ensuring food security and a safe environment for present and future generations.

Rational water management is indispensable


Photo: ©FAO, by Vlad Ushakov

The global crisis caused by climate change is inseparable from water issues. Climate change enhances the water cycle variability, thereby causing extreme weather events, reducing the predictability of water supplies, deteriorating its quality, and threatening sustainable development and biodiversity.

International experts state that 3.6 billion people worldwide already live in areas where water scarcity has a negative impact on community well-being. Moreover, irrigated agriculture accounts for more than 70% of the world's water consumption.

Understandably, the issues of efficient water management constitute a major component of the FAO-GEF Regional Project CACILM-2.

The region's countries have been implementing resource-saving techniques of tillage, irrigation, and pasture management, both traditional ones and those recently tested and proven to be effective.

Hydraulic ram pumps are already successfully operating in the pilot Kochkor district ensuring irrigation for vast pasture areas, arrangement of points for farm animals; dams and special structures are built on tributaries and canals to regulate water supply and facilitate cattle access to pastures.

Farmers and agricultural production system specialists regularly participate in training workshops and field days learning about the most efficient approaches to stewardship in using natural resources.

In late October, a training seminar on automated irrigation water metering and distribution systems was held at the Kochkor District State Administration, where the employees of the Kochkor District Water Management Department and members of Water User Associations (WUAs) learned how to productively operate such systems.

Earlier, major water-metering stations of the Kochkor District Water Management Department were fully automated within the framework of the CACILM-2 project. This activity was supported by computing equipment procurement, installation of remote sensors and development of software for transmitting data to computers.

The district water management specialists can now receive real-time data on the volumes of supplied water and its distribution between WUAs. Daily data on water consumption is archived for further analysis and development of response measures.

The workshop participants had an opportunity to learn about the outcomes of operations digitalization of two district WUAs.

"Climate policy and climate planning at the national and regional levels should be based on an integrated approach to water management," said Makhmud Shaumarov, the project's Regional Coordinator. "Considering the aggravating water scarcity and the need to meet the growing demand, new approaches are needed to promote the rational use of this critical natural resource," he said.

Small-scale investments in agriculture in Tajikistan

Signing ceremonies on parity grant awards and funds allocation were held in Yovon district in the west of Tajikistan to ensure inclusive economic growth by supporting the most vulnerable families in the country's rural areas. FAO and the local government authority supported the initiative as part of a multi-country project funded by the Global Environment Facility (GEF).

FAO, the local authority, and local community members carefully studied applications with 224 business cases. Supported by experts, farmers were able to finalize their business plans based on short-listed cases.

"FAO has developed and is currently successfully scaling up a model for parity grant awards to ensure further development of agriculture in Tajikistan," said Oleg Guchgeldiev, FAO Representative in Tajikistan. "Such projects are primarily aimed

The investments will mainly be aimed at improving the efficiency of agricultural production, construction of greenhouses for lemons and vegetables, development of animal husbandry with a focus on sheep and meat production, as well as further development of poultry farming.

A parity grant is a single-time gratuitous money transfer for specific purposes with the condition that the recipient makes a relevant contribution to achieve these goals.

will benefit from such support. The funding mechanism used will help ensure the income sustainability of low-income segments of the population and the growth of rural economy, as they can stimulate market development and innovation."

Now, the beneficiaries will start implementing their ideas. FAO, jointly with the district authority, will monitor the performance of grant funds and provide assistance to entrepreneurs in the form of technical consultations.

FAO's best 2021 employees honored in Rome.

A member of the FAO office in Tajikistan was among them

Among thousands of talented and dedicated employees of the Organization in 194 countries, top 200 were selected including Daler Domullodzhanov, Coordinator for Land and Water Resources and National Project Manager for FAO-GEF CACILM-2 in Tajikistan.

The news about the award came as a complete surprise to Daler. "But it was a very pleasant surprise," he says. "I could not even imagine that people would vote for me, because I know that the Organization's success in Tajikistan is the merit of the entire team and the FAO head in the country. It is the high degree of mutual understanding and constant support from colleagues that help to achieve success in any business," Daler said.

Having received a degree in ecology and nature management, he has worked in projects and development programs with various international organizations, including activities in the field of sustainable management of river basin resources.

Over the years of employment in projects to support agricultural production in rain-fed areas in arid agricultural landscapes of Tajikistan, Daler has assisted in putting into practice the methods and tools developed by FAO to increase the productivity of land and water resources and improve the standard of living of vulnerable smallholders who grow crops in harsh arid conditions in remote regions of the country.

"I love my job, and I am deeply satisfied working for an organization that contributes to the gradual changes for the better in our country's agriculture," says Daler.

"Without you, there would have been no FAO," Qu Dongyu, FAO Director General, said at the award ceremony, emphasizing the ”determination and commitment, effectiveness and consistency" of all the winners of the annual award, as well as their hard work in the difficult and risky conditions of the pandemic.

At the end of the year, the Organization selects the best out of thousands of brilliantly educated and experienced employees, who enable FAO to take on and solve the most pressing challenges of modern agricultural production systems, including ensuring food security in the face of climate change, degradation of natural resources, conflicts, loss of biodiversity and pandemics. Two hundred outstanding FAO employees represent 105 nationalities, 84 occupations, and more than half of them are women.

"The Food and Agriculture Organization of the United Nations (FAO) has been honoring its best employees for two years already," said Makhmud Shaumarov, CACILM-2 Regional Coordinator. "We are very proud that our project staff has been included in the list of prominent employees for the second year in a row. Last year we congratulated Zhanyl Bozayeva, the National Project Manager in Kazakhstan, on this award, and this year we congratulate Daler."

Building up preparedness for climate change through optimized irrigation of agricultural crops

On December 15, 2021, Dushanbe hosted a capacity-building workshop for specialists in applying FAO-developed tools - *Aquacrop, KropVat and evapotranspiration calculator*, which help calculate the crop irrigation regime under various climate change scenarios.

In addition, Shirinsho Shotemura Tajik Agrarian University and Tajik Research Institute of Hydraulic Engineering and Land Reclamation received computers and other office equipment from FAO, while their researchers, experts and other partners participated in two three-day workshops arranged by FAO together with international experts from the University of Cordoba in Spain. A number of training materials required for FAO tools application, dissemination of knowledge and implementation of innovative solutions have been translated into Tajik.

Photo: ©FAO, by Daler Domullodzhanov

an increase in ambient temperature and intense precipitation outside the vegetation period, which would lead to earlier planting dates for crops, and would also require very careful planning and calculation of the irrigation regimes," says Daler Domullodzhanov, FAO Land and Water Resources Management Specialist in Tajikistan. "The Aquacrop tool lets the user model water use and crop productivity on both irrigated and rain-fed lands," he added.

In 2019, specialists from Tajikistan, along with participants from other Central Asian countries and Turkey, were trained to apply the Aquacrop tool at the University of Cordoba, Spain,

at the initiative of the FAO-GEF regional project CACILM-2.

FAO in Tajikistan has prepared 7 books and training manuals in Tajik on crop irrigation regimes in five river basins (Sirdarya, Zeravshan, Kafirnigan, Vakhsh and Pyanj), calculation of crop water consumption, their modeling, and yield planning using the Aquacrop tool in order to disseminate the knowledge gained in Cordoba in the field of using the latest tools that help calculate resource-saving irrigation regimes and model crop water consumption.

President for Science and Innovation of Tajik Agrarian University (TAU), noted: "The workshop is very useful, particularly for young researchers and graduate students of TAU. We learned about the modern approaches and tools developed by FAO and other partners that are already being successfully used in other countries. FAO, as a specialized technical organization of the United Nations, has vast experience in all areas of agriculture, which is especially important now, in the context of climate change. It is very important to use modern developments to boost efficiency and productivity of agriculture and ensure rational use of natural resources. Therefore, we are already introducing this topic into the curricula and research of our graduate students."

The event was attended by 36 specialists, including nine women. The participants represented the departments of the Ministry of Energy and Water Resources, Irrigation and Land Reclamation Agency under the Government of the Republic of Tajikistan, and Meteorology Agency of the Environmental Protection Committee under the Government of the Republic of Tajikistan. Representatives of several public organizations, water users from the districts of Javan, Kushonien, Vakhsh, and graduate students and young researchers from Tajik Agrarian University and the Research Institute at the Academy of Agricultural Sciences were active participants as well.

Vital resource: World Soil Day celebrated in Tajikistan

In early December 2021, a number of events dedicated to the World Soil Day were held in Tajikistan with the assistance of FAO, the Ministry of Agriculture of Tajikistan, GIZ and other partners.

Soil is a vital resource, and its fertility is the most important component in the process of crop production. Nevertheless, preservation and improvement of soil fertility remains a challenge in Tajikistan posing a threat to agricultural productivity growth and farmers' incomes. That inspired a broad discussion on the most important issues of preserving and increasing the productivity of soil resources in the country.

On December 7 and 8, 2021, Dushanbe hosted a round table discussion on the rational use of soil resources, and a master class for agronomists. The round table participants noted that soil erosion in Tajikistan poses a serious threat to water and food security due to the growing pressures on farmland, urbanization, and unsustainable farming methods, .

Experts who participated in the discussion noted that proper soil management contributes both to increasing the productivity of land resources and to the rational use of fresh water in terms of its quality and quantity also influencing the sustainability of food production systems.

Daler Domullodzhanov, National Project Manager, FAO CACILM-2 in Tajikistan, presented the events and approaches being spread in the region to restore the productivity of degraded soils in drought-prone and salinized agricultural landscapes.

According to new FAO estimates, about 10% of irrigated arable land, 10% of rain-fed arable land and 8% of agricultural land worldwide are subject to salinization or alkalization. The total area of the world's saline soils is 833 million hectares. This estimate will grow as countries submit updated maps of saline areas.

In the early-mid 2010s 1.9 billion people, or 27% of the world's population, lived in areas potentially experiencing acute water shortages, while by 2050, this number will increase from 42 to 95% affecting from 2.7 to 3.2 billion people.

At the event, Maria Konyushkova, an employee of the FAO headquarters, briefed the audience on the activities of the International Network of Salt-affected Soils, the Global Soil Partnership, and the Global Soil Doctors Programme. Various FAO methods and publications on combating soil salinization were presented including the protocol for assessing sustainable soil management.

The discussion participants emphasized that healthy soils are a vital component in achieving a number of goals and objectives of the Sustainable Development Agenda, the Paris Agreement on Climate Change, and the Sendai Framework for Disaster Risk Reduction, .

During the master class at the State Design Institute for Land Management "Tojikzaminsoz", the participants learned about the approaches to integrated land management and engaged in the analysis of soil samples and development of recommendations for improving soil fertility at the Institute laboratory.

On day three, December 9, 2021, FAO and partners facilitated a field day at the CACILM-2 pilot site in A. Jami district, Khatlon region, where the project participants and beneficiaries shared their experience in soil improvement, use of drought- and salt-resistant crops, utilization of modern rational agricultural technologies and irrigation methods.

In addition to the beneficiaries, the field day was attended by more than 120 people including representatives of local administrations of the district and Khatlon region, local specialists of agricultural services of the Ministry of Agriculture and the State Committee for Land Management and Geodesy of the Republic of Tajikistan, students and lecturers of Sh. Shotemura Tajik Agrarian University, experts from the Tajik Academy of Agricultural Sciences, scientists of the Research Institute of Agriculture of Tajik Academy of Agricultural Sciences, the Research Institute of Soil Science of Tajik Academy of Agricultural Sciences, the Agricultural College of Bokhtar city, public organizations, service providers in the field of agriculture, as well as representatives of GIZ and JICA.

Visit of the FAO Sub-Regional Coordinator to Ashgabat

Turkmenistan's partnership with FAO will be enhanced through the implementation of the Cooperation Framework between the Government of Turkmenistan and FAO for 2021-2025 signed during the visit of the FAO Sub-Regional Coordinator Viorel Gutu to Ashgabat in December 2021.

Viorel Gutu arrived in Ashgabat to participate in the International conference "Peace and Trust Policy - Basis of International Security, Stability and Development." During the visit, the Government of Turkmenistan and FAO signed new agreements: Cooperation Framework for 2021-2025, and the agreement on the implementation of the regional project "Improving efficiency of small ruminants' production for reduction of the GHG emission intensity."

The parties also discussed the issue of opening a FAO Representative Office in Turkmenistan.

During the visit, the Sub-Regional Coordinator visited the office of the FAO-GEF Regional Project "Integrated Natural Resources Management in Drought-prone and Salt-affected Agricultural Landscapes of Central Asia and Turkey (CACILM-2)" and discussed the issues of implementation of project components in pilot zones of Turkmenistan with Rahmanberdi Hanekov, National Project Manager, and the staff.

Concept of the new edition of Turkmenistan's National Action Programme to Combat Desertification

In early December 2021, an online meeting was held among the participants and partners of FAO-GEF CACILM-2 regional project, which is being implemented in Turkmenistan in partnership with the country's Ministry of Agriculture and Environmental Protection.

The virtual discussion was joined by the Mejlis (national legislature) staff, specialists of the Department for Coordination of International Environmental Cooperation and Projects, as well as Land Resources and Hydrometeorology services, scientists of the National Institute of Deserts, Flora and Fauna, the Ministry of Agriculture and Environmental Protection of Turkmenistan, representatives of the State Committee for Water Resources, the Union of Industrialists and Entrepreneurs, employees of the hyakimliks of Dashoguz and Akhal velayats, faculty of S. A. Niyazov Turkmen Agricultural University, Turkmen Agricultural Institute (Dashoguz), experts of the Research and Information Center of the Interstate Commission for Sustainable Development (ICSD RIC) and international projects in the field of environmental protection and sustainable management of natural resources.

According to the agenda, the participants were introduced to the concept of the new ecological term "national balance of neutral land degradation" and the idea of the roadmap for its integration into the national policy and institutional components of Turkmenistan. (*The idea of the neutral balance of land degradation is an equilibrium (balance) between the processes of soil degradation and measures of its reclamation*).

The concept of the new edition of the National Action Programme to Combat Desertification (NAPCD), adopted by Turkmenistan in 1997, a year after the country's accession to the Convention of the same name, was also presented at the event.

Murad Nepesov, the project's guest expert from ICSD RIC, elaborated on the significance of NAPCD as an integral part of the National Action Programme to Combat Desertification in synergy with international ecological and environmental conventions. Among the scientific and methodological aspects of achieving and maintaining such a state of farmland and pastures, he pointed to the comparison of global and local indicators, the classification of land cover in the national plan,

determination of land productivity, formalization of the process of carbon sequestration and accumulation in the soil, and among institutional ones — harmonization of global and national terms, land inventory, establishment of a national system of indicators of the land status to complement and/or clarify global data.

The speaker also emphasized the importance of stipulating a legal provision that reveals the concept of neutral degradation or neutral balance of land degradation based on the UNCCD documents: "Measures to improve the condition of waste lands are carried out taking into account an internationally recognized approach where the volume and quality of land resources necessary to maintain their vital ecosystem functions and services, as well as to ensure food security, remain stable and, if possible, increase in the specified temporal and spatial scale agro-industrial ecosystems (landscapes)."

The concept of land degradation helps to define the term "desertification" standing for "land degradation in arid, semi-arid and sub-humid areas as a result of various factors including climate change and human activity," he summed up, specifying that the harmonization of national and international approaches in the field of concepts and definitions can be implemented through the work of the Land Cadaster, the Intersectoral Commission on Environmental Protection, the Government

Commission for the Coordination of the National Earth Surface Monitoring System, the State Fund of Eco-information.

Currently, a group of national experts supported by the FAO project and ICSD RIC continues to work on updating the National Action Programme to Combat Desertification (NAPCD).

According to the concept, it will consist of three components: measures to prevent and mitigate the effects of droughts, reduce the risks of dust and sandstorms, work with the national legal system on the stated theme, synergy of the three global Rio conventions - CCD, CBD and FCCC.

Mukhamet Durikov, UNCCD National Focal Point in

Turkmenistan, presented the concept of updating the NAPCD in view of the adoption of several programmatic and legislative instruments in the country. The speaker briefly described the contents of the document's new edition, touched upon the background of the convention and the work accomplished as part of its implementation in Turkmenistan: "The Conference on Environment and Development (1992 in Rio de Janeiro) suggested preparing and adopting a new efficient tool for mobilizing political, human, scientific and technical resources to combat desertification and mitigate the drought effects. During the following years, the convention was drafted and signed by most countries on June 17, 1994. During an international conference in Paris, Turkmenistan was among the first states to ratify the document. The country convened a government commission to develop a concept and action strategy under the coordination of the Institute of Deserts (then under the Academy of Sciences). The work was completed in 1997.

The purpose of the programme was to determine and assess the state of the country's natural and economic potential under transition to market economy, identify indicators of desertification processes and their development trends, develop knowledge-intensive but cost-effective technologies for restoring disturbed landscapes and using nature resources based on ecological principles.

The program has been implemented for a long time via separate projects that eventually identified vectors in land protection related to anthropogenic and natural factors - countering pasture degradation, desertification of territories, wind erosion, and water erosion. The NAPCD fulfilled all its functions, which were advisory in nature since specific measures were not financially supported.

Currently, more robust actions should be taken to address land use issues based on interagency interactions. The need to update the document is due to the fact that over the past years the country has adopted the National Socio-Economic Development Program for 2011-2030; the Presidential Program for Socio-Economic Development of the Country for 2019-2025; the Agricultural Development Program for 2019-2025; the National Climate Change Strategy; the National Forest Program for 2021-2025 and the relevant Action Plan; the National Aral Program for 2021-2025. These documents indicate the need for a comprehensive inventory of land with detailed characteristics based on GIS technologies, as well as appropriate measures for recultivation and desalination of land and their reclamation.

It was emphasized during the meeting that the successful new edition of NAPCD should include a set of measures, be a program document with a binding legal status and funding guarantees to cover, among others, the publication of the international journal "Problems of Desert Development", the only regional publication specializing in land use in arid territories, and the appointment of a responsible authority or an operations coordination center; the document must be aligned with the country's international obligations.

Rahman Hanekov, FAO Regional Project Manager, advised that the project intends to support both the development of the above programme and the publication of the "Problems of Desert Development" journal in 2022 as this periodical features the activities carried out not only in Turkmenistan, but also in other countries of the Central Asian region.

Trainings for seed growers of the Research and Production Center and winegrowers of Nohur

FAO CACILM-2 regional project experts, with the organizational support of the Ministry of Agriculture and Environmental Protection of Turkmenistan, held a meeting with researchers of the Agricultural Research and Production Center (Anau city) of Turkmen Agricultural Institute (Dashoguz city). The participants discussed the issues of breeding and seed production of agricultural crops – legumes, cotton, vegetables, and cucurbits. The project lecturers spoke to the research center staff informing the audience about the new methods proposed by FAO in the field of agricultural production and agricultural science.

term scientific and practical activities. Guljemal Tailakova, Head of the Cereals and Legumes Breeding and Seed Production Department, Candidate of Agricultural Sciences, presented an overview of modern technologies for harvesting high-quality wheat seeds; Doctor of Agricultural Sciences Kerimguly Mametgulov, Head of the Plant Protection Department, outlined the common diseases of grain crops and methods of combating them, modern methods of wheat seed pretreatment for pest control. Aidogdy Agadzhanov, CACILM-2 project expert, delivered a lecture on specific measures to reduce the salinization of agricultural land before sowing wheat. He also presented the proposals portfolio of a salinization reduction and seed pretreatment project to the training participants.

A few days later, the Farmers' Field School classes continued in the pilot region of Nohur attended by local farmers and livestock breeders of Kenegyummez village that belongs to the footprint of "Enish", the Daikhan collective farming entity of Bakharden etrap, Akhal Velayat. Cattle breeding, viticulture and horticulture dominate in this area; therefore, the lectures were dedicated to the issues of efficient fruit growing under limitations of land and water on mountainous agricultural landscapes. Mr. Hanekov, National Project Manager, emphasized in his welcoming remarks that the purpose of the field school is to introduce an integrated approach to resolving the challenges small agricultural producers face in conditions of intensifying drought and increasing soil salinity. This will improve the collection, conservation, and efficient use of water resources via environmentally friendly and biodiversity. In general, the tasks are to show stewardship in land, water, and forest use in order to mitigate the negative impact of desertification processes on country-specific agricultural landscapes.

The project expert introduced the training participants to the FAO methods for improving agricultural production in Turkmenistan. "In this mountainous region facing aggravating water shortage, it is feasible to timely provide farmers' fields with the required volumes of irrigation water using improved methods and technologies, and advanced technical means of irrigation," the expert said. "Traditional methods of collecting flood waters by building dams and small reservoirs, arranging cascades of such structures on the relevant mountain areas will also be appropriate.

Groundwater is another source of irrigation water. Mini-reservoirs may serve a platform to integrate a drip irrigation system." Technologies, tools, and methodologies developed by specialists, including FAO experts, for forecasting yields based on weather data, soil water regime programming, such as AquaCrop, CROPWAT, Collect Earth, ASIS, etc., contribute to the agriculture improvement. Many practices have been developed to be applied in the conditions of limited water resources. The speakers emphasized the need for comprehensive measures, prevention of water erosion in the course irrigation, negative impact on catchment areas and on the environment in general.

(melleks). The importance of compliance with the requirements of agricultural technology, timely and high-quality irrigation, measures to protect crops from diseases and pests was noted.

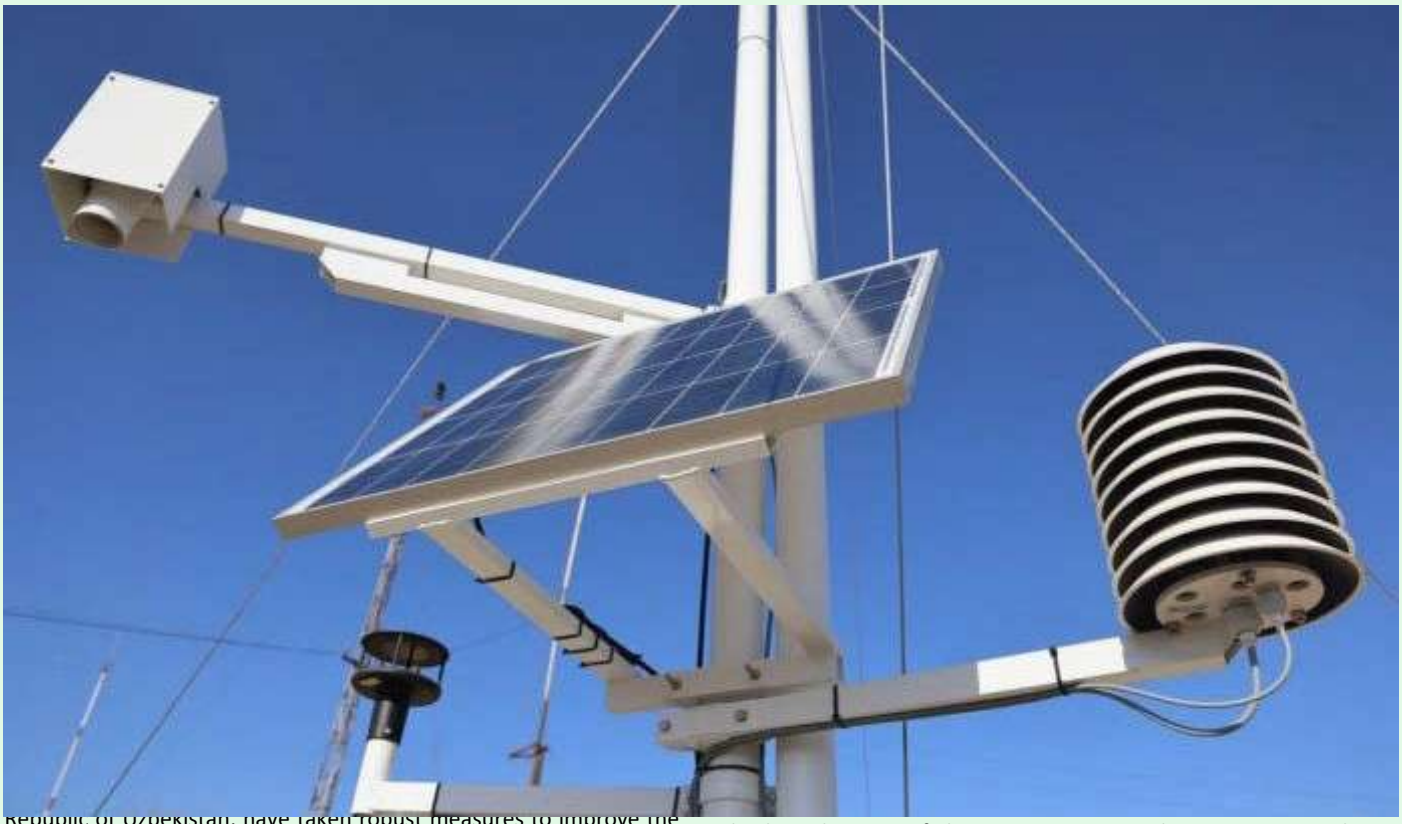
After the lectures, practical classes were held directly on the garden plots where local farmers grow apple and pear trees. Despite the lack of water this year, they managed to get a good harvest. The local garden was watered with a drip irrigation system. Thanks to that, farmers noted, it was possible to mitigate water shortages this year. The participants also emphasized that fertilizing the soil with organic matter is a useful measure for the local soil and for water conservation. Then the students moved to the

S.Veysov, the project's national expert on sustainable land management, briefed the audience on ways to improve arable land use in mountainous agricultural landscapes. He spoke about the issues associated with land resources in mountainous regions that experience difficulties in delivering water to potential agricultural territories, which limits irrigated farming across vast areas. Nohur possesses is experience and small land plots for rain-fed agriculture – wheat is the predominant crop there due to the risks associated with more frequent droughts. The expert spoke about the available methods and technologies that contribute to the development of agricultural production and expansion of crops. Additionally, he pointed out the need for measures to increase fertility in the fields already available to local farmers and their own private plots

fields for planting cherries and crab cherries arranged with the project's assistance, and then to the nursery, where local farmers planted mountain tree species for reforestation this year. There, the discussion continued about the practices that could contribute to overcoming difficulties and help mitigate the human impact on the environment. In the practical part of the meeting, the experts were assisted by Gurban Abdyrakhmanov, the local consultant of the project. The practical classes were completed by discussions, consultations, exchange of experience and contacts, joint assessment of the prevailing climatic conditions, possible solutions based on available technologies. Representatives of local agricultural communities expressed gratitude for the informative field day and supported the continuation of such classes.

FAO promotes improvement of agrometeorological observations in Uzbekistan

Climate has a key impact on agriculture that is heavily dependent on precipitation, temperature, and sunlight. Agricultural producers need accurate, reliable, and timely meteorological and climate information both for making daily tactical decisions and for implementing long-term planning. Seasonal indicative climate forecasts are becoming an increasingly important tool for decision-making concerning, for example, distribution of crops and their sowing schedules, or selling livestock in the event of an impending drought.



Republic of Uzbekistan, have taken robust measures to improve the system of providing the agricultural sector of Uzbekistan with agrometeorological information. According to the Presidential Decree "On measures for further improvement of the operations of the Hydrometeorological Service Center of the Republic of Uzbekistan" FAO handed over to Uzhydromet 12 modern automatic agrometeorological stations that were installed on agricultural areas of Jizzakh and Kashkadarya regions. The equipment transfer was provided for in the roadmap for the implementation of priority projects on the use of hydrometeorology in the field of agriculture within the framework of the Development Concept of the Hydrometeorological Service of the Republic of Uzbekistan in 2020-2022.

The support was provided within the framework of the FAO-GEF CACILM-2 project implemented with the constant support of the Ministry of Agriculture of Uzbekistan.

"Automated agrometeostations installed on the project territories will enable local farms to receive all the necessary meteorological information in a timely and efficient manner. And this, in turn, will allow farmers to perform long-term planning based on climate forecasts, reduce the risks associated with yields by making appropriate decisions regarding seeding, pest control and much more," said

The key objective of the CACILM-2 regional project is to scale up integrated natural resource management in drought and salt affected agricultural production landscapes in Central Asia and Turkey. In Uzbekistan, this project is being implemented jointly with the Ministry of Agriculture. The national partners of the project are the State Forestry Committee of the Republic of Uzbekistan, the State Ecology and Environmental Protection Committee of the Republic of Uzbekistan and the Hydrometeorological Service Center of the Republic of Uzbekistan. Its implementation makes a significant contribution to the implementation of the UN Convention to Combat Desertification and the UN Framework Convention on Climate Change in the Central Asian region.

Modern agricultural equipment for Bukhara households

In close cooperation with the Ministry of Agriculture of Uzbekistan, the project continues to provide socio-economic support to the rural population.

In September 2021, the project shipped modern agricultural equipment to Bukhara region including 10 soil augers, 10 backpack sprayers and 10 water pumps.

"One of the project's important tasks is to assist in the development of rural households for more efficient use of land plots and higher incomes. For this purpose, the new equipment was donated to the owners of private plots in Bukhara district. The beneficiaries were selected based on the recommendations of the local khokimiyat," said Muhammadjon Kosimov, National Project Manager.

The soil auger is a ground-drilling device. It makes works on household plots a lot easier. The new equipment mechanizes the process of seedlings planting saving time and resources, while its design ensures ease and high quality of drilling.

Backpack sprayers will be used mainly for chemical treatment of plants. Portable and light, this equipment is easy to operate in various working conditions. Backpack sprayers will facilitate plant treatment against pests and diseases.

Water pump operations will contribute to the uninterrupted fresh water supply for household plots.

Soon, the project will deliver and donate similar agricultural equipment to the residents of Kamashinsky district of Kashkadarya region.

Another lot of FAO's socio-economic support was delivered to the residents of Bukhara and Kashkadarya regions

The project transferred 20 power tillers to the households of Bukhara district in Bukhara region and Kamashinsky district in Kashkadarya region. The beneficiaries were selected based on the recommendations of the local khokimiyat.

It should be noted that they previously received other agricultural equipment: 20 water pumps and 10 backpack sprayers to the households of Kashkadarya region and 10 augers, 10 backpack sprayers and 10 water pumps to the households of Bukhara region.

The campaign is organized in order to assist in the rural households' development for more efficient use of land plots and obtaining higher incomes.

"The transferred equipment will contribute to a more favorable environment for increasing the agricultural production on household plots, which, accordingly, will provide employment and increase the incomes of their owners. This corresponds to the goals and objectives of the project," said Muhammadjon Kosimov, National Project Manager.

Moreover, state-of-the-art laboratory equipment including laboratory scales, anemometer, drill, refractometer, power tiller and mower was transferred to the Bukhara Research and Production Center for Steppe-Pasture Fodder Crops Breeding within the framework of CACILM-2. Supporting scientific research aimed at improving agricultural production is also fully in line with the project's mission.

The project implementation makes a significant contribution to the implementation of the UN Convention to Combat Desertification and the UN Framework Convention on Climate Change in the Central Asian region. In Uzbekistan, the project is being implemented jointly with the Ministry of Agriculture. The national partners of the project are the State Forestry Committee of the Republic of Uzbekistan, the State Ecology and Environmental Protection Committee of the Republic of Uzbekistan and the Hydrometeorological Service Center of the Republic of Uzbekistan.

Greenhouse as a backyard business

Greenhouses for growing vegetables, herbs and seedlings can be used to realize an interesting and quite profitable commercial idea. After all, even a small backyard greenhouse can become the basis for economic development and eventually turn into a stable source of income. Moreover, fresh, environmentally friendly food grown in optimal conditions will always be on the table.

This principle guided the project experts who handed over 40 greenhouses to the rural residents of Bukhara district in Bukhara region and Kamashinsky district in Kashkadarya region in December 2021 to support more efficient management of the villagers' homesteads. The beneficiaries were selected in consultation with local khokimiyats (authorities) from the list of citizens in need of social and economic assistance.

"High profits can be expected only with constant care of the greenhouse and the gradual expansion of the homestead. This would require certain skills and knowledge including plant care, proper planting, watering, and fertilizing. Therefore, following the distribution of greenhouses, we conducted special trainings for their owners teaching the villagers all the ins and outs of greenhouse farming," said Muhammadjon Kosimov, National Project Manager.

This was of great help to rural households. From now on, they can manage land plots more efficiently throughout the year, they have the opportunity for self-sufficiency with both and new sources of income. At the same time, employment issues have been resolved.

It should be noted that a total of 108 greenhouses were allocated to the beneficiaries during 2021 within the project's framework. In addition to the recently transferred greenhouses, 34 greenhouses were received by the owners of household plots of Bukhara district in Bukhara region and Kamashinsky district in Kashkadarya region in January as socio-economic assistance during the crisis caused by the coronavirus pandemic. FAO, Ministry of Public Education and the Agency of Presidential Educational Institutions allocated 22 greenhouses to eco-schools and 12 greenhouses to kindergartens to support the "Young Farmer" project of the "Zamin Eco-Education" programme initiated by Zamin Foundation. These greenhouses are classrooms for children, where they can improve their knowledge and skills in the field of environmental protection, agriculture, ecology, and rational use of resources.

Well restored in the arid area of Kashkadarya region

According to experts, both overgrazing and undergrazing of pastures are undesirable. Therefore, it is important to distribute drinking wells for livestock evenly across the territory.

However, many wells and holes on desert and semi-desert pastures eventually fail, and their restoration is a rather complicated and expensive exercise for farmers.

The FAO-GEF CACILM-2 regional project assisted in repairing a well located near Takham village in Guzar district of Kashkadarya region, which was a great support for local pastoralists.

The population of Takham village is about 1.5 thousand people. Animal husbandry is the only source of income for the local population due to the arid climate.

In total, karakul breeders keep more than three thousand sheep. The mentioned well is the only source of water for agricultural needs in this settlement. It took about 90 million soums and more than two months to repair the well. Today, farmers can collect up to 40 cubic meters of water per day.

"First of all, previously unused pastures are now available, therefore the burden on other grazing areas will be reduced. After all, uniform grazing is most beneficial for arid steppe territories. It will also contribute to the preservation of local flora and fauna." said Muhammadjon Kosimov, National Project Manager.

The new well launch made the locals very happy and confident about the future.

"This is extremely helpful for us," said Otabek Ismatov, Director of Guzor Korakulchilik LLC. "Our farm runs karakul breeding, we supply precious karakul hides, meat and wool. The farm has 86,000 hectares of land and more than 40,000 animals. From now on we are thinking big, we will increase the stock and develop the farm."

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