

## COLLECTING PERSEAS IN THE HIGHLANDS OF GUATEMALA

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### Introduction

During the search for avocado rootstocks resistant to *Phytophthora cinnamomi*, one of the regions in middle America that has been extensively explored is the highlands of Guatemala. This is part of the Maya territory that together with Yucatan and Chiapas form the so-called Mayan triangle. It is this territory that the "conquistadores" first invaded from Mexico; these were the men that Cortez sent.

The highlands start at an elevation of 6,000 feet in Central Guatemala behind the volcanos of Fuego and Acatenango (the Chimaltenango valley), and continue past Lake Atitlan to the Mexican border by San Marcos and Huehuetenango provinces. Elevations reach 11,000 feet, in the Cuchumatanes mountain range.

It is here that we have collected over 80 percent of all 350 collections made in recent years in Guatemala. These collections were made from trees located in valleys, on river banks, mountains and volcanos; and collections made in the local markets of the native towns. The essential materials for collecting have been a jeep, camping equipment, a native guide and a "machete" (machete is a knife used for work and cutting wood by the Mayan natives; it is also used for protection against snakes, etc.), the best companion to enter the forests to be explored.

### Collecting in the Cuchumatanes

Climbing from 5,000 feet up to 11,000 feet to reach the summit of the Cuchumatanes by car, is an experience by itself. The jeep will follow a winding narrow road and on one side the steep canyons almost 2,000 feet down, give a sense that you are reaching the top of the world or the bottom of it. It is in these trails and narrow roads that the "conquistadores" walked to reach and conquer Central Guatemala. Here the vegetation changes to the "parramo" type as in South America. After reaching 11,000 feet, a type of "moon-landscape" is seen in the plateau, with no trees, and lavarocks thousands of years old. On the other side of this massive mountain is the Quetzal country, where *Perseas* are also found.

Beyond the Mayan town of San Mateo Ixtatán, a dense forest of *Persea americana* v. *nubigena* (*P. nubigena*) was found, at Cruz Limón. Hundreds of trees abound here at an elevation of over 8,000 feet. The native guide who spoke very little Spanish tried to explain that this wild avocado is known by the Mayans as "Onte". As we collected fruits

and seedlings growing freely under the old trees (Figs. 1 and 2), the guide asked the senior author if he was a "doctor". I dared not admit being a "plant doctor" because of the connection with a "witch-doctor" who uses plants for his medicine. It happens that here the seed of *Persea nubigena* is used as medicine against coughing diseases. During the recent years, in all our collecting trips, no area has shown the population of wild *Persea* trees like this area of Cruz Limón between Nuca and Barillas in the Cuchumatanes. Trees here form a very dense forest.



**Figure 1. A dense forest of *Persea nubigena* at Cruz Limón near Nuca in the Cuchumatanes, Guatemala.**



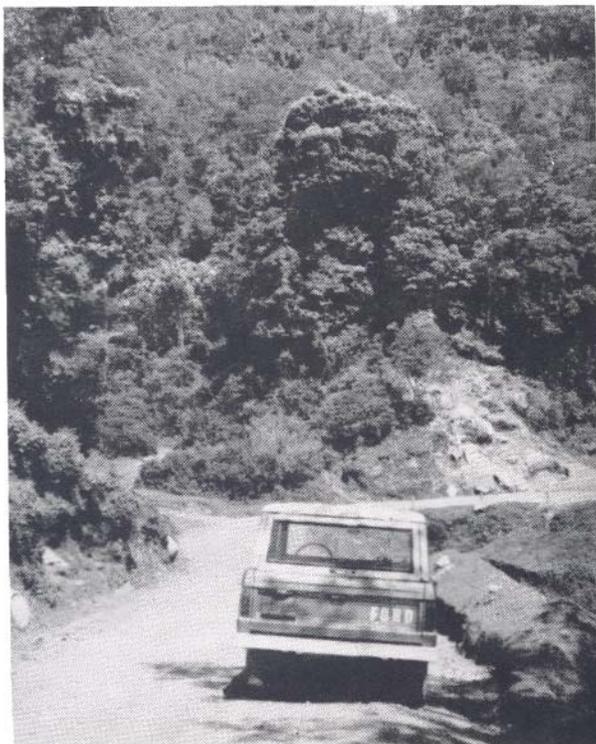
Figure 2. The native guide showing a branch of *Persea nubigena* at Cruz Limon in the Cuchumatanes to author Schieber.

As we drive six hours back to the eastern slopes of the Cuchumatanes, we reach the town of Cunén. In this region one of the oldest trees of *Persea americana* var. *drymifolia* was located on a river bank. This tree with the characteristic anise odor of its vegetative parts (especially leaves) is known by the natives as "aguacate de anís". Dr. Popenoe believes that these *Perseas* were introduced by the Spaniards (conquistadores) as they were coming from Mexico into Central America. Are we then following the steps of the "conquistadores" on the search of *Perseas*?

### **Collecting *Persea Steyermarkii* at the Mexican Border**

Since the collecting program of *Persea* was started one of the interests was to find *P. steyermarkii* at the location where the type collection was made by J. A. Steyermark near the Mexican border in the Depto. of San Marcos. The description by Steyermark came from trees at finca El Porvenir; this plantation farm was during World War II one of the important producers of "quinine".

To reach finca El Porvenir, we had to take the Pan American highway towards Mexico, and after the city of San Marcos, a secondary road takes you to La Lucha, a satellite of finca El Porvenir. Here at the locality known as "Talsá" just above La Lucha, we located a tree that appears to be *Persea steyermarkii* (Fig. 3).



**Figure 3. The tree of *Persea steyermarkii* at La Lucha, El Porvenir-San Marcos. Tree is seen straight above our jeep.**

To harvest the fruit of this collection (Gu-86), in September 1973, we traveled to this region, and we harvested the first 75 fruits of this tree. The harvesting of these fruits was an adventure in itself. Tropical rain storms were advancing over southern Mexico and the western highlands of Guatemala. Over 20 landslides were counted on the Pan American highway, and when reaching La Lucha to harvest the fruit, the rain and wind was so intense, that guides could not reach the top of our tree. After we returned from San Marcos, news broke that the area was "under emergency" because of landslides, floods and even the isolation of the area from any help.

### **Collecting Matul-oj Types**

Matul-oj means little avocado in the Mayan "cakchikel" language (Matul = small or little, and oj = avocado). All these types belong to what the Spaniards call "aguacate de anís" and are *Persea americana* v. *drymifolia*. Dozens of collections have been made of Matul-oj in the Guatemalan highlands. The leaves of these collections have the characteristic anise odor; sometimes the green fruit also has this odor. The fruit ranges from the size and shape of a plum to a pear and as small as a hen's egg (Figs. 4 and 5). The color ranges from purple-wine to black. In the markets, natives buy these fruit and eat the complete flesh and skin without peeling. The seeds of some Matul-oj types are used to prepare tea against coughing diseases.

One of the most important centers of Matul-oj types in the highlands is the region of

Malacatancito in the province of Huehuetenango. Another center is the Itzapa-Parramos region near Antigua. Some slopes of volcanos like Agua (Santa Maria de Jesus, San Juan Obispo) and Acatenango (Concepción) have some types of this Matul-oj.

One day we started our trip with the jeep to go and harvest Matul-oj seed. My guide asked if I knew where the tree was, and my answer was yes, since it had been located previously with the second author. We were driving with great confidence. After climbing the mountain and reaching the tree, the guide went up and started to harvest all fruit that was ripe. Suddenly two natives appeared from the nearby forest and speaking in "cakchikel" they told my guide to come down from the tree at once. These natives were furious because the tree belonged to them. We did not know the tree had an owner, so we were of course very confident at harvesting. A second time they spoke and commanded that my guide come down from the tree . . . then I told my guide in Spanish to come down.

While driving the jeep back home, I told my guide that I thought that natives were always friendly and sometimes very shy. Even though the senior author was born in a town of the cakchikel country here in the Guatemalan highlands, he never had the impression that the natives could be belligerent. However the natives were right in their actions. The way I feel about pollution of "anthropologists" in certain areas of Mexico and Guatemala . . . now the natives have to face what I call "botanists' pollution" — in this case "aguacateros" (avocado hunters)!



**Figure 4. Guide showing a branch of Matul-oj belonging to *Persea americana* var. *drymifolia*. Fruit is mature but not purple yet.**



Figure 5. One of the many Matul-oj types collected in Guatemala.

### **The Strange Collection Called O-Max**

One of our newest collections is an unknown *Persea* called by the "quekchi" natives in northern Guatemala as O-max or "Oj-max" (O and Oj meaning avocado, and "max" meaning similar). Also "max" is known in Spanish as "mico" or monkey in the English language. Trees of O-max grow in the cloud-forests over 7,000 feet above sea level. Leaves are broad and strikingly of a blue color on the undersurface. The size of the seed that is typically an avocado, appears similar to the seed of *P. nubigena*, however the seed shows outside striated lines that make it very strange. The fruit is the size of that of *P. nubigena*, but reddish in color, with rough skin. One collection (Gu-334) was made in the northern mountain range of the Polochic valley.

This collection does not resemble any of the collections we have made in recent years in Mexico and Central America. Also this has not been observed in herbariums that have *Persea* collections of the region.

### **Collecting at the Native Markets**

Two days a week, the towns in the Guatemalan highlands have the so-called market-day. It is an occasion when the farmers bring in their harvest from remote areas. Corn, beans, fruit etc. are brought from as far away places as four hours' walking distance. Since avocados are brought also from these remote localities, it is the market that provides a range of diverse types (Fig. 6). These Guatemalan "criollo types" sometimes resemble the wild *Perseas* (Fig. 7), for example in the world-renowned Chichicastenango market, sometimes "criollo types" resemble the "Aguacate de Mico" or "Aguacamico" that we have collected near the craters of volcanos in Central America. The characteristics of the fruit are its hard shell, its roundness and large seed, and also its rough skin.

When trying to buy a dozen fruit from a native sitting in the market plaza, first he looks at you as a foreign tourist. Then when he finds out that you speak Spanish, of course he asks fewer "centavos" for the dozen fruits. The senior author has observed how the natives criticize us, since we sometimes ask for the littlest, strangest looking avocado fruits to collect, the worst quality they select from the basket, and sometimes the smallest fruit type.

## Conclusion

How can we define the word "Aguacateando" that means collecting avocado, this complex and interesting activity? . . . As the senior author sits one evening at his house in Panajachel (Lake Atitlán) in the highlands of Guatemala . . . and at 7:00 p.m. the Pan Am jet crosses over the lake in the direction of Mexico and the U.S., he thinks what a strange world! Here go the seed of the Perseas that were just collected across the lake in San Lucas Tolimán and Cerro de Oro. Well, to get the seed on that jet, it took first all the steps of riding on a jeep, crossing the lake on a boat, finding a native guide, climbing mountains and volcanos and visiting markets of the towns across the lake. Finally processing and packing the harvested seed, then labeling the package with the characteristic green and yellow tag of the USDA, walking to the Antigua post office . . . then the seed-packages ride the bus to Guatemala City and reach at last the airport, then finally fly exactly over the mountains where these Perseas have been collected.



**Figure 6. Native market in the highlands of Guatemala.**



**Figure 7. Guatemalan "criollo type" tree growing in the region of Atitlan lake.**