

NOTES FROM HONDURAS

Wilson Popenoe

Escuela Agrícola Panamericana, Tegucigalpa

I can hear you ask, "Why are we interested in Honduras?" Perhaps some of you may even be thinking along the lines of the Biblical character who inquired, "Can any good thing come out of Nazareth?"

For several years we have been trying to make Escuela Agrícola Panamericana a tropical outpost of the avocado industry. We are situated in the very heart of the region where the West Indian and Guatemalan races may have had their origin. Around us grow wild species of *Persea* of interest as possible rootstocks. We are afflicted by root disease to a perfectly magnificent degree, thus enabling us to give potential new rootstocks the acid test. Because of favorable climatic conditions, we can propagate new varieties and bring them into production so rapidly it fairly makes your head swim, thus enabling us to get a prompt reading on some of their possibilities for other regions, such as yours. And we don't have any hurricanes to bother us. We don't even have respectable earthquakes.

If I have convinced you that something good for Florida might come out of this Nazareth, I will comment on a few of the lines we are following. I will commence by talking about a subject of somewhat recondite interest, but which in the end may have practical importance.

WILD AVOCADOS

For many years I have personally been attempting to trace the three cultivated avocado races back to their wild progenitors. Time and again I have thought I had them pretty well tied down, only to see them slip through my hands when new information was brought to light. For some time now, our California colleagues have been chasing the Mexican race from the Rio Grande down to the Isthmus of Tehuantepec, without having found it, as yet, in a state which was convincingly wild. Carl Crawford of Santa Ana, California, has spent a lot of time and money on this quest, in which it is quite probable that he will ultimately be successful.

I myself have devoted more attention to the Guatemalan race. In the highlands of Central Guatemala, around 8000 to 9000 feet, grows a wild avocado. Our botanist Louis Williams considers this a new species and has given it the name *Persea nubigena*. There is still a possibility that the Guatemalan race may have had its origin in this wild form, or in one of several others, very similar in character, which are being discovered in Guatemala and Honduras.

The West Indian race has been even more elusive. Recently, however, the botanist Paul Allen has found a wild avocado in Costa Rica which may be the thing. I believe I

saw this in Panama, years ago, but I was not able to get botanical specimens.

THE ROOTSTOCK PROBLEM

Apart from what I trust is a laudable curiosity in finding out where our cultivated avocados came from, the search for wild forms has its practical aspect—an aspect which has assumed great importance in California. I refer to the problem of rootstocks. Particularly in heavy soils—which are abundant in southern California—avocado trees have died by the thousands, as all of you are aware. The pathologists are convinced that a fungus, *Phytophthora cinnamomi*, is responsible. This organism appears to be common in that state and in many other regions. It has been isolated from sick avocado trees in Peru, in Honduras, and I believe in El Salvador. I do not know much about its occurrence in Florida, but some of you who are familiar with the situation can talk about that.

It has been—and is—the feeling in California that commercial avocado culture in that state will be limited to certain areas unless a rootstock can be found that is more resistant to *Phytophthora* than any of those which has been used to date. Since quarantine restrictions have made it difficult to import seeds of avocados and related species into the United States, we have hoped that we might be of assistance by making some preliminary trials in Honduras. We have been materially assisted in this work through having with us two eminent botanists, one of them Louis Williams, whose name has already been mentioned, the other Paul C. Standley, who is the outstanding authority on the flora of Central America. These two men have been busily at work rounding up wild *Perseas*.

So far, only one thing has shown promise here. This is *Persea Schiedeana*, known in Mexico as chinini, in Guatemala as coyó, and in El Salvador and Honduras as chucte and supte. It is a wild, but usually not common tree in all these regions—and goes clear down to Costa Rica where it is known by the name yás. The fruit is good to eat. It is highly esteemed in the state of Veracruz, Mexico, and also in parts of Guatemala, El Salvador, Honduras and Costa Rica. It has been planted in Florida—George B. Cellon had a tree or two at Miami, and there were a few at the old Plant Introduction Garden on Brickell Avenue. All of these were killed by cold, I believe, before they had a chance to come into bearing. The coyó may be slightly more tender than any of our cultivated avocados, but perhaps if we keep it under ground (that is, as a rootstock) it will get by. The interesting facts are that it seems to be a fairly congenial stock for the avocado (we have healthy three-year-old trees budded on it) and that where avocados on West Indian roots have died out, it has so far shown considerable resistance to whatever it is that kills avocados on our heavy, poorly drained soils. There is a tendency for the stock to outgrow the scion, but no more so than has been the reverse case with many of our Guatemalan x Mexican hybrids budded on West Indian.

Several years ago a species which has been determined as *Persea floccosa* was introduced into California from the mountains near Orizaba in Mexico. The budwood I brought from that place was used on West Indian seedlings and we lost it. At the College of Agriculture in Los Angeles it was saved, and Professor Schroeder told me, when I was there a few months ago, that it seemed to be showing considerable

resistance to root disease. It also seems to be a congenial stock for the avocado, as far as can be judged at present. When we saw the fruit in Mexico it looked so much like a small avocado of the Guatemalan race that I did not suspect it was a distinct species.

In a plot which we established here at the Escuela to test wild avocados and other species as possible rootstocks, *Persea nubigena* from Guatemala has so far shown no promise. Most of our seedlings died before they were large enough to take the bud. Several species belonging to allied genera of the Lauraceae, such as *Nectandra* and *Ocotea* have so far proved to lack congeniality. The same is true of *Bielschmiedea* (*Hufelandia*) *anay*, a tree from Guatemala which bears a fruit strongly resembling a good-sized avocado of the Mexican race.

Incidentally, we have had in our plot numerous seedlings of rather primitive forms of the Mexican race, brought from Mexico and Guatemala, as well as seedlings of the West Indian and Guatemalan races, and up to now the Mexican seedlings have shown a stronger tendency to die from root diseases at an early age than the West Indians; though in our nurseries we have lost many West Indian seedlings before they were a year old. Perhaps not much importance can be attached to this observation. With us at least, the avocado is extremely sensitive to differences in soil texture. In a nursery we established last year, about a quarter of an acre, all the trees did well except those in an area some 40 feet in diameter, where they died before the buds had reached suitable size for transplanting. The soil in this small area was sticky, sandy clay a few inches below the surface.

NEW VARIETIES

It is exactly forty years since we introduced the Fuerte Avocado from Mexico and I budded the first trees in the West Indian Gardens at Altadena, California. In spite of the fact that Fuerte now accounts for more than 75% of California's commercial production, time has shown that it is not satisfactory in all avocado growing regions. And in spite of the fact that literally hundreds of seedlings have since appeared and seemed promising commercially, there is still a "variety problem." Most of the local seedlings have turned out to be what George B. Cellon used to call "seven day wonders."

There have been some interesting developments. When David Fairchild started me on a ten-year exploration of tropical America, I was told to look for one-pound avocados of good quality and good bearing habits. At a recent annual meeting of the California Avocado Society I voiced my grievance: they had made me throw away ten years of my life, for now they want nothing bigger than an eight or ten ounce fruit. As you know, there is still a strong prejudice against purple avocados. Which reminds me that George B. Cellon once told me that he had never ceased to regret having chosen Trapp and Pollock as the first two varieties to be put on the market commercially; he had developed what I believe you folks call "consumer resistance" to purple fruits which exists to this day.

The alternate-bearing habit of the Guatemalan race seems gradually to be driving this race out of the industry, at least so far as California is concerned. Just this year the Variety Committee of the California Avocado Society had to take Nabal, one of my pets,

off the approved list. I don't blame them. Nabal is a magnificent fruit—one of the finest of its race. I chose it in Guatemala, way back in 1916, because it was such a fine fruit and the parent tree was carrying a tremendous crop. I gave it the name "Nabal" which is an Indian word meaning "abundance." When they threw this back at me in California, not long ago, I defended myself strongly. "Sure it means abundance," I said, "abundance every third year."

I am afraid we are not prepared, here in Honduras, to give Florida avocado growers as much assistance in the matter of new varieties as we hope to give the Californians. But I want to tell you briefly what we have been doing. In 1947 Harian Griswold and others of the California Avocado Society decided it was time to go back to the native home of Fuerte and get some more varieties with the same background—crosses between the Guatemalan and Mexican races. It happened that a resident of Atlixco had got the fever, probably (I assume) from having heard how Fuerte had succeeded in California, and he had planted an orchard of about 4000 seedlings. These were probably 15 or 20 years old, hence of mature size.

Louis Williams and I joined the Californians, and as we went through that wonderful collection of potential varieties I thought to myself, over and over again, "What a time I would have had if I could have dropped into an avocado paradise like this when I was exploring for Dr. Fairchild thirty years ago!" We picked out a lot of promising trees and cut budwood. Some went to California, some went home with me to Honduras.

Of course there were many trees which were not in fruit at the time of our 1947 visit, so we decided to go back again in 1948, at a slightly different season; and this time some of the lads from Texas joined us, and we understood your own Ivey Futch was planning to come. He did not show up—maybe a hurricane blew him temporarily off the map. Anyway, we did our best without him and even visited several other avocado-growing regions.

The result of these two expeditions was some 40 selections, which were planted in California, in Texas, and in Honduras; and subsequently we sent budwood of some of the most promising to Florida, to South America, and even as far as Johannesburg, South Africa. I do not think any of these introductions has yet matured fruit in California, but here in Honduras (because, as I tell everyone, here we have the sort of climate folks *think* they have in California) we had mature fruit on some of the 1947 selections twenty months after insertion of the buds. Since that time, we have fruited about 25 altogether, and some of them look very promising, so much so in fact that we have named and described two, which we call Aztec and Toltec. We propose to go on giving Mexican names to further good ones which show up; I have already chosen Zapotec and Huastec and was going to use Mixtec until someone mentioned that it would be pronounced "mistake" and might eventually prove to be a bit too appropriate.

I do not know what to expect of these varieties in Florida. If any one of them pans out, I imagine it may prove to be in the Ridge section, rather than South Dade. As far as we can see, there is no West Indian blood in any of them. Some lean toward the Guatemalan side, some toward the Mexican. The former may be the ones most worth trial.