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Mansour K.M.

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K.M. MANSOUR
HORTICULTURAL RESEARCH INSTITUTE
AGRICULTURAL RESEARCH CENTER
MINISTRY OF AGRICULTURE
EGYPT

SUMMARY - Among the five underutilized fruits (fig, pomegranate, Barbary fig, persimmon and loquat), the first three are common in Egypt. Persimmon and loquat are less common and are known to few people. However, there are indications that their acreage and production are constantly increasing. Almost all the varieties of these fruits are local ones with local names, except in the case of kaki and loquat.

Key words: Egypt, fig, pomegranate, barbary fig, persimmon, loquat.

RESUME *- En Egypte, la culture du figuier est bien répandue surtout dans les zones côtières nord-ouest. A côté des variétés locales, certaines variétés étrangères sont utilisées. Le grenadier est cultivé en haute Egypte (Assiut). Les variétés utilisées sont toutes locales. Le néflier du Japon est, également, bien connu et sa culture est en extension continue ces dernières années. La superficie occupée par le kaki ne cesse d'augmenter bien que le fruit ne soit pas très commun. Le figuier de Barbarie, quoique assez bien connu, ne se rencontre pas en plantations régulières mais plutôt comme brise-vent ou comme plante de clôture.*

Mots-clés *: Egypte, figuier, figuier de Barbarie, grenadier, kaki, néflier du Japon, variétés.*

Introduction

Egypt is well known for its excellent climate and fertile land. There is also adequate water for irrigation and wide variety of soils, as well as a dynamic human resource. These favorable characteristics permit the cultivation of almost all species of fruit trees known to the world, except perhaps those that have high chilling requirements.

Underutilized fruits differ from one country to another. A species which may be considered exotic in one country may be quite common in another. It is perhaps better to define underutilized fruits as those generally having less economic importance than the more popular ones, and also those usually grown in limited or very limited areas and are familiar only to very few people.

Of the fruits discussed in this paper (fig, pomegranate, persimmon, loquat and Barbary fig). Fig, pomegranate and Barbary fig are quite common in Egypt and are known to all classes of people. Persimmon and loquat, on the other hand, are only known to few people. The data on area and production (1993) given in Table 1 shows this in a clear way.

Table 1. Area in ha and production in tons of figs, pomegranates, Barbary figs, persimmon and loquat in Egypt (1993)

Fruit crop	Area (ha)	Production (tons)
Fig	12 293	160 000
Pomegranate	1 974	33 700
Barbary figs	603	8 740
Persimmon	238	2 825
Loquat	32	440

Figs *(Ficus carica)*

Figs in Egypt are mostly grown in the north coast of western desert which extends from the west of Alexandria to the Mersa Matrouh. It is also cultivated in Barshoum (Kaloubia Governorate), Zowere (Monofia Governorate), Oleela (Dakahlia Governorate), Fayoum, Quena and Aswan Governorates.

In Egypt, figs are grown on a commercial scale, and are generally propagated by cuttings taken from vigorous mother plants with high yield and resistant to diseases. Cuttings are taken from mature branches older than one year old. This is done towards the end of February and the beginning of March.

Cuttings are planted directly to their permanent places in the at 5 x 5 m or 3 x 3 m spacings according to the type of the soil. They may also be planted in nurseries then transplanted to the orchard after a year. Fig plants can also be propagated by suckers, root cuttings, layering or grafting.

Plants are drip irrigated in new lands, flooded in old lands (valley) and rain-fed in the northern coast areas. Average yield is about 30-40 kg/tree.

Local varieties: 'Sultani', 'Aswany', 'Abboudy', 'Adsy', 'Kahramany'.
Introduced varieties: 'Mission', 'Kadota', 'Brunswick', 'Vazanata', 'Conadria'.

Fig fruits are, to a large extent, eaten fresh, but they may be dried. Varieties most suitable for drying are: Black mission, Kaddota, Conadria, Kahramany, Aswany and Abboudy.

Pomegranate *(Punica granatum)*

Area and production figures for 1993 are given in Table 1. Pomegranates are cultivated in Upper Egypt particularly in Assuit Governorate. Fruit color yellow white to deep dark red.

Trees are propagated by seed, cuttings, grafting, layering or sucker. The most common method, however, is the propagation by 25-30 cm long hardwood cuttings. These are usually planted in the nurseries around the end of February and then

transplanted to the permanent field after one year.The average yield of a fully grown tree (8-15 years) is 200 fruits.

Varieties: 'Araby', 'Manfalouty', 'Banati', 'Hegazy', 'Baladi', 'Wardi', 'Yellow', 'Black' and 'Nab El Gamal'.

Uses: Seeds are eaten fresh. Juice is also widely used.

Tannins are extracted from the skin. Likewise a dye is taken from the flowers. Fruits are found at the market from July till October.

Barbary fig *(Opuntia ficus-indica)*

This fruit is not cultivated as a regular commercial crop, but rather found as fences and/or wind breaks. Since plants tolerate to drought, they are usually planted in sandy soils.

Fruits are born on thorny modified stems which appear as large thick prickly leaves. They contain a large number of small hard seeds embedded in the flesh. Fruits have a high nutritive value and are useful as a remedy for constipation. The crop appears on the market in July and August. Plants are propagated by portions of the large leaf-like stem.

There are no definite varieties. There is, however, a thornless cultivar which may be used as fodder for farm animals.

Persimmon *(Diospyros kaki)*

Persimmon trees grow well in Egypt, but the fruits are still not very common in the country, and in 1993 the total average was 560 feddans (235 ha). There has been, however, a constant increase in the kaki plantations for over the last five years. This is shown in the table below.

Kaki trees can be grown in different types of soils, however, for commercial production they perform best on clayey and lightly clayey soil possessing a good drainage with a pH varying between 6 and 7. Trees are particularly sensitive to salinity, and it is not advisable to grow them in newly reclaimed lands.

Table 2. Area and production of Kaki in Egypt[†]

Year	1989	1990	1991	1992	1993
Area (ha)	69.7	160	194	196	238
Production (tons)	625	1631	1932	2351	2825

[†] General Admin. for Agric. Statistics, M.O.A., Egypt 1993.

Kaki plants are propagated by grafting either on 'Lotus' or 'Virginiana' stocks. The latter is the most common stock used in Egypt. Trees are planted at the orchard with a spacing of 5 x 5 m. They are usually trained either to the center leader system or to the open center (vase) system. In Egypt, the vase system is more common.

The trees begin to flower after 3 years from transplanting to the orchard and reach full production after 8-10 years. The harvest period ranges from October to December, according to the cultivar. As all the varieties grown in Egypt belong to the astringent type, their fruits need certain post-harvest treatments to remove the astringency present in them.

Fruits are harvested when they reach their full size, and after about half of the fruit is coloured. After harvest, they are treated by one of the following methods to remove the astringent tannins:

(i) Fruits are packed in carton boxes and the upper layer is sprayed with ethyl alcohol (35%). Boxes are then lidded and stored for 10 days until the astringency disappears. This is the best method used for ripening kaki fruits.

(ii) Fruits are put in rooms at 20-25°C in which they are exposed to CO_2 (90-95%) for 24 hours. They are removed after treatment and astringency disappears after 3-4 days.

Kaki trees need mild summers. This makes Egypt well suited for the large scale cultivation of this fruit and also for its production specially that there are no large areas planted with kaki trees in the Mediterranean Basin except in Italy and a smaller area in Israel.

The strategy for expanding the production of kaki in Egypt is as follows:

(i) Importing and evaluating varieties, suitable of the Egyptian climate particularly the non-astringent cultivars.

(ii) Production of more grafted transplants from varieties presently grown in the country and encourage growers to cultivate them.

The most important varieties grown in Egypt are: 'Costata', 'Fuyu', 'Hachiya', 'Maru', 'Ormond', 'Tampan', 'Tanenashi', 'Triumph', 'Nachenutan' and 'Hayakume'.

Loquat *(Eriobotrya japonica)*

In 1993, the acreage cultivated was about 80 feddans (33 ha), and the production about 450 tons. Loquat is not widely known in Egypt. Trees are propagated either by seeds and by grafting on loquat or quince rootstocks.

Varieties grown in Egypt are: 'Early Suckary', 'Large round', 'Advance', 'Premier' and 'Late Victora'.

Fruits appear on the market in March and April. It may be noted here that the acreage of loquat more than doubled from 1989 (30 feddans) to 1993 (77 feddans), and the production increased from 200 tons in 1989 to 440 tons in 1993.

The most important pests and diseases that infest the above mentioned under-utilized fruits are:

(i) Figs:

- Diseases: Souring, mosaic, lichens, die back.
- Pests: Lonchaea virescens, Ceratitis capitata, Aceria ficus, Hesperophanes griseus, Asterolecanium pustulans, Ceroplastes rusci, Paropta paradoxa.

(ii) Pomegranate:

- Diseases: Scoty mold (secondary infection).
- Pests: Virachola livia, Zeuzera pyrina, Siphoninus granati, Aphis durantae, Aceria granati, Maconellicoccus hirsutus.

(iii) Barbary figs:

- Pests: Cactus scale, Diaspic cacti.

(iv) Kaki:

- Pests: Scolytus amygdali, Ceratitis capitata, Maconellicoccus hirsutus.

(v) Loquat:

- Pests: Scolytus amygdali, Ceratitis capitata, Aspidiotus cydoniae, Maconellicoccus hirsutus.

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