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Citrus Varieties in Egypt: An Impression

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ABSTRACT

Citrus industry is very important for Egyptian economy, citrus fruit is the leading exportable agricultural product of Egypt and is an important source of national income. Citrus cultivation area represents about 29% of the total fruit area, there are different citrus varieties cultivated in Egypt. This work aims to provide a short description of main citrus varieties cultivated in Egypt through providing information about fruit size, maturity periods, seediness and productivity average and main cultivated areas for each variety. However Washington Navel and Valencia orange are the main varieties followed by Mandarins group varieties, lemon, Balady orange, while other varieties like Grapefruit, Sour orange and Kumquat are cultivated in small areas.

Key words: Citrus industry, navel orange, valencia orange, mandarins group, citrus varieties

INTRODUCTION

Citrus is a genus from Rutaceae family, subfamily *Aurantoideae*¹ and there are several species in this genus; but there are major species such as sweet orange (*Citrus sinensis* (L.) Osbeck), mandarins group, grapefruits (*Citrus paradisi*), lime (*Citrus aurantifolia*) and sour orange (*Citrus aurantium* L.)². Citrus is a diploid genus origin in tropical, subtropical, but now it is produced mainly in arid and semiarid regions. Citrus species are among the most widely grown fruit crops in the world and have a huge market all over the world³.

Citrus cultivated in Egypt since ancient time and there are some species cultivated in different areas like Balady orange, Sweet orange (Sukkari), Blood oranges. Nowadays, citrus cultivation area has increased rapidly, this area reached to (204095 ha) representing about 29% of the total fruit area (700854 ha), while, the total produced area reached about 175734 ha, produce 4.27 million metric tons approximately, from which around 1.34 million tons are exported⁴, therefore, Egypt ranking as the sixth biggest producer of orange throughout the world after Brazil, China, US, EU and Mexico⁵. Citrus fruit is the leading exportable agricultural commodity of Egypt and is an important source of foreign exchange, however, the total yield of citrus (4.27 million tons) is very low compared to the world average. There are various reasons for decrease citrus production in Egypt and some main factors influenced consistent bearing and quality citrus production⁶, the citrus orchards size varies from less than 1-5 ha in Delta and Old Valley regions, however in new reclaimed land orchards area are widely about 50 ha and more, it is account 31572 ha produce 706826 t represented for 53% of the

country production and these orchards are usually technologically advanced in farm management. The purpose of this work was to provide an explanation about main citrus varieties cultivated in Egypt as the total cultivated area, productivity and maturity period for each variety.

CITRUS VARIETIES

Citrus varieties in Egypt: There are various varieties of citrus cultivated in Egypt like orange, mandarin, lime, lemon, grapefruit, sour orange, kumquat, shadouk, pummelo and citron, but the main varieties are Navel orange and Valencia orange followed by Mandarin varieties, lemon, Balady orange, although other species, such as Grapefruit, sour orange and Kumquat are cultivated in small areas (Table 1).

Orange varieties: Orange is the major citrus species crop in Egypt, while the cultivated area reaches to (133.236) hectares representing about 69% of the total cultivated citrus area, this area produces 2.9 million tons approximately, representative about 69% of the total citrus production and represent around 30% of the total Egyptian fruit production exports. Valencia orange is the leading citrus cultivar produced in the new land represent the second rank of Egyptian citrus exportation after Navel orange fruits, valencia orange cultivated area reach 53090 ha represent 26% of total citrus cultivated area, fruitful area reach to 43000 ha produced 1165444 t represent 27.27% of the total citrus production in the country⁴.

Several orange varieties are produced in Egypt, while, Navel orange considered the main variety produced in Egypt, it shares more than 39% in the country's citriculture, total cultivated area reach to 68851 ha, total production 1489536 t from 60659 ha fruitful area.

Washington navel orange: It is main cultivar navel orange in Egypt and it is the leading exportable fruit commodity of Egypt. It is the best-known navel orange, also, there are other navel orange cultivars like (New Hall, Navelina, Navelate, Lane Late, Cara Cara, Fisher, Fukumoto and Leng). The main production areas are Behera governorate (21030 ha), Qalyoubia governorate (11780 ha), Ismailia governorate about 7591 ha, Sharkia governorate (6877 ha), Menoufia governorate about 6426 ha and Nubaria district (5938 ha). Fruit color break start in September as shown in Fig. 1 and fruit mature from mid of October to March approximately, the fruit is seedless, medium to large sized, with relatively rough skin in some cultivar and soft skin in others, it has sweet flavor, fruit taste is luxurious, rind is orange with dark pulp.



Fig. 1: Field Image for color break in W. Navel Orange in Egypt 2018

Table 1: Citrus varieties in Egypt, cultivating area, fruitful area and total production in Egypt, 2016

Variety common name	Scientific name	Total area (ha)	Fruitful area (ha)	Total production (t)
Washington navel orange	<i>Citrus sinensis</i>	68851 ha	60659	1489536
Valencia orange	<i>Citrus sinensis</i>	53100 ha	43100 ha	1165444
Balady grafting oranges	<i>Citrus sinensis</i>	8980	6238 ha	137805
Balady seeded orange	<i>Citrus sinensis</i>	4840 ha	3350 ha	75862
Sweet orange Sukkari	<i>Citrus sinensis</i>	3440 ha	2732 ha	64538
Blood orange	<i>Citrus sinensis</i>	299 ha	215 ha	4284
Khalily orange	<i>Citrus sinensis</i>	52 ha	52 ha	1072
Yafawy oranges	<i>Citrus sinensis</i>	31.5 ha	23.5 ha	477
Youssief soliman orange	<i>Citrus sinensis</i>	11.30 ha	2.1 ha	42
Mandarins group	<i>Citrus</i> spp.	47646 ha	44553 ha	982790
Acid lime	<i>Citrus aurantifolia</i>	16324 ha	14461 ha	345929
Sweet lime	<i>Citrus limettoides</i>	229	160	709
Rough lime	<i>Citrus limonda</i>	96.20 ha	81.1 ha	1488
Sour oranges	<i>Citrus aurantium</i> L.	168.4 ha	116.8 ha	1225
Grapefruit	<i>Citrus paradisi</i>	128.1 ha	109.2 ha	1609

*Modified from Annual Reports of Statistical Institute and Agricultural Economic Research⁴

Valencia orange CV: Valencia orange rank the second position after Navel orange, since it's cultivated area reached 53100 ha, this area represents about 26% of the total citrus area, the fruiting area reach to 43100 ha produced 1165444 mt⁴. Nubaria district considered the largest production area for valencia orange in Egypt with cultivated area (19967 ha) followed by Sharkia and Ismailia governorates (9484 and 8954 ha) and Behera governorate with 5302 ha cultivated area (Table 1). Under Egyptian conditions Valencia orange fruit have long ripening season from March to July (Table 2). Fruit pulp is juicy, it is large to medium size, with round to oval shape, the skin is soft, easily peel, the seeds are small, rind and flesh is orange (Fig. 2) and the fruit taste is good.

- There are other varieties like Baladi Orange (seeded and budding trees), Blood orange, Khalily orange and Sweet Orange (Sukkari) but in small areas compared to Navel and Valencia orange

Mandarins group: Mandarins group is consisting of several intergeneric species and interspecific hybrids such as

mandarin, Satsuma, clementine, willowleaf, tangors and tangelos. Mandarins group is the second larger cultivated group after sweet orange, there are different mandarins varieties cultivated in Egypt and the total cultivated area reach to 47646 ha. Meanwhile the fruitful area about (44553 ha) produced 982790 t and there are three main areas for mandarin cultivation in Egypt, first one is Nubaria district (20363 ha), then North Sinai (3386 ha) and Ismailia (3006 ha), the fruit mature from December to March approximately (Table 2).

- **Satsuma mandarin (*Citrus unshiu*):** Satsuma fruit is seedless medium to small sized fruits and easily peel with loose skin and has moderately sweet flavor, rind and flesh are orange. It is one of early ripen fruits about November and December
- **Clementine mandarin (*Citrus clementina*):** Clementine originated and grown in North Africa therefore called Algerian Tangerine. Fruit ripens at late fall from December till February. The fruit is peeled easily, juicy with sweet rich flavor and has excellent taste and is smooth, with

Table 2: Ripening fruits dates of the most important citrus varieties and Fortunella japonica in Egypt

Variety	January	February	March	April	May	Jun	July	August	September	October	November	December
W. Navel orange												
Valencia orange												
Balady oranges												
Sweet orange Sukkari												
Blood orange												
Mandarins group												
Egyptian lime												
Eureka lemon												
Grapefruit												
Kumquat												

Modified from Citrus Department Leaflet, Horticulture Research Institute⁸

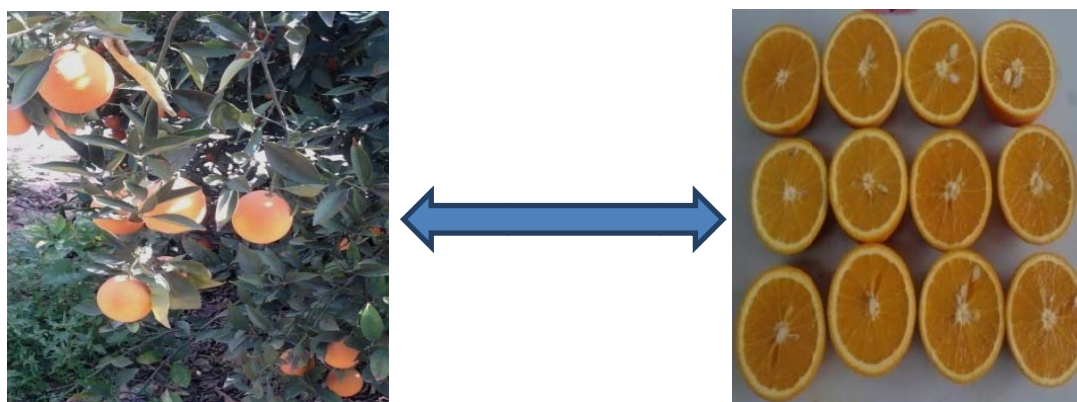


Fig. 2: Image field of valencia orange trees and fruits

glossy appearance. It is medium to small sized and usually commercially seedless, with deep orange to orange-red rind color

- **Murcott or honey tangerine:** Murcott trees are moderately vigorous, the fruit is produced in clusters on terminal end. In heavy year fruits are cropped till the ending branches and sometimes break it. Therefore, trees need wooden support to fix branches. Murcott considered the latest maturing tangerine cultivar, the fruit matures in January to March. The fruit is seedy and small with yellow-orange rind and has sweet flavor and it has excellent qualities for the fresh consumption
- **Ponkan Chinese honey mandarin (*Citrus reticulata blanco*):** Ponkan is possibly the most broadly cultivated mandarin in the world, particularly in China, India and Brazil. It is a vigorous grower and has an upright bearing. The mature tree is a medium-sized and the fruits are usually oblate shape, with a loosely-adherent thick rind
- **Kinnow mandarin (*Citrus nobilis* Lour × *Citrus deliciosa Tenora*):** Kinnow mandarin is best cultivated in hot climate. It is grown well in new reclaimed area. The trees are of small size, fruit is seedy, very sweet and fragrant. It is mid-season fruit, ripens from January till April, hard to peel therefore, it is proper for exporting for long distances
- **Mediterranean or willow leaf mandarin:** The fruit has yellow-orange peel color, smooth and glossy appearance. It is sweet, aromatic and juicy with a few seeds and is amid-season ripens fruit
- **Fremont mandarin:** The fruit size is medium and ripens early from fall to winter. It is seedy, sweet fruit with bright orange rind.
- **Dancy tangerine:** The trees growing better under desert conditions, therefore it is cultivated in Egypt in new reclaimed area. The fruits are seedy and smaller than other varieties and has spicy flavor with dark orange-red rind and flesh, thin rind, peels easily, fruits ripens from December and January

Also, there are different mandarin varieties cultivated in Egypt as a small scale like Fina clementine, Nour clementine, Minneola Tangelo, Orlando Tangelo, Fortune Mandarin, Fremont Mandarin and Fairchild Mandarin.

Lemons and limes: There are different varieties of lemon cultivated in Egypt, but acid lemons (*Citrus aurantifolia*) also called Egyptian Lime is the main variety depend on cultivated area, about 16324 ha. However, productive area reach to 14461 ha produce 345929 t. The fruit is a small rounded about

2.5-5 cm diameter, high acidity, juice citric acid about 7-8%⁷. There is high interest for lemon cultivation in specific area like Nubaria district, Sharkia governorate, Fayoum governorate and New valley district. Also, there are other varieties cultivated in Egypt such as Sweet Lime (*Citrus limettioides*) and Rough Lime (*Citrus limond*) but on small scale.

Kumquat (*Fortunella* spp.): There are two types of kumquat cultivated in Egypt, *Fortunella margarita* with oval fruits and *Fortunella japonica* with round fruits, kumquat fruits ripens later from mid November to March. Fruits has acid to light acid flavor, contains small seeds and sometimes seedless. Kumquat fruits can be eaten whole (rinds and flesh).

CONCLUSION

Egypt is one of the main citrus producers in the world and there are different citrus varieties cultivated in Egypt and produce high-quality fruits, some of these varieties used as fresh fruits like Washington navel orange cultivars, Sweet Orange (Sukkari) and mandarins group, also, other varieties for juice production like Valencia orange and Balady orange. Under Egyptian conditions, the maturity period for citrus varieties starts from middle of October till March, while Valencia oranges extend to July, which provides good opportunity to export citrus for long period of the year, which contributes to improving national income.

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