National Genebank System in Egypt

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Introduction

Location of Egypt

- Northeastern Corner of Africa
- Western Extension of Asia (The Sinai Peninsula)
- Borders Libya to the West, Sudan to the South
Introduction

1. Egypt’s total area is about 1,002,000 sq. km., of which, only 4 % of the total area is populated;
2. Many regions are rich in wild plants and landraces, where 2094 plant species are identified of which 61 are endemic and 4 are endangered;
3. Currently, the Egyptian agriculture is facing many challenges:
   - Limited cultivated area and water supply;
   - Desertification, deforestation, erosion, climate changes and overuse of pesticides and other agrochemicals;
   - New uniform crop varieties have replaced many of local varieties and landraces leading to great losses of useful genes resistant to many biotic and abiotic stresses.
Management of PGR in Egypt
In-Situ Conservation of PGR

1. Conservation in natural protectorates managed by the Ministry of State for Environmental Affairs according to the law No. 102 of 1983;
2. In 2010, the number of natural protectorates reached 29, of which 14 protectorates include PGR.
3. The total area of all natural protectorates represent about 10% of Egypt’s total area.
Ex-Situ Conservation of PGR

1. National Genebank and Genetic Resources (NGBGR).
NGBGR Mandate

- The NGBGR has the mandate of exploring, collecting and conserving agricultural genetic resources to protect them from erosion and extinction, and making them available for sustainable utilization to public and private institutions as well as to farmers.

- The NGBGR was assigned as the focal point in Egypt for the FAO International Treaty for Plant Genetic Resources for Food and Agriculture (IT-PGRFA).
NGBGR Objectives

➢ Plan and conduct exploration missions to survey the genetic resources in their native habitat;

➢ Collection, Conservation, Identification, Characterization and Evaluation of National Collections of Plant, Animal and Agricultural Microorganism Genetic Resources;

➢ Strengthen the international cooperation in the field of GR;
- Facilitate the exchange of GR and related information under a Material Transfer Agreement in compliance with the IT-PGRFA;
- Document all the information generated for each accession on the NGBGR database;
- Enhance public awareness on the importance of maintaining genetic resources and promoting in situ and on-farm conservation.
NGBGR Departments

- Field Crops;
- Horticultural Crops;
- Animal Genetic Resources;
- Agricultural-related micro-organisms.
NGBGR sections

• Genetic resources conservation section;
NGBGR sections

• Seed viability testing and regeneration section;
NGBGR sections

- Genetic resources evaluation section;
NGBGR sections

- Documentation and information section;

*Genebank* Data information System in Egypt
NGBGR labs

Cytogenetics lab
Wheat
Faba bean
NGBGR labs

Tissue culture lab
NGBGR labs
Molecular genetics lab

ISSR

SSR
NGBGR labs

Chemical Analysis Lab
NGBGR labs

Microbiology Lab
NGBGR facilities

Farm
NGBGR facilities

Green Houses
Botanical Garden
Collection missions
Hyphaene thebaica L. (Doum palm)
## Current Project

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Source of Fund</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-farm conservation and in vitro preservation of Citrus local varieties and sustainable utilization in Egypt.</td>
<td>International Treaty for Plant Genetic Resources for Food and Agriculture (IT-PGRFA)</td>
<td>2009 - 2011</td>
</tr>
<tr>
<td>Characterization, preservation and studying the phytochemistry and antibacterial activity of pomegranate germplasm.</td>
<td>Science and Technology Development fund (STDF)</td>
<td>2010 – 2012</td>
</tr>
<tr>
<td>Sustainable utilization of agriculture biodiversity to develop the local communities in the western desert.</td>
<td>Agricultural Research and Development Fund (ARDF)</td>
<td>2010 - 2013</td>
</tr>
</tbody>
</table>
Other Organizations involved directly in plant genetic resources *ex-situ* conservation activities:

- Agriculture Research Center Research Institutions;
- Desert Research Center (DRC);
- National Research Center (NRC);
- Faculties of agriculture (17) and science (15) of different Egyptian universities.
## 2. Botanical Gardens

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Botanical Garden</th>
<th>Present Area (Feddan)</th>
<th>Date of Establishment</th>
<th>No. of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alex. Univ. Fac. of Sci.</td>
<td>2</td>
<td>1942</td>
<td>500</td>
</tr>
<tr>
<td>2</td>
<td>Aswan Garden</td>
<td>17</td>
<td>1928</td>
<td>371</td>
</tr>
<tr>
<td>3</td>
<td>El Saff Botanic Garden</td>
<td>17</td>
<td>1893</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Orman Botanic Garden, Giza</td>
<td>28</td>
<td>1873</td>
<td>114</td>
</tr>
<tr>
<td>5</td>
<td>Qubba Palace, Cairo</td>
<td>124</td>
<td>1960</td>
<td>350</td>
</tr>
<tr>
<td>6</td>
<td>Sabahia Horticultural Research Station</td>
<td>-</td>
<td>1958</td>
<td>-</td>
</tr>
</tbody>
</table>

* Feddan = 4200 m²
Aswan Botanic Garden
THANK YOU