

Al-Mafraq agricultural research center

Duties:

Achieving the general goals of NARC namely:

1. Prioritize the national agricultural scientific research in cooperating with related institutions that serve agriculture sustainability.
2. Develop and adapt agricultural technology suitable for local conditions for optimal utilization of productive resources.
3. Improve the skills of workers in the agricultural sector and conduct training courses and workshops.
4. Rehabilitate and build the abilities of the technical staff through internal training courses and workshops.
5. Cooperate with local and international institutions to implement applied research and research projects.
6. Provide technical consultation and services in the agricultural sector.
7. Publish the research result locally and internationally.
8. Conduct field visits to field school project and ACTED projects.
9. Coordination of work on field tours for different categories (organizations, associations, university students) of the center and its stations according to the specialization.

Currently workings projects and research in Al-Mafraq Agricultural Research Center:

1. Execution of the following projects in Al-Khalidya, Maru and Zaatari camp:
 - Conduct research, experiments and tests with the provision of technical recommendation on the safe use of organic waste, treated wastewater and sewage sludge in different agriculture corps in Jordan.
 - Technical concept on implementing field experiment for testing locally produced compost.
2. Project of the effect of adding Potash to the production of millet crop under saline conditions.
3. Rural Economic Growth and Employment for field schools and food processing.
4. Rural Economic Growth and Employment for organic field schools (Dutch scholarship)
5. Project of 20 dunam development.
6. Project of monitoring potato lines in (Al-Khalidya and Nayfeh)
7. Wiper project
8. Gotham project

The Mafraq Agricultural Research Center has two research stations:

1. Al-Khanasry station for livestock research.
2. Al Khalidya station for Biosaline research

Al-Khanasry station for livestock and rangeland research.

Tasks of Al-Khanasry station for livestock and rangeland research:

- 1- Preserve local breed of awasi sheep.
- 2- Preserve local breed of goat (Baladi, Dhawi)
- 3- Preserve local breed of camel.
- 4- Conduct applied researches and studies on sheep, goats, poultry and camel.
- 5- Rehabilitate and protect rangeland reserve, and evaluate the biodiversity inside the station and the optimal exploitation for them to maintain environmental balance.
- 6- Publish the researches locally and internationally.
- 7- Improve the productivity of local breeds of Awasi sheep, Baladi goat, Baladi poultry, camel, and horses, and protect them.
- 8- Rehabilitate and build ability of the technical staff through internal and external courses that suits scientific development in livestock researches.
- 9- Raise awareness of livestock keepers about animal diseases and treatment methods.
- 10- Collaborate with local and international institutions to implement applied researches and research projects.
- 11- Train and rehabilitate animal production engineers, the veterinarians, and farmers on modern technologies in animal husbandry and welfare.

Active projects and researches at Al-Khanasry station for livestock rangeland researches:

1. Small Ruminants Investment & Graduating Households in Transition Project (IFAD).
2. Serological and Molecular Survey of Q fever in Camels in Jordan (Scientific Research Fund).
3. Willow trees as new forage resource in semi-arid zones (USAD)
4. Ziziphus trees as new forage resource and as biocontrol (USAD)
5. Improve the Livelihoods in Arid Areas Through Food Processing and Development of Protocols for In Vitro Propagation of the Caper Plant in Jordan (Scientific Research Fund).
6. Developing Effective Methods For Propagation Caper To Exploit It In The Development Of Rangeland In The Jordanian Badia (NARC)
7. Watershed Restoration in Badia Areas of Jordan (ICARDA)
8. Soil hydrology assessment at Al Khanasari Research Station (ICARDA)
9. Restoration of the degraded rangelands by means of long Lived soil seed

banks. PhD student from NARC. Majd Allouzi

10. Developing indicators for tipping points in rangelands under climate and land use change. PhD student

.11 Agricultural water demand under climate change. PhD student from NARC
. Israa Kharabsheh.

Alkhalidya station for Biosaline research

- 1) Prepare, implement and publish applied research, and studies related to environment, water, and saline lands.
- 2) Provide technical consultation and technical assistance for the farmers and who is concerned with water, agriculture and saline environment issues.
- 3) Facilitate researches carried out by public and private institutions like universities, and centers related to saline studies.
- 4) Train supervised and targeted manpower in developing the saline areas in the Jordanian environment.
- 5) Introduce growing saline-tolerant crops suitable to drought conditions, such as fodder or horticultural crops, and changing the dominant agricultural patterns.
- 6) Develop traditional farming, and introducing suitable and modern agricultural systems.
- 7) Improve the use of different irrigation system and improving water resources management.
- 8) Publish desalination technology, and the usage of saline water in agriculture.
- 9) Improve institutional work, enhancing the role of women, and diversifying sources of income in saline areas.
- 10) Encourage and training farmers especially cattle holders on producing biogas, as this technology produces energy through the biogas production unit in the station.

Operated projects in the station in 2023

- 1- Project of breeding national wheat. (with crop directorate)
- 2- Implement researches in the area of developing barley varieties that are highly productive and climate change tolerance. (with crop directorate)
- 3- Use of the plastic pipes for Miswak production from Arak tree (Total number of experiments 1, with crop directorate)
- 4- The local and introduced species of wheat responses to different irrigation system with fresh and saline water in comparison to rainfed water. (Total number of experiments 1, with crop directorate)
- 5- Produced organic bottles to use them in forest seedling production in Jordan (Total number of experiments 1, with crop directorate)
- 6- The effect of agricultural practices in irrigated cultivations on the soil characteristics and quality of groundwater in northern Badia in Jordan.

- 7- Evaluate sensitivity of varieties of tomato planted in Jordan to isolate tomato brown rugose fruit virus (TOBRFV).
- 8- Project of producing willow silage as a fodder for small and big ruminant using saline and treated water. (with livestock directorate)

Alkhalidiya Research Station for Saline Agriculture/ NARC

Location:

Alkhalidiya station is located in Mafraq governorate at a height of 597 meters above sea level. The average of rainfall rate is 140mm yearly, the climate is characterized by high temperature as it reaches 45 degrees in the summer.

Generally Alkhalidiya has Alkali soil with loam texture (clay, sand, and silt), and the pH level is 7.5.

The agriculture in the station depends on irrigation from ground wells at depth of 300m, the salinity of the water varies from 5.6 to 8 DTS respectively in winter and summer. As these conditions are similar to Jordan's Bedouin areas, including rangeland.

The staff station consist of a variety of distinct agricultural expertise of irrigation, soil science, plant protection, and climate change, and they are directly associated with the directorates at NARC.

The station has hydroponic, water desalination unit that produce 10 m³/hour, weather stations, a unit for mushroom cultivation training, and a small lab to test EC and pH level. Recently two ponds have been established with 4000 m³ capacity, for fish farming, and it will be ready in April 2024. The station employees can cooperate with farmers on their farms throughout Mafraq governorate.

Targets of the station:

Firstly: increasing the agricultural area in the Kingdom and exploiting natural resource, through:

- 1- Preparing, implementing and publishing applied research, and studies related to environment, water, and saline lands.
- 2- Providing technical consultation and technical assistance for the farmers and who is concerned with water, agriculture and saline environment issues.

- 3- Facilitating researches carried out by public and private institutions like universities, and centers related to saline studies.
- 4- Training supervised and targeted manpower in developing the saline areas in the Jordanian environment.
- 5- Introducing growing saline-tolerant crops suitable to drought conditions, such as fodder or horticultural crops, and changing the dominant agricultural patterns.
- 6- Increasing livestock production through increasing the agricultural production of fodder.

Secondly: preparing a database of information related to agricultural areas that suffer from saline stresses, and documenting it to serve target farmers and others interested.

Thirdly: coordinating with international, regional, and local entities to develop and grow saline areas.

Fourth: organizing meetings, seminars, and workshops related to saline agriculture aimed at development.

- Areas of work and interest of the station:

- 1- Developing, protecting, and growing the natural resources.
- 2- Salinity and environmental pollution.
- 3- Studying the ecosystem in the saline areas and developing them.
- 4- Managing and maintaining natural rangeland.
- 5- Studying and producing fodder crops under saline conditions.
- 6- Developing traditional farming, and introducing suitable and modern agricultural systems.
- 7- Maintaining the wildlife and biodiversity in saline areas.
- 8- Improving the available water resources, and increasing the water harvest quantities, in addition to improving technologies and exploiting them.
- 9- Improving the use of different irrigation system and improving water resources management.

- 10- Publishing desalination technology, and the usage of saline water in agriculture.

11- Encouraging and training farmers especially cattle holders on producing biogas, as this technology produces energy through the biogas production unit in the station.

12- Improving institutional work, enhancing the role of women, and diversifying sources of income in saline areas.