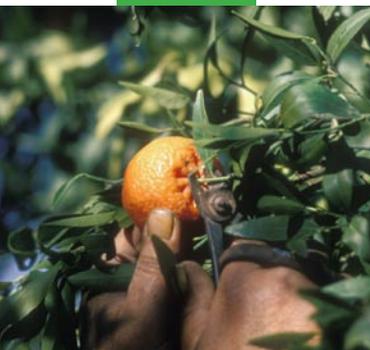


# Improving local citrus varieties to meet consumer taste



Egypt, the center of origin of many citrus varieties, is one of the world's largest producers of oranges, and citrus is its number one export crop. Yet, in spite of its importance, there has been a major loss of diversity in the area's citrus orchards.

Citrus production is very business oriented and, as citrus farmers have followed market demand, they have steadily adopted newly introduced commercial varieties that conform to consumer taste and, in doing so, have abandoned their traditional varieties. It is not just geneticists who are concerned about the loss. Farmers also realize that they benefit from locally adapted varieties that do not require expensive input packages of fertilizers and pesticides.

The Treaty Benefit-sharing Fund Project set up collecting missions guided by a taxonomist partnering with local farmers who identified and helped collect samples of local varieties of orange, mandarin, lime, lemon, grapefruit and other citrus at farms in four areas of Egypt. The project goes beyond merely saving the genetic diversity. It wants to re-introduce these varieties as viable crops because, in this case, in situ conservation has the potential to improve the livelihood of resource-poor farmers.

**The National Gene Bank and Genetic Resources (NGBGR)** led the collecting missions with the overall goal of monitoring the genetic

diversity of citrus in Egypt. It followed up with characterizing, evaluating and micro-propagating the accessions of the collecting missions to ensure disease free germplasm and then mass produced them and made them available to farmers.

## Farmer appreciates support in maintaining traditional citrus

A local farmer who participated in the collecting mission of the project and who grows both local and new improved varieties of citrus said he was happy to farm the local varieties but he had always worried about whether they would do well enough at the market to provide for his family. If there is no market for the local varieties, he cannot do it. He now works with the NGBGR which supports him by providing improved seedlings and training for increasing production.

**By improving the selected samples** in a way that makes them more attractive to both local and export markets, and returning them to the field, the farmers will have fewer expenses because of less need for inputs, as well as potential for increased production, new marketing opportunities and, thus, improved income. NGBGR does not suggest abandoning the new varieties. For example, if an agronomic package of modern varieties that requires fertilizers and pesticides is adopted by farmers, it could increase their income and, as a result, they would be able to maintain their preferred traditional varieties on smaller land areas.

## *In just one year ...*

**Project objective I:** Enhance and document citrus agro-biodiversity, explore and collect local varieties, undertake on-farm conservation of citrus germplasm.

The project has:

- ◆ conducted 7 survey missions in four areas of Egypt,
- ◆ identified and labeled 27 accessions: 13 mandarin, 13 lime and lemon, 3 grapefruit, 6 pummelo, 1 kumquat, 1 citron,
- ◆ collected leaf samples for DNA testing including unidentified local or exotic varieties and known varieties from different parts of Egypt,
- ◆ propagated and grown 5 000 seedlings of 6 varieties in NGBGR greenhouse.

**Project objective II:** Characterize, evaluate, utilize and document citrus genetic resources, and conserve, evaluate, utilize and document citrus germplasm, and cyro-conserve selected germplasm.

The project has:

- ◆ morphologically characterized 15 orange and 13 mandarin varieties,
- ◆ examined 7 lime and 6 lemon varieties, and 9 accessions of grapefruit, shaddock and kumquat,
- ◆ begun development of new in vitro conservation and cryopreservation protocols,
- ◆ determined pollen viability of 30 leaf samples of citrus cultivars, and extracted DNA for molecular analysis.

**Project objective III:** Establish mass production of citrus germplasm and subject citrus germplasm and its information to exchange under the Treaty Multilateral System (MLS).

The project has:

- ◆ collected and then germinated, grown and disseminated seeds in the NGBGR greenhouse,
- ◆ distributed 100 seedlings of rootstock to small farmers in Siwa oasis.

## *Still to come...*

- ◆ On-farm evaluation of local varieties that considers agro-ecological factors.
- ◆ Documentation of collected citrus germplasm.
- ◆ Uploading of MTA of citrus on the NGBGR Web site.



### **FOR MORE INFORMATION CONTACT:**

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