

FOREIGN EXPERIENCES IN SPHERE OF CITRUS PRODUCTION

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Abstract

The current stage of development of the agro-industrial complex of Uzbekistan in the conditions of saturation of the food market makes new demands on the development of the citrus-fruit sub complex of the agro-industrial complex. This is primarily due to the requirements to improve the quality of life of the population, the increasing differentiation of its consumer preferences, as well as a sharp increase in the level of manufacturability of citrus fruit production. It is currently possible to ensure the proper level of satisfaction of traditional and new requirements for citrus fruit growing only on the way of its purposeful transfer to a predominantly industrial basis of production as part of a qualitatively new stage in the development of the industry, which should be consistently innovative.

Cultivation and export of citrus fruits to other countries are carried out by agricultural producers of states located in the tropics and subtropics. The article analyzes the leading countries in the production of citrus fruits.

Key words: Cultivation, export of citrus fruits, agricultural producers, agro-industrial complex, innovative development

Introduction. Citrus industrial crops - lemon, orange, mandarin and grapefruit - are of great national economic importance. The fruits of citrus crops have very high taste, nutritional and dietary properties. They contain sugars, acids, mineral salts, vitamins C, D, PP. The fruits of plants of the genus Citrus are an important source of vitamin C, [4] but their nutritional value is not limited to this component. The fruits are rich in monosaccharides and fiber and contain numerous micronutrients, including folic, nicotinic and pantothenic acids, thiamine, riboflavin, potassium, calcium, magnesium, phosphorus, copper and vitamin B6 . Compared with the fruits of other species, citrus fruits are distinguished by the high strength of the vitamins they contain, not only during storage, but also during the production of juice and canning.

Citrus fruits are a valuable fruit crop throughout the world. Not only do they provide essential minerals and vitamins, but they are also of great commercial importance.

Citrus fruits are widely cultivated in subtropical, tropical and temperate regions of the world. World production of citrus fruits is 157 million tons per year from an area of 15 million hectares. About 50% of citrus area and production is in the northern hemisphere of the world, China (28%) and the Mediterranean regions (25%) are the main contributors to world citrus production, followed by Brazil (13%). China leads in the production of grapefruits and tangerines. Among the Mediterranean countries, Spain leads the world in citrus production (table 1).

Materials and analysis. The genus Citrus apparently formed in Southeast Asia, in the region from East India to the islands off the Pacific coast of Asia. Presumably, the watery-liquid-filled sacs that contain the seeds of plants in this genus were an evolutionary adaptation to the conditions of the dry monsoonal climate that characterizes this region [6]. At the same time, there are studies according to which the ancestors of this genus appeared in Australia, New Guinea and New Caledonia [5].

Since the end of the 20th century, per capita consumption of citrus fruits in the world has been growing rapidly. The consumption leader is North America, followed by Latin America and Europe. In developed countries, per capita citrus consumption peaked and began to decline, while in developing countries it continues to rise. Economically significant species and hybrids of the genus Citrus include lemon, lime, orange, orange, mandarin, grapefruit, citron, and pomelo .

Table 1

List of countries by total citrus fruit (2022)

	Countries	Production (tons)	Production per person (kg)	Area (ha)	Yield (kg/ha)
1	China	38 392 847	27.544	2625709	14,621.9
2	Brazil	19 591 623	93.501	759 951	25,780.1
3	India	12 043 000	9.011	944 368	12,752.4
4	Mexico	8 110 382	65.019	564 431	14,369.1
5	USA	7 514 334	22.926	299 239	25,111.4
6	Spain	7 022 271	150.501	363 722	19,306.7
7	Egypt	4 808 531	49.32	196 419	24,480.9
10	Turkey	4 293 007	53.124	135 643	31,649.3
11	Nigeria	4 062 983	20.583	837 655	4,850.4
12	Iran	3 744 745	45.803	214 746	17 438
13	Argentina	3 281 320	73.747	145 665	22,526.4
14	Italy	2 566 413	42.465	146 962	17463.1
15	Pakistan	2 270 136	11.245	197 910	11,470.5
16	South Africa	2 241 245	38.826	67 045	33,429.2

The world produces 146,866,263 tons of citrus fruits per year.

- China is the largest citrus producer in the world with an annual production of 38,392,847 tons.
- Brazil ranks second with 19,591,623 tons of annual production.

According to estimates for 2021/2022, the world produces (figure 1):

- about 49 million tons of oranges (more than a third of them in Brazil and 15% in China);
- about 38 million tons of tangerines (to the share of the largest producers - China and the European Union - accounts for 8% of global production);
- 9.5 million tons of lemons and limes (one third of them in Mexico and more than 15% each in Argentina and the European Union);
- 7 million tons of grapefruits (almost 3/4 of the total volume in China).

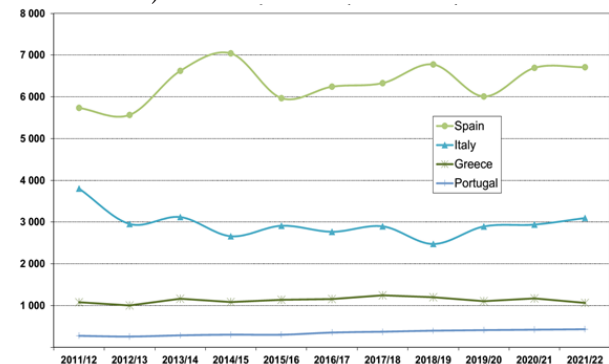


Figure 1. Citrus fruit production (in 1000 tons) [9]

China is the largest producer of citrus fruits (35,469,387 tons), tangerine accounts for 65% of the total citrus fruit harvest in the country.

China was the main exporter of tangerines, it supplied 660 thousand tons of fruits to the international market, which is 10% more than in the previous year. Among popular varieties – “Jaffa Orri”, “Australian Empress” and “Clemen Gold”.

Brazil is the largest citrus producer in the world with an annual production of around 20 million tons. It is also the largest exporter of orange juice in the world. The orange was first brought to Brazil by the Portuguese in 1530. Citrus farmers in Brazil are moving away from citrus production in favor of sugarcane production. Expensive labor, chemicals, low prices for lemon products in the Brazilian market, pests and diseases are some of the reasons why Brazilian farmers are moving away from citrus production.

Egypt is the largest producer and supplier of citrus fruits. The most important citrus crop in Egypt are oranges: they account for 65% of the citrus production and 30% of the total fruit production in that country. The most common varieties of oranges grown in Egypt are table varieties Navel and Sukkari, juice varieties Valencia, Baladi, Blood orange. The largest supply season (half a yearlong) is for Navel and Valencia varieties (from October to March and from February to July, respectively). Sukkari and Baladi are supplied from December to March, Blood orange (red oranges) from January to March. Orange production is booming even in the desert regions of Egypt, making the country a leader in the export of oranges in volume terms [10]. Egypt exported 1.8 million tons of oranges worth \$660 million in 2019, according to the United Nations International Trade Center (ITC). World consumption of oranges has risen markedly, and Egypt has been able to carve out a niche in the expanding market. The advantage of Egypt is in cheap currency, which means prices are competitive. Due to the growth in the sale of oranges, farmers have more money, so they began to expand the area of orchards. Approximately 60%-70% of Egyptian orange exports are from the Valencia variety, the fruits of which are more destined for juice production. The rest is Navel oranges, part of which is grown in old orchards, but the main volume comes from large orchards planted in the desert.

According to the USDA, more than 2,500,000 tons of citrus fruits have been produced in the country. It is worth noting that citrus suppliers from Egypt periodically face the problem of quarantine restrictions on supplies due to the spread of pests - the Mediterranean fruit fly and the peach fruit fly. Russia is the largest importer of Egyptian oranges: about 18% of oranges exported from Egypt are supplied to the country (according to the US Department of Agriculture). According to this indicator, Russia is second only to Saudi Arabia with 20%; other major importers are Iran, Ukraine, UAE, UK [11].

South Africa. The products of South African farmers have always been characterized by high quality, a wide range of fruits offered and a low price. Therefore, South African products compete with Argentina, Uruguay, Turkey and Egypt.

The main advantages of South Africa in obtaining high-quality products are the climate favorable for growing fruits and vegetables, fertile soils, ecological methods of agricultural production and the geographical position of the country, which allows you to get a wide range of fruits throughout the year, which in turn affects the quality and cost of products. The economic policy of the country's government is aimed at supporting and stimulating the country's agriculture, as well as using the latest technologies.

South Africa is the second country in the world in terms of exported citrus fruits. In terms of supply of oranges and grapefruits, South Africa ranks first in the world. The export of citrus fruits is the most important component of South

African agriculture, and foreign supplies of citrus crops account for about 65% of fruit exports from this country.

Deliveries of citrus fruits from South Africa fall mainly on the spring and summer months. So, the supply season for oranges lasts from April to November, tangerines and clementine - from March to October, lemons - from March to August, grapefruits - from April to September.

In the 2021/22 marketing year, South African citrus producers achieved a record export volume of 2.7 million tonnes. However, in 2022/2023, the pace of laying citrus orchards is slowing down. Rising input costs for growing, high transport tariffs, new phytosanitary regulations imposed by the European Union, inflation in key markets and infrastructure inefficiencies have become major factors affecting citrus exports. They reduce the profitability of the sector, which leads to limited investment in the industry [12].

Citrus orchards in South Africa cover over 100,000 hectares, of which orange orchards account for 47%. Over the past seven years, the area under orange orchards has grown by almost 14%, or an average annual growth of 2%. Growth is constrained by shifting to other citrus varieties in the Western Cape and Limpopo regions. In the 2021/22 season, the area of orange orchards increased by about 2% to 47,750 ha from 46,809 ha a year earlier.

Limpopo is the leading orange growing region in South Africa, accounting for 48% of the total orchard area. This is followed by the provinces of the Eastern Cape (23%) and the Western Cape (14%).

Turkey since the 1980s payments provided by the state under support programs accounted for more than 20% of the income of Turkish farmers. At the same time, most of this support was aimed at regulating market prices for agricultural products.

The agricultural services sector is dominated by spending on the development and maintenance of infrastructure, mainly related to irrigation systems. An indirect form of support is the financial support of state-owned enterprises engaged in the sale of goods.

The production and export of fruits, including citrus fruits, is the most important sector of the Turkish economy. Citrus fruits occupy the main share in Turkey's agricultural exports. The favorable climate of the Mediterranean is ideally suited to the requirements of this capricious plant. The fertile soils of Turkey are the best suited for the cultivation of citrus fruits. Turkey ranks eighth in the world among citrus producing countries, with a production volume of 5 million tons in 2019. Almost half of the crop was exported. The main place is occupied by oranges, followed by tangerines, lemons, grapefruits and other citrus fruits. Statistics show that the production potential in Turkey may be at least three times higher.

There are more than a thousand varieties of orange grown in the world. Most of the orange production in Turkey consists of Navel Orange, Valencia, Blood Orange, Shamouti and Finike, Kozan, a variety with a perfect composition that allows these products to be used in the vine, fresh, etc.

Turkish farmers are very sensitive to their citrus orchards - in order for the fruits not only to ripen, but also to turn out tasty and juicy, the plants need constant attention and careful care. First, seedlings are grown in separate greenhouses, then they are transferred to prepared areas. While the tree is growing, it is pruned, giving it the desired shape, which should be constantly maintained - otherwise you will not get good fruits.

Harvested fruits are sorted and packed before shipment. At the factory, citrus fruits are thoroughly washed with plain water using a small amount of natural cleaners and then dried. The fruits are then sorted by size, as customers from different countries have their own requirements for this; for example, Arabs prefer small lemons, while Russians prefer

medium ones. Next, the selected goods are laid out in boxes, the size and weight of which are also specially discussed with the buyer. Moreover, the packaging is done manually to prevent spoiled or simply ugly fruits from getting into the batch.

The volume of exports of citrus fruits from Turkey in 2022 amounted to 904 million 18 thousand dollars. According to AKİB, Turkey exported a total of 1 million 940 thousand tons of citrus fruits [7] in 2022. Among citrus fruits, tangerines, lemons, oranges and grapefruits were in the greatest demand abroad.

Russia became the leading importer of citrus fruits from Turkey in 2022. Exports to this country amounted to 429 million dollars, that is, almost half of the total export of citrus fruits from Turkey. This is followed by Ukraine - \$84 million, Iraq - \$68 million, Poland - \$46 million and Romania - \$42 million.

Agriculture in Spain occupies an important place in the country's economy. It employs almost 5% of the total working population. The industry provides 5 percent of Spain's GDP [8].

Spain has a long tradition of citrus cultivation in regions

such as Valencia, Andalusia and Murcia, where the total area of orange groves is over 70,000 hectares. This country is one of the main suppliers of oranges and tangerines to the markets of many European countries. In Spain, the cultivation of the tangerine group is second only to *C. sinensis* (orange). Mandarin group is represented by varieties: Clemenules, Clemenrubi, Okitsu and Iwasaki. The gross harvest of citrus fruits is more than 7 million tons, of which the fruits of the tangerine group make up 3 million tons.

Conclusion. The arrival of mandarin fruits on the market begins in October and ends in March. The gross harvest is about 3 million tons. However, the Spanish production of tangerines and clementine for 2021-2022. decreased by 30% in the provinces of Valencia and Andalusia, which are the most important growing regions. The reason for the loss of crops was heat and drought.

Compared to Spanish oranges with Turkish, Moroccan or Egyptian oranges, this is a premium product, which is reflected in its price. Strict sanitary supervision (the trees are not treated with chemicals) and quality standards make Spain the main supplier of fruits to Europe for a reason [13].

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