



WORKSHOP ON DEVELOPMENT OF NATIONAL GENE BANKS IN OIC MEMBER STATES



National Gene Bank of Egypt

Developed by

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5-7 July 2020, Dubai, UAE

Panel II: Country Experiences on Gene Bank Development and International Collaboration

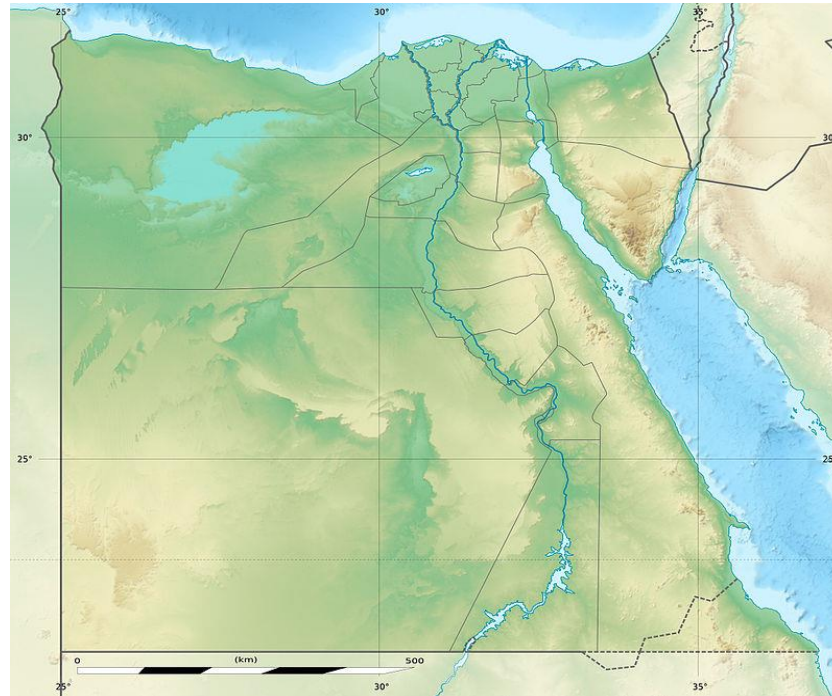
Egypt



Egypt's total area is 1 million sq. km., of which only 8% of the total area is populated by 100 million people

Egypt

“Egypt is the gift of the Nile”

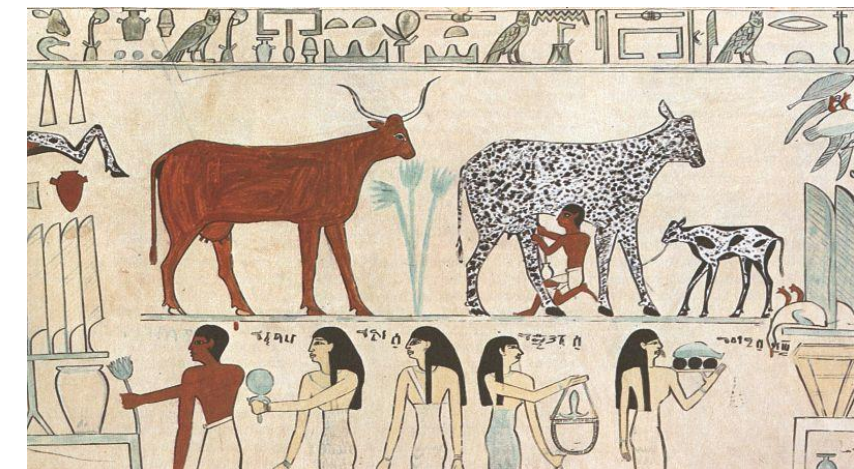
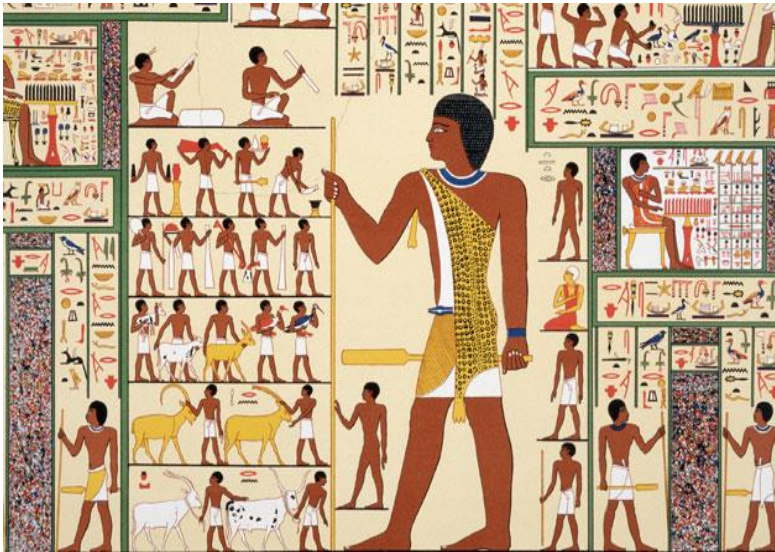


Egyptians mainly live around Nile River Valley and Nile Delta

Many regions are rich in wild plants & landraces, where 2094 plant species are identified (61 endemic & 4 endangered)

5-7 July 2020, Dubai, UAE

Human-Animal-Plant-Relationship



National Gene Bank of Egypt



Gene Bank in brief:

- Affiliation:
Ministry of Agriculture and Land Reclamation
- Foundation: 2004
- Special collections:
Phoenix dactylifera & traditional cultivars

NGB Mandate:

- The NGB has the mandate to explore, collect and conserve agricultural genetic resources to protect them from erosion and extinction, and making them accessible for sustainable utilization by public and private institutions as well as farmers
- The NGB was assigned as the focal point in Egypt for the FAO International Treaty for Plant Genetic Resources for Food and Agriculture (IT-PGRFA)

Objectives:

- Plan and conduct exploration missions to survey the genetic resources in their native habitat
- Collection, identification, characterization, evaluation and conservation of national genetic resources of plants, animals and agricultural microorganisms.
- Strengthen the international cooperation in the field of genetic resources

Objectives:

- Facilitate the exchange of GR and related information in compliance with the IT-PGRFA
- Document the information generated for each accession on the NGB database
- Enhance public awareness on the importance of maintaining genetic resources and promoting in-situ and on-farm conservation programs.

Programs:

- Coordination with other entities working on genetic conservation of biodiversity in Egypt
- Conservation of genetic resources of wild and economic varieties, with special emphasis on crops and fodder plants, poultry and farm animals

Programs:

- Conservation of national genetic resources of microorganisms using appropriate media and techniques for the various groups concerned
- Investigation on innovative technologies for conserving genetic resources, and providing other centres with genetic materials required for the production of improved races and cultivars

NGB Departments:

- Animal Genetic Resources
- Field Crops
- Horticultural Crops
- Agricultural-related microorganisms

NGB Specialized Sections:

- Genetic Resources Conservation Section



NGB Specialized Sections:

- **Seed Viability Testing and Regeneration Section**



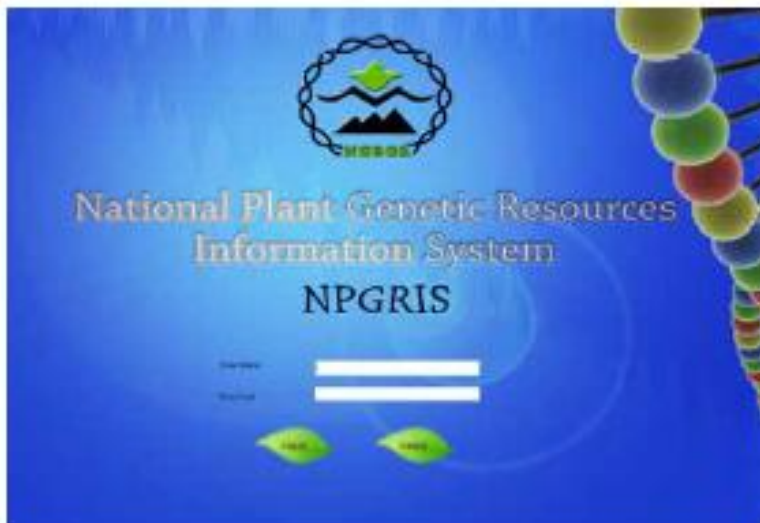
NGB Specialized Sections:

- Genetic Resources Evaluation Section



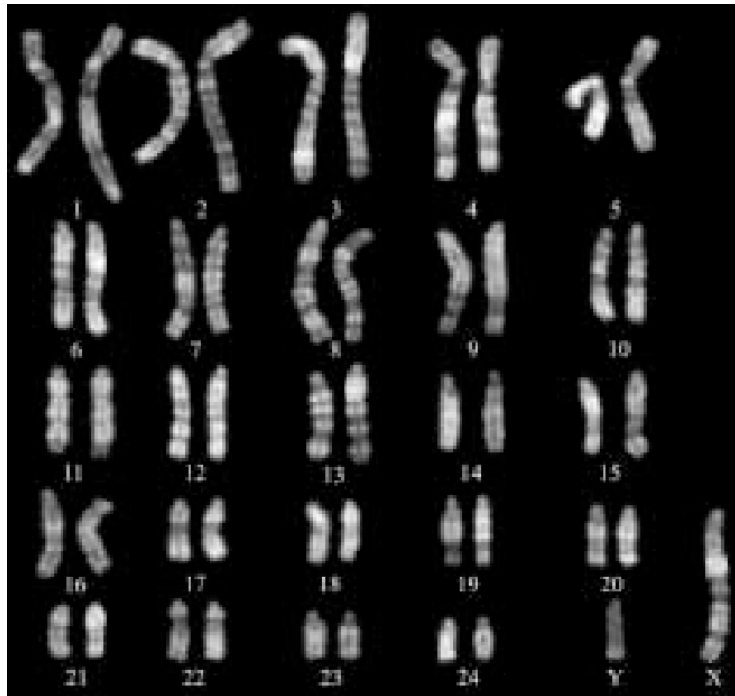
NGB Specialized Sections:

- Documentation and Information Section



NGB Laboratories:

- Cytogenetics Lab



Egyptian Buffalo

NGB Laboratories:

- Cytogenetics Lab



Wheat



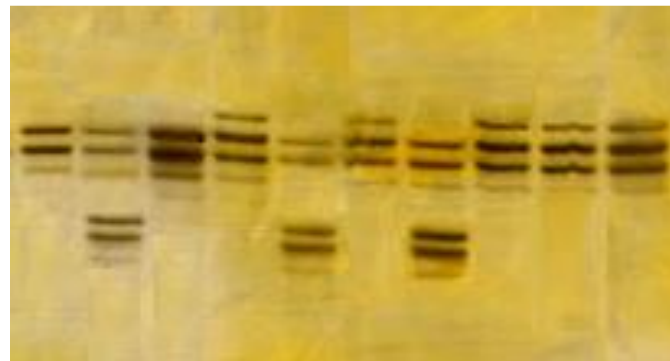
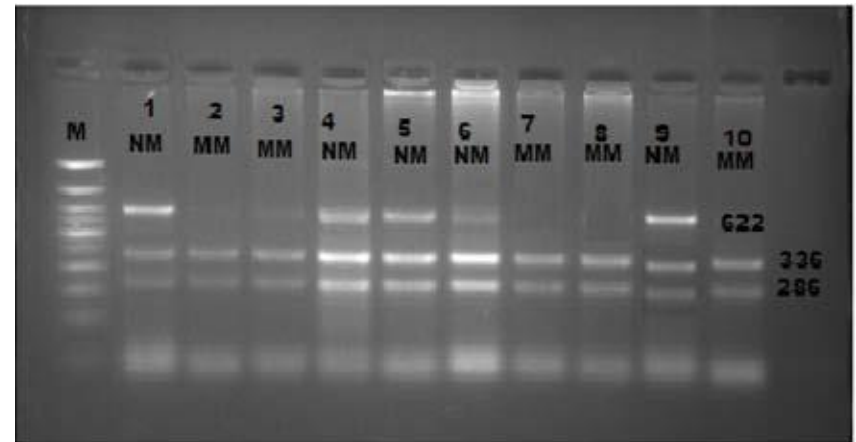
NGB Laboratories:

- Tissue Culture Lab



NGB Laboratories:

- **Molecular Genetics Lab**



NGB Laboratories:

- Chemical Analysis Lab



NGB Laboratories:

- Microbiology Lab



NGB Facilities:

- Farms
- Green Houses
- Botanical Gardens
- Laboratories
- Herbarium (365 seed samples of 84 species)
- Storage rooms at different temperatures

National Cooperation

Other institutions involved in animal and plant genetic resources ex-situ conservation activities:

- Egyptian universities: Faculty of Agriculture (17) and Faculty of Science (15)
- Agriculture Research Center (many institutes)
- National Research Center (NRC)
- Desert Research Center (DRC)

Faculty of Agriculture

Cairo University Research Park (CURP)



International Cooperation

MED-O-MED NETWORK:

It was created in 2009 by the Spanish Agency for International Development Cooperation (AECID)

It serves as an instrument of cooperation for sustainable development in the Mediterranean basin, fostering the encounter and peaceful coexistence among cultures

Since then, many initiatives for the recovery of the natural and cultural heritage have been promoted and developed in several countries

MED-O-MED NETWORK:

The network serves as an engine for the promotion of an inclusive and sustainable development, while holding a human rights, diversity & gender approach

The Med-O-Med platform has highly contributed to the exchange of experiences, training and raising awareness initiatives

MED-O-MED NETWORK:

As a result of this work, four networks and natural heritage inventories for the Med-O-Med area have been constituted:

- Botanical gardens
- Centers of plant diversity
- Cultural landscapes
- Sustainable initiatives

Botanical gardens:

No.	Name of Botanical Garden	Present Area (Feddan)*	Date of Estab.	No. of F.	No. of G.	No. of Species
1	Ain Shams Univ., Fac. of Sci.	3	1 953	114	750	1 200
2	Alex. Univ. Fac. of Sci.	2	1 942			500
3	Cairo Univ., Fac. of Agr.	15	1 947	31	64	80
4	Orman B.G., Giza	28	1 873	90	520	600
5	Zohryia, Gezera, Giza	8	1 868	57	143	442
6	Quba Palace, Cairo	124	1 960	72		551
7	Zoo Garden, Giza	80	1 890	68	208	342
8	Manial Balace, Giza			61	150	239
9	Agriculture Museum, Dokky, Giza		1 937	32	73	94
10	Azbakyia Garden	10	1 867	41	83	800
11	Antoniadis Garden, Alex.	45	1 860			62
12	Al-Nozha Garden, Alex.		300 BC.			
13	Rose Garden, Alex.	5	1928			
14	Aswan Garden	17	1928	59	97	371

Botanical gardens:

Aswan Botanical Garden



Centers of plant diversity:

[Wadi El Natroun, EGYPT](#)

[Qattara Depression: Siwa, Qara and Moghra Oases, EGYPT](#)

[Kurkur and Dungul Oases, EGYPT](#)

[Kharga Oasis, EGYPT](#)

[Gebel Qatrani and the ancient quarries, EGYPT](#)

[Fayoum Oasis and Lake Qaroun, EGYPT](#)

[Farafra oasis and The White Desert, EGYPT](#)

[Egypt – Zohria Trial Gardens](#)

[Egypt – Saff Botanic Garden](#)

[Egypt – Sabahia Horticulture Research Station](#)

[Egypt – Qubba Botanic Garden](#)

[Egypt – Orman Botanic Garden](#)

[Egypt – National Genebank](#)

[Egypt – Maahad fouad el Awwal lEssahara](#)

[Egypt – Egyptian Natural History Museum](#)

[Egypt – Captive Breeding Center](#)

[Egypt – Botanic Garden and Botany Department of
University of Alexandria](#)

[Egypt – Aswan Botanic Garden](#)

[Egypt – Antioniades Public Park](#)

[Egypt – Al-Nozha Garden](#)

[Dakhla Oasis, EGYPT](#)

[Bahariya Oasis, EGYPT](#)

ONGOING RESEARCH PROJECTS

Research Projects:

Project Title	Finance	Duration
On-farm conservation and in vitro International Treaty for Plant 2009-2011 preservation of Citrus local varieties and sustainable utilization in Egypt	International Treaty for PlantGenetic Resources for Food and Agriculture (IT-PGRFA)	2009–2011
National faba bean Rhizobium Germplasm collection, genotyping and its potential use as inoculants	Science and Technology Development fund (STDF)	2010–2012
Characterization, preservation and studying the phytochemistry and antibacterial activity of pomegranate germplasm	Science and Technology Development fund (STDF)	2010–2012
Sustainable utilization of agriculture biodiversity to develop the local communities in the western desert	Agricultural Research and Development Fund (ARDF)	2010–2013

Egyptian Livestock



Egyptian Livestock

Common challenges facing development of farm animals in Egypt:

- Absence of confident farm records
- Low genetic potential for production
- Using animals in agricultural works
- Poor level of nutrition and health care
- Limited reproductive performance
- AI is not common
- Not subjected to deep genomic analysis

Thank You

