

COLLECTING AVOCADOS IN MEXICO

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(Partially financed by funds from the California Avocado Advisory Board.)

As part of the continuing search for root rot resistance, more seeds from native Mexican avocados were collected during August 1973. Areas in the State of Veracruz where different types of avocados are grown were visited. This was made possible by the excellent guidance and assistance of Dr. Jose T. Vazquez and Ing. Alejandro Olmos from the Comisión Nacional de Fruticultura in Xalapa, Mexico.

Most of the seeds collected were from "criollo", or wild types of *Persea americana*. Seeds from various types of "chinini" (*Persea schiedeana*) and "anayo" (*Beilschmedia anay*) were also collected. During the rainy season in this part of Mexico, avocado seed weevils, "barrenadores," are very common. Therefore, it was necessary to choose fruit carefully and examine the seed thoroughly before importing through the USDA Plant Quarantine Station in El Paso, Texas, where all seeds were fumigated. Over 300 seeds were collected from five different areas. Seedlings grown from these will be used in tests for resistance to root rot at the University of California, Riverside.

Xalapa (also spelled Jalapa), the capital of the State of Veracruz, is a very pleasant city to visit. Points of interest include the University of Veracruz, Museum of Anthropology, beautiful parks, and a large State Theater where many fine cultural programs are presented.

A few hours drive northwest from Xalapa is a mountainous area where we began avocado collecting. Alejandro Olmos' acquaintance with local growers and his experience with avocados proved invaluable in locating unusual avocado types and gaining permission to enter private property.

Small fruit (approx. 2½ inches) were collected near Jalacingo from an avocado and pear orchard (Figures 1 and 2). In the mercado in Teziutlan two very interesting kinds of fruit were purchased: one light green with longitudinal ridges; the other purple, squash shaped with a narrow curved neck. On a rancho near Atzalan huge trees of *Beilschmedia anay* and *Persea schiedeana* were located. As is common practice in Mexico, these trees served as shade for a coffee plantation. One problem encountered with these large old trees is that there are often no branches within reach from the ground, even with a pole. The "anayo" fruit were green skinned, and the tree trunks had red bark. Also located on the same rancho is an "aquacatillo" with very small fruit (approx. 1 cm.). Through the cooperation of Dr. Vazquez, plans have been made to spray this tree so that insect-free seed can be sent to UCR next year.

The area around Misantla, north of Xalapa, is lower in altitude and more tropical than the mountainous region to the west. At the mercado in Misantla four groups of fruit were purchased, including both green and purple skinned, ranging from 2¾ to 6 inches long.

One of the most interesting localities visited was La Antigua, a small town very near the Gulf of Mexico. A fortress-house, built for Hernando Cortez, is still standing there, its walls partially engulfed by the roots of huge trees. Partial restoration and archaeological investigations are in progress. The artifacts being uncovered there reflect a mixture of Spanish and Indian cultures. The walls themselves exhibit various construction techniques and materials: stone, brick, and unusual but beautiful "brain corals". Growing in the courtyard around the Cortez house were many avocado trees, broadleaved tropical types.

With the help of the children from a family living near the Cortez house, fruit were collected representing eight different fruit forms, both green and purple skinned. The fruit seemed very high in oil content, with an excellent flavor. The local description of the fruit is "mantequesa", referring to the buttery taste. Some of the fruit at La Antigua were very large, up to 4 x 7½ inches.

South of Xalapa, near Coscomatepec, other avocado seeds were collected, and soil samples were taken to check for *Phytophthora*. The changes which occur with the passage of time can either facilitate or hinder explorations of this type. For example, it was difficult to locate a locality near Coscomatepec visited by Dr. G. A. Zentmyer in 1951 (2), because most of the trees had been cut down. We were, on the other hand, fortunate to find a new road ascending the mountains above Calchualco into an area which was previously inaccessible to vehicles. The "pueblito" Maquixtla is at an elevation (approx. 7,500 feet) near the upper limits suitable for avocado growth in this area. Above Maquixtla the land is uncultivated oak and pine forest. The avocado trees near Maquixtla had leaves with a very strong anise smell and many small black-skinned fruit (approx. 2 inches long) (Figs. 3 and 4). Different types of avocado trees, which were growing at lower elevations along the same road, had no fruit due to frost damage.

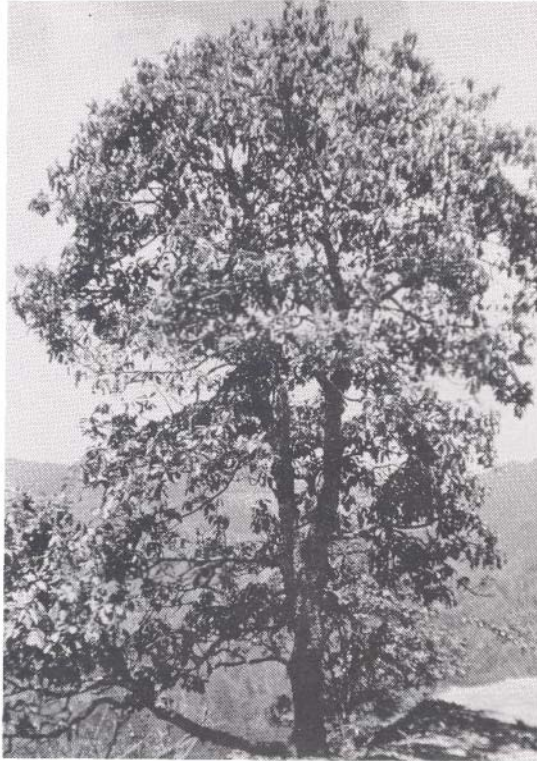


Figure 3. 'Criollo' avocado tree growing above 7,000' near Maquixtla, Ver., Mexico.



Figure 4. Small fruit on a tree near Maquixtla, Ver., Mexico.

The fruit collected at Maquixtla appeared similar to those described by Dr. Wilson Popenoe (1), which were found on the slopes of the Pico de Orizaba (the volcano "Citlaltepetl"). From Coscomatepec there is an excellent view of the peak (elev. 18,843 feet), which is the highest in Mexico and can be seen for many miles in clear weather.

On Sundays in Orizaba a busy open market is held, and many different avocados are displayed for sale. Several groups of purple-skinned fruit were purchased, ranging from round to pear shaped, 2½ to 3½ inches long. Also purchased were different types of "chinini" fruit, both green and purple, 4½ to 6 inches long.

The problems facing Mexican avocado growers in high rainfall areas are somewhat different from those in California. For example, frequent spraying for insects is necessary, and weeds must be chopped regularly. Although it takes fewer years than required in California for trees to come into full production, many Mexican growers must interplant (usually with corn) in order to financially survive the waiting years.

Phytophthora cinnamomi was isolated from an avocado grove near Coscomatepec. Preliminary observations of cultures from this isolation indicate that the fungus involved is the same mating type (A2) and morphologically similar to *Phytophthora cinnamomi* found in avocados in California. As many California growers know, it can be quite discouraging to discover that your grove is infested with *P. cinnamomi*. The problem is even more complex in high rainfall areas in Mexico where the standard recommendation of "reduce your irrigation" does not apply. However, due largely to the efforts of organizations such as the Comisión de Fruticultura and agricultural schools in

Mexico, more growers in Mexico are becoming aware of the need for improved practices in avocado growing. It is hoped that continued communication between researchers studying *Phytophthora cinnamomi* problems in California, Mexico, and elsewhere will eventually provide solutions beneficial to everyone.

Many interesting and informative conversations with Mexican avocado growers and researchers added to the benefits of this trip. The warm hospitality and friendly assistance extended by many Mexican people were greatly appreciated.

REFERENCES

1. Popenoe, Wilson. "Origin of the Cultivated Races of Avocados." California Avocado Association Yearbook 1935, page 184-194.
2. Zentmyer, George A. "Avocado Diseases in Mexico and Costa Rica". California Avocado Society Yearbook 1951, page 103-104.