

AVOCADO CULTURE IN TURKEY

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Though Turkey has plenty of possibilities for growing avocado trees on a large commercial scale, mainly in various districts of the Mediterranean coast, this fruit is still very little known among Turkish growers. At the present time, the number of trees in the whole country does not exceed a few tens and moreover, are cultivated mainly in state agencies.

The first avocado seeds were introduced about 35 years ago, mainly at the Adana Agriculture School. Soon after, grafted trees were imported from California and planted at the Antalya Citrus Institute. They were mainly of Duke variety. Subsequently some trees were frozen in 1942 and are represented now only by sprouts of the rootstock. From these trees, seeds were collected and planted in various locations, such as the Iskenderun Citrus Experiment Station, the Alanya State Nursery and the Antalya Citrus Institute itself. So, for the most part, avocado trees in Turkey are only seedlings giving fruits of inferior commercial qualities.

In spite of the lack of good management due to ignorance of the requirements of the avocado, these seedlings produce good crops almost every year. They were never injured by the low temperatures which occurred in some years and do not suffer from pests or diseases. Nevertheless, some of them show some withering and necrosis of the leaf tip which are not considered to be caused by salts. In Antalya, iron chlorosis symptoms are very strong.

Avocado varieties, mainly Mexican ones, have roughly the same requirements as Citrus, and as citrus groves, thrive very well in various areas of the Turkish Mediterranean coast from Iskenderun in the South, (not far from the Syrian border) to Dalaman in the South-West, (the limit between the Mediterranean Sea proper and the Aegean Sea). One may consider that the citrus districts of Iskenderun-Dortyol, Adana, Mersin, Alanya, Finike, Demre, Bodrum, Fethiye and Dalaman are also particularly suitable for avocado. In this country, citrus trees are also grown in the Izmir (Smyrna) area and on the Black Sea coast around Rize, but there is too much frost hazard in these locations for avocado culture. (The cultivated citrus are mainly the very frost tolerant satsuma mandarins budded on trifoliolate.)

In the above mentioned regions, there is a large range of soils, proceeding from the very light, sandy, sometimes very deep ones to some compact, clay ones. The average is a medium-light, well drained soil. Some basic soils of Antalya excepted, the average pH is close to 7.3.

Irrigation water is plentiful and always free from all kinds of salts. It can be obtained from creeks and rivers and from wells as well as from a network of water canals in some

places.



Fruiting avocado seedling, 5 years old. (Citrus Research Institute, Antalya).



Avocado seedling, 5 years old. (Citrus Research Institute, Antalya)

The average climatic data (1931-1960 period) for the various locations mentioned above are:

- rainfall in mm: from 610 to 1039 (mainly from November to April)
- lowest temperature in winter (January and February): from —2.9 to 7.1°C
- average temperature of the coldest month (-idem-): from 4.6 to 6.2°C —highest temperature in summer (August): from 41 to 45.6°C.
- average temperature of the hottest month (-idem-): from 28 .1 to 34.9 °C
- annual average temperature: from 17 to 19.1°C.

Until a few years ago, Turkish growers were very reticent to plant this, to them, new fruit species. The grafted trees raised by the Antalya Citrus Institute and offered free did not find patrons, and the multiplication of avocado was discontinued. Now requests from farmers are increasing as are the needs of government agencies, (experiment stations, agriculture schools, state farms, etc.) but they cannot be answered because of the lack of mother-trees to supply budding material.

Following this increasing interest in the avocado, a plan has been drawn up to start some research work in the bounds of a project sponsored by the United Nations Development Programme (Special Fund), called "Research and Training Centers for the Production, Processing and Marketing of Fruit and Vegetables." It is executed by the F.A.O. in cooperation with the Turkish Government. This project comprises the introduction of mother-trees and seeds for rootstocks from Israel, California and Morocco, the planting of a few behavior plots and the establishment of a small state nursery. The chosen rootstock is Topa-Topa and eventually any kind of available Mexican seed. This choice was dictated by the desire of preventing eventual frost damages. (The situation about *Phytophthora* and *Dothoriella* is not still known in Turkey.) Experiments will involve Fuerte (various clones), Macdonald, Hass, Nabal, Anaheim, Ettinger, Benik, etc. The majority of these varieties were chosen for their relative tolerance to frost and also for their ripening date, if possible a late one, in order to prevent competition, in the European markets with avocados from Israel, the supply of which takes place between November and the end of March.

This program for creating a new avocado industry is intended to supply Western European countries at first, then some domestic markets such as the large cities like Istanbul. It is expected also that after a few years of familiarization, avocado will become part in the every day diet of the nationals and constitute a very good substitute (richer in vitamins) for chickpea and sesame in such Turkish dishes as humus and ibesh.

To sum up, we can say that Turkey offers important potentialities for growing avocado trees. From a practical point of view no major problem could arise from the climate, the soil, nor the irrigation water. The main difficulty lies in the lack of propagating material, mainly mother-trees of commercial varieties. It is expected that the UNDP/SF/FAO Project will bring a solution to it within the next three years.



In the background, Pecan seedling trees, about 30 years old. In the foreground, sour orange trees; between pecan and citrus, grafted avocado trees introduced from California in 1937. (Citrus Research Institute, Antalya)



Fruiting avocado seedling, 5 years old. (Citrus Research Institute, Antalya).