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# About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

CITPUS EXPERIMENT STATION DEPRTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA

May 16, 1960

#### Air Mail

Dr. Wilson Popence Antigua Guatemala

Dear Wilson:

I was very interested in receiving the copy of your letter of May 6 to Dr. Coit with your comments on the avocado root rot situation in various parts of Central America. I would think that your analysis of the situation regarding the occurrence of avocados on limestone areas is essentially correct, particularly if, as you suggest, these areas are primarily well drained.

I would like very much to have a small root sample from the area at Pintado, Guatemala, where you note that a number of avocado trees have died from some malady. J'll cleck with quaranter people on this & Hoping to see you up this way before long. I am. may far to have a permit.

Hoping to see you up this way before long, I am,

Very sincerely yours,

George A. Zentmyer Plant Pathologist

GAZ:b1

### ESCUELA AGRICOLA PANAMERICANA

APARTADO 93

TEGUCIGALPA, HONDURAS CENTRO AMERICA

Antigua Guatemala, 20 July 1960

Dr George Zentmyer Citrus Experiment Station Riverside, California.

Dear George:

Referring to your letter of 10 June:

Herewith a few feeder roots from a thirty-year-old tree of QUEEN avocado which is growing at Finca El Pintado in the outskirts of Antigua. We know this tree is 30 years old because Jorge Benitez and I planted it; I am pretty sure it was propagated at Lancetilla Experiment Station in Honduras, and brought over here from there as a grafted tree, probably on West Indian roots. This tree is not in good condition but it is far from dead, there are a number of small branches, dead, in the upper part, on the outside of the tree. I have not seen anything around Antigua which looks more like a case of <u>Phytopththora cinnamomi</u> that this but I have not made a search with this disease in mind.

Ever yours,

Wilson Popence

CITRUS EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA

August 19, 1960

#### Air Mail

Dr. Wilson Popenoe Antigua, Guatemala

Dear Wilson:

This is to report that I could not find any <u>Phytopthora cinnamomi</u> on the roots that you sent from the 30<sup>d</sup>-year-old Queen avocado tree at Finca El Pintado. I don't know whether to be happy or sad about this, but think I should be happy as this indicates that there is little if any root rot in your area.

I had an interesting trip to various parts of Mexico last month, including Tapachula, Tuxtla Gutierrez, various other remote sections of Chiapas and Tabasco, Atlixco, the Huatusco-Coscomatepec area, Monterrey, Sabinas Hidalgo, etc. With the aid of Prof. Efrain Hernandez from Chapingo I collected over 1000 avocado seed plus some <u>Persea schiedeana</u> (and some that looked like hybrids), and found <u>Phytopthora cinnamomi</u> in Tapachula, Atlixco (Gilly grove), and near Huatusco.

You may be interested in knowing that one of my collections from the Rodilles grove shows promise in our root rot resistance tests. This is a tree that looks somewhat like Duke but has dark fruit; based on just a few seedlings to date it may be better than Duke.

Best regards,

Very sincerely yours,

George A. Zentmyer Plant Pathologist

GAZ: jp

CITRUS EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA

October 7, 1957

Dr. Wilson Popence Calle de la Nobleza, Number 2 Antigua, Guatemala, Central America

Dear Dr. Popence:

In additional tests with the Duke variety of avocado for resistance to Phytophthora root rot, this variety looks increasingly good. It certainly stands out above the standard rootstocks in a number of trials that we now have underway, though its resistance is not as high as that of some of the small fruited species of <u>Persea</u>, such as <u>P. Skutchii</u>, <u>P. caerulea</u>, <u>P. borbonia etc</u>.

As an indication of how Duke is continuing to show resistance in our tests this year, 75 out of 175 Duke seedlings are showing root rot in one of our test beds, compared with 47 out of 49 Topa Topas.

Ever since this variety first looked interesting from the resistance aspect about 4 years ago I have wondered what its origin might be. In 1954 I visited the old Sunnyslope Nursery site in Butte County where the Duke originally came from in California, and tried to find out from old timers in that area something about its possible origin. There were no clues, except that a Mr. Benedict about 1912 brought several hundred avocado seeds into California from some place in Mexico, selecting the fruit for good size and appearance, and planting these seed at the Sunnyslope Mursery at Bangor (southeast of Oroville).

I wondered if you might have any ideas as to the source of the Duke in Mexico, or at least what area might be the most likely place to look for a variety of this type. Here we have a source of moderate resistance at least; possibly in the region in Mexico where this type came from there may be some seedlings with even higher resistance. I would certainly appreciate any suggestions that you might have along this line.

. I hope that you are enjoying your "retirement", though I suspect that, will be more a change of the scene of your active horticultural interests rather than an actual retirement. Nonetheless it is hard to imagine the Escuela Agricola Panamericana without you as Director. That institution is certainly a remarkable living monument to your efforts and vision, and I hope it will continue along the lines which you so effectively initiated.

With best regards.

Very sincerely yours,

leorge

George A. Zentmyer Plant Pathologist

Antigua, Guatemala, 21 Oct 1957

Dr George Zentmyer Riverside, California.

Dear George:

Mighty nice to hear from you. I am afraid, however, that I cant be of any help on this Duke business. Paul and I left California in July of 1912; previous to that time, my father and I had pretty close contact with avocado interests in <u>southern</u> California -I think we knew practically of the enthusiasts and all of the interesting trees; but I dont recall that we had any contacts up in Butte dounty though it does seem to me that we shipped a few trees up that way. I do not recall a Mr Benedict, who is believed to have brought the seeds from Mexico out of which Duke developed.

To make matters worse, I am not familiar with Duke. I do not believe I have ever seen a fruit of it, hence I cannot make any worthwhile suggestions as to where we might find similar things in Mexico; but if I had to guess I would say that there is a good chance it might have come from therMonterrey area. We were not getting into contact, very much, with the Querétaro region until about 1911, and I dont believe California avocado enthusiasts were much involved even at that early day. Much less with the Zitácuaro region.

If you get any good leads, you and I will go up and run them to ground. It is fine to be able to do the things one wants to do 2 as is my case now; though I am getting myself tied up with obligations in Salvador and in Spain and I suppose in a few months more I will be even more helpless than I was at Zamoranol. I am looking forward to next spring in Spain, when I think I will be able, not only to help get quite a few interesting fruits established on the Mediterranean coast, but also to make a rather detailed survey of what they already have, just as I did during July and August in Salvador. It was extremely interesting, and I believe will be useful in the long run, to make an inventory of what there is in Salvador and where.

If and when you come down this way again, remember you must spend several days with us if we are here at the time. In a general way we are planning to head for Spain about the first of March; take in the International Hort Congress at Nice in April; and perhaps go over as far as Israel to see what those boys are doing - and I think they are doing a lot! But I really want to do something in Spain. The hard part is getting living plant material over there from here; so much delay, so much red tape.

Ever yours,

Wilson Popence

CITRUS EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA

January 29, 1958

#### AIR MAIL

Dr. Wilson Popence Calle de la Nobleza, Nu. 2 Antigua, Guatemala, C. A.

Dear Dr. Popence:

Thank you for your letter of January 15. It sounds as though you have a very interesting trip planned to Spain and other points.

I have been thinking more about our program of resistance to Phytophthora cinnamomi, and feel that we should have a continuing active program of collecting and testing of materials of all types, as a resistant stock certainly seems like the ultimate control for this disease. This means additional collections in Latin America, for certainly all of the possibilities there have not been explored.

Do you have any idea whether it might be possible to hire someone familiar with the area, on a part-time or even fulltime basis, to make collections for us? I cannot spend long periods of time on this phase, though I may be able to get down on short trips as on this Duke project, and to plan and organize some of the work. Do you know of anyone who might be interested and who would be effective in such a project? First and foremost, would you be interested in doing this type of thing? We are working on the possibility of funds for such additional collecting now, and are reasonably certain that such will be available if we can find the right person to do the work.

With best regards,

Very sincerely yours,

Heorge G. A. Zentmyer

Plant Pathologist

GAZ/DIS It looks like an metican try may be full or tryast.

Rancho California, Almuñecar, Granada, SPAIN 21 March 1958

Dr George Zentmyer Citrus Experiment Station Riverside, California.

Dear George:

Your letter of 29 January caught up with me in Madrid a couple of weeks ago. If I were not otherwise tied up, I would be happy to conduct a hunt for rootstock material in tropical America. But my program for the rest of this year is full - and probably it will be Custer's last fight. Helen and I have established headquarters in this very delightful spot, the valley of Almumecar, which unless you can beat us in California is the largest center of grafted cherimoya culture in theworld. I will tell you later how many acres there are in this valley. I look forward to some interesting work on variations on productivity and things like that; but the main job here is to establish a good coalection of avocado varieties, after finding out what has been the trouble with the plantings already made. Now, dont tell me it is Phytophthora because I cant seen any signs of it! But just to satisfy you, I shall probably be sending you a few roots from sick trees sooner or later. As far as I can learn, there are between 100 and 200 avocado trees on the Mediterranean coast of Spain, probably nearer the first than the second number. While in this part of the world I hope to visit Israel and the Canaries and Madeira - all interesting places for subtropical fruits, and of course I would include the North African coast but they tell me the climate on that side of the Mediterranean is very bad. I dont mean for fruit trees.

Helen and I have just gotten into our stride here, the logistics working well and so on. I am going to be writing to Doc Coit and Art Schroeder and a few others next week, and will probably be after you also from time to time. This is going to be one of the most interesting jobs I have ever tackled and I hope I can make it useful to these folks as well as to the New World. Right now we are thinking primarily of avocados and hychees and macadamias.

As to someone to chase after rootstocks in C A: I thought you folks had a deal with the I stituto Agropecuario in Guatemala -I saw in the Yearbooks that the Society had given some financial assistance, but never heard, in Guatemala, who washandling the job. Jorge Benitez, now working with the Instituto, is your man if you can possibly pry him loose for a time. They are sending him to Hawaii in April, I understand, to learn all about Macadamias, and he is supposed to come back thru California. If you meet him, dont forget that he has worked with me on and off since 1919 and I consider him tops - no Fh.D. but the best darn plantsman in our neck of the woods. Anything you can get Jorge to do for you will pay dividends. He is running three large nurseries in Guatemala for the ICA boys and they are the only really good nurseries I have seen outside of Zamorano, of course.

Always yours cordially

March 24, 1959

CITRUS EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA

> Dr. Wilson Popence Calle de la Nobleza, Nu. 2 Antigua, Guatemala, C.A.

Dear Dr. Popence:

It was certainly a pleasure to see you on your all-toobrief visit to Riverside, and I hope that you and Mrs. Popence had a good trip back to Guatemala. I have been thinking about the ASHS meeting in Costa Rica that you mentioned, also the possibility of doing some avocado rootstock exploring with you, as you also mentioned.

I am not sure yet of being able to come down, but would certainly like to very much. University funds seem to be a bit scarce this year. If I can make it I wondered if there is a possibility that we could spend some time together looking for rootstocks in Honduras or Guatemala, or wherever you had in mind, <u>before</u> the ASHS sessions? I should be back here for our Phytopath. Society meeting in San Diego the week of June 15.

As I recall you also said that there might be someone in Guatemala who could do a good job of collecting for us, in this rootstock search, on a year-around basis--or at least during the main fruiting seasons. Do you have any more thoughts on this?

I would appreciate hearing from you regarding the above possibilities. Also, do you have any more information on the Costa Ricam eeting? Thanks very much.

With very best regards,

Very sincerely yours,

Merge

George A. Zentmyer Plant Pathologist

Antigua, Guatemala, 31 March 1959

Dr George A Zentmyer Citrus Experiment Station Riverside, California.

Dear Georges

Your letter of 24 March has just come. On our way back from California to Guatemala I talked with Ralph Richardson and Ernest Casseres over the telephone (we just stopped overnight in Mexico) and my understanding is that the ASHS meetings will be held in San José de Costa Rica 7 to 13. I am sending a copy of this letter to Ernest so he can advise you if there is any change in the program, because I realise you will have to make alans well in advance if you are going to attend. I may mention that there has been some talk about an Interamerican Congress on Agriculture here in Guatemala, sometime in May. I spoke to Ralph and Ernest about this when I went through Mexico, and on getting back haseeI have made inquiries, but no one seems to know anything about it. I dont believe it can possibly come off in May. It takes some time to organize those international meetings. I shall continue to check up, but my ex-disciple Enrique Carcia Salas has just retired as Minister of Agriculture (he told me in January he felt sure they would have the Congress in May) and it seems ti me very doubtfull that the new Minister, Lic. Clemente Marroquin Rojas, whill have time to get into his stride andarrange a meeting for May.

Now coming down to your question, the possibility that we might spend a little time looking for avocado rootstocks in Honduras and Guatemala before the ASHS meetings in Costa Rica. You want to get back to California by June 15th for meetings of the Phytopatholigical Society at San Diego in June - the week of June 15th. Unless the dates for the ASHS meetings in Costa Rica have to be changed and I do not believe they will be, you could do this, provided you come down a little early and you and I do what we can the look for avocado rootstocks before the ASHS meetings. I do not know just what to look for here, or in Honduras, bjut as for your suggestion that we line up someone to stay on the job, I believe this will be easy. We have Jorge Benitez here, who is working for ICA, and who is a real plantsman and who knows his aguacates. Just last month Mario Jalii, whom I trained at Zamorano and who subsequently got his M.S.Ag. at Gainesville, has come over here as horticulturists for the FAO. So we are sighting pretty, so far as good help is concerned. I would strongly advise that you come down here in time for us to spend a few days together before we go to the ASHS meetings in Costa Rica. I am flying down to Venezuela next week to see if I can help the Fundación Eugenio Mendozz organise a fruit improvement program but I expect to be back here by the end of April - I have offered to go down there just to make plans - a thing I rather regret as I am tired of making surveys and programs - but I think perhaps I can get a man or two into the picture who will do something, and avocados will have their place.

You can figure on my being back here by the end of April. Borrow enough money so you can be here a little before June first, then we will go on to Costa Rica together.

Ever yours,

CITRUS EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA

April 29, 1959

#### Air Mail

Dr. Wilson Popenoe Calle de la Nobleza No. 2 Antigua, Guatemala, C. A.

Dear Dr. Popence:

I was certainly glad to hear from you following your return to Guatemala, and appreciated the information on the meeting in Costa Rica. I would like to be able to get there but am doubtful of the possibilities.

You mentioned that Mario Jalil or Jorge Benitez might be able to do some collecting for us in this search for resistant avocado rootstocks. Could you give me any sort of an idea of how much time either of them might be able to put into such work, and how much money would be required to finance such an operation? Would they be able to do collecting outside of Guatemala? I had thought, for example, of someone who could perhaps spend one-quarter to one-third of his time on such a project, making collections of course in the months when most avocado seed, and occasional seed of other species of <u>Persea</u>, would be available.

bit start, so I am a bit dubiaus of making it. If I can develop some sufficient good reasons, I may be able to make it - the apportunity to spend some time with you in the field would certain be themesdays of worthwhile. If there were anything an avoicedos, or

portivilar) avoido diseases on the program in Costa Pica too, thes

Thanks for any information on this. With best regards,

Very sincerely yours,

george

George A. Zentmyer Plant Pathologist

P.S. The administration Leve doesn't look too foroally on my going down to the Costa Rican neeting & finds are a

Antigua, Guatemala, 9 May 1959

Dr George Zentmyer Citrus Experiment Station Réverside, Calif.

Dear George:

Thanks for yours of 29 April, but I am mighty sorry to hear that the chances of seeing you in Costa Rica are slim. I am leaving tomorrow for Venezuela and expect to be in CR the first week in April. I shall stop in Sakvador on the way back to Guatemala. I wish you could be along. I always enjoy knocking around with you. I have just sent Marvin Rounds a long report on the avocado work in Spain, Israel and the Canaries which I hope will appear in the new Yearbook; I hope you wont object to the few jokes in which you are involved. I felt I had to make this report rather easy reading, because the guy down at Vista the is seeing his orchard go out with root rot isnt in exactly the mood for a paper a taxonomic revision of the species of Phytophthora isolated from roots of Pers ea americana Mill. (P. gratissima Gaertn.)

About getting some collecting done down here. I dont think Mario Jalil will have an opportunity. Jorge Benitez might be able to do something. If Paul Allen finishes his work in Salvador next month and does not get tied up too heavily he would be the ideal man. We dont know where Paul may land. I am urging, begging him to take over Lancetilla; and if he does I feel sure he might be able to devote one fourthof his time to outside work such as you have in mind, and not only in Honduras. He would be an excellent bet; next would come Jorge Benitez but right now he is tied down too closely. But times chamge and we change with them - at least we damn well better!

Ever yours,

Antigua, Guatemala, 14 July 1959

Dr George Zentmyer Citrus Experiment Station Riverside, California.

Dear Georges

When I was touring Mexico with members of the III Curso Internacional de Horticultura, we visited the interesting Citrus region around Rio Verde in the State of San Luis Potosí. They are having their troubles with diseases. The local extension agent, Ing. Romero Buenos, is extremely anxious to get a copy of the Color Handbook of Citrus Diseases by Klotz and Fawcett. He has been unable to get a copy through any of the booksellers he has approached.

It occurred to me that there might just possibly be a spare copy available at Riverside, and since you are the one there whom I know best, I told Ing. Buenos I would ask you to see if you could find one and send it to him. I shall appreciate it greatly - as will he - if you can do this, but we will understand if you can not. His address is:

> Ing. Romero Buenos, Delegado de Extensión Agrícola, Rio Verde, Edo, de San Luis P**otosi**, MEXICO.

With best regards always,

Sincerely,

Wilson Popence

copy to Ing. Romero Buenos

Antigua, Guatemala, 14 July 1959

Dr George Zentmyer Citrus Experiment Station Riverside, California.

Dear George:

Our enemy is closing in on us. At least <u>some</u> enemy is. What did I find in Venezuela. First thing, your colleague Malagoti told me, and showed me a publication to back it up, that about 60% of the avocados in Venezuela are dead or dying. I hoped he was exaggerating, but after my bather thorough survey of the areas where avocados are growing or have been grown, I was just about knocked cold. I went down with the hope of giving avocado culture a boost. As far as I can now see, avocados in that country will have to be limited go the limestone areas or to those few regions where there are light sandy s oils. Everywhere, everywhere, trees more than 10 to 15 years old dying out. I only as about a dozen trees which I could feel were 50 years old; half a dozen of these in a light sandy area north of Valencia, the rest near Carbie, south of Cumaná, a limestone formation. I went to see a fine big orchard (mixed fruit species) near Acarigua; heavy soil; poor drainage qualities. This orchard is about 5 or 6 years old, lots of grafted avocados; lots of them already dead, others in bad shape.

Then what does I do? I comes up to Mexico, and goes to Queretáro. The near-by section known as Pueblito has been a big avocado center as you perhaps know. All small black mex of course. Dead and dying trees everywhere. I asked a man what was happening. He said, This sickness hit us 10 or 15 years ago and we dont know what to do about it. Soil pretty heavy clay, poor drainage.

So there you are, George. In Mexico City last week I met your Dr Boyce for a few moments and I told him the only hope I can see right now is to limit our plantings, down here, to limestone areas or very sandy, well-drained soils. Now sit down and prescribe a cure for us.

Incidentally, and following your advice, I looked around in Venezuela for curious forms or allied species but saw nothing. In Costa Rica, where I stopped a couple of weeks, I did not get out into the field very much but you know that area well.

This business has me worried.

Ever yours,

Wilson Popence

CITRUS EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA

July 24, 1959

#### Air Mail

Ing. Romero Buenos Delegado de Extension Agricola Rio Verde, Edo, de San Luis Potosi Mexico

Dear Ing. Buenos:

Dr. Wilson Popence has written me regarding your desire to obtain. a copy of the Color Handbook of Citrus Diseases, by Klotz and Fawcett. I have contacted Dr. Klotz regarding this, and am very sorry to inform you that the book is out of print and that there are no copies available here at Riverside.

Dr. Klotz tells me that there is a possibility that the book will be reprinted, but he does not know just how soon this may take place.

Very sincerely yours,

Herge

George A. Zentmyer Plant Pathologist

GAZ:TT cc: Dr. Wilson Popence.

W Dron'. Sorry that this seens to be the situation. & Ritoty tells no that he has finished the manuscript on a revision but to norder when it will be and it will be required apparent publication funds are scarce at present. Vot rot in Vereyvels etc. Joops like resistance is the best answer a we are certain trying everything possible

#### Antigua, Guatemala, 1 June 1960

Dr George Zentmyer Cisture Experiment Station, Riverside, Calif.

Dear George:

Yrs of 16th pxmc ppdc recd and contents noted. Let me know if need a permit to receive the roots of one of those sick trees at Pintado; and I will do the needful. I want to keep you out of jail at any cost. Which reminds me: I sent some budwood of the capulin cherry (Prunus serotime var salicifolia, to my way of thinking, but the really top-flight botanists do not all agree with me) to my good friend Robert Tichdeat Haifa, Israel. I sent the budwood by first class air mail and Roberto wrote that he got it promptly, even though it was sent in what was not exactly an orthodox manner. I guess you've got to he orthodox these days. I brought an avocado, Choquette, from Florida over here two months ago - just one nice big fruit - and it was grabbed at the airport. Might bring a new disease into Guatemala. I am for all this if someone can say what new disease that avocado might bring into this fatherland of avocados.

I have just returned from a two weeks' job in Nicaragua (I wish they would stop giving me these jobs; I want to do some writing) and I want to mention two things, viz.: Those avocados of Chinaders, West Indians, are just about the finest West Indians I have ever et and I have et a lot of West Indians; and secondly, I was given a free trip over almost all of the Patific side of Nicaragua and did not see any trees which looked to me as though there was Phytophthora in the picture. There are not a great many avocados in Nicaragua outside the Chinandega region; maybe you have been there and know more than I do. I have worked up a fruit development program for that country and am recommending some of the Florida hybrids and for the higher elevations, Nabal and Hass (now dont snort about Nabal; they say in Israel it only Bears every second year, but in that second year it bears more than enough to make up for the off year); this program might give Nicaragua avocados 8 monthso out of the year instead of three as at present.

I am glad you agree that I was wrong about the limestone soils. It aint the limestone, it is the drainage. I am still looking that that avocado or relative which loves to grow on wet heavy clays and will take the avocado bud as a duck takes to water; but I suspect I am too dld to find it. But I feel you boys are making some progress. If I should hit the jackpot one of these days and fly up to California with a Phytophthoma rootstock, of course I mean a Persea rootstock which Phytophthora doesnt like, then you boys are going to set me up a good luncheon at the Mission Inn.

Ever yours,

Wilson Popence

CITRUS EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA

June 10, 1960

#### Air Mail

Dr. Wilson Popence Antigua Guatemala

Dear Wilson:

I am enclosing a quarantine tag for shipping avocado roots which you suspect of having Phytophthora cinnamomi.

Please wash all soil from the small feeder roots and enclose them in a small plastic bag such as the one I enclose.

Very sincerely yours,

George A. Zentmyer Plant Pathologist

GAZ:b1 Encls.

Tag et . just tomote it legol ;

CITRUS EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA

March 8, 1961

Air Mail

Dr. Wilson Popence Calle de la Nobleza Nom. 2 Antigua, Guatemala

Dear Wilson:

Carl Crawford tells me that any avocado seeds imported into California in the early days came from a man by the name of Servien in La Canada near Oueretaro.

Carl thought that you would have some information on Sr. Servien's address and whether he is still in the area. I would like to contact him, if possible, in relation to our search for the source of Duke seed in particular, among the early shipments to California.

Thanks for any information.

Best regards.

Very sincerely yours,

George A. Zentmyer Plant Pathologist

Are you going to Caribbean meeting in miani mout 20-24? I plan to go-hope to see you there.



### THE AMERICAN PHYTOPATHOLOGICAL SOCIETY

OFFICE OF THE SECRETARY DEPARTMENT OF PLANT PATHOLOGY UNIVERSITY OF CALIFORNIA RIVERSIDE, CALIFORNIA

May 29th, 1962

anne 2 June 1962

Air Mail

Dr. Wilson Popenoe Calle de la Nobleza, Num. 2 Antigua, Guatemala

Dear Wilson:

My plans are definite for attending the meetings in Antigua, and I am certainly looking forward to seeing you there. I will probably come down from Los Angeles on Saturday, June 16th, and come on over to Antigua that afternoon.

I will also look forward to discussing avocados with you, and if possible, getting around in the field after the meeting and making some collections. I could spend a few more days in Guatemala, and may also go on down to Honduras.

Very sincerely yours,

George A. Zentmyer, Plant Pathologist

GAZ:S

CC: Dr. Wilson Popenoe 1722 N.W. 2nd Avenue Gainesville, Elorida

UNIVERSITY OF CALIFORNIA DIVISION OF AGRICULTURAL SCIENCES COLLEGE OF AGRICULTURE CITRUS RESEARCH CENTER AND AGRICULTURAL EXPERIMENT STATION

DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA 92502

February 24, 1964

#### Air Mail

Dr. Wilson Popence Calle de la Noblesa 2 Antigua, Guatemala

Dear Wilson:

Thank you for your letter of February 15. We will be pleased to receive the scions of 14375 whenever you are able to obtain them. Also, I will be glad to forward your article to the editor of the California Avocado Society Yearbook.

With best regards.

Very sincerely yours,

George A. Zentmyer Professor of Plant Pathology

GAZ:hb

#### UNIVERSITY OF CALIFORNIA DIVISION OF AGRICULTURAL SCIENCES COLLEGE OF AGRICULTURE CITRUS RESEARCH CENTER AND AGRICULTURAL EXPERIMENT STATION

DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA 92502

February 24, 1964

Mr. Hugh T. Walker Editor, California Avocado Society Yearbook 4833 Everett Avenue Los Angeles 58, California

Dear Hugh:

I am enclosing an article entitled "A new avocado of the Mexican race" that Wilson Popence sent to me for publication in the 1964 California Avocado Society Yearbook. I would appreciate your attention to this article.

With best regards.

Very sincerely yours,

GAZ:hb Encl. George A. Zentmyer Professor of Plant Pathology

cc: Dr. Wilson Popence

### UNIVERSITY OF CALIFORNIA

DIVISION OF AGRICULTURAL SCIENCES

BERKELEY · DAVIS · IRVINE · LOS ANGELES · RIVERSIDE · SAN DIEGO · SAN FRANCISCO



SANTA BARBARA · SANTA CRUZ

RIVERSIDE, CALIFORNIA 92502

August 17, 1965

AGRICULTURAL EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY

COLLEGE OF AGRICULTURE CITRUS RESEARCH CENTER AND

Air Mail

Dr. Wilson Popenoe Calle de la Nobleza No. 2 Antigua, Guatemala

Dear Wilson:

I have just returned from a year's sabbatical in Australia and the South Pacific, southeast Asia, and Europe. This was a very interesting year and I had an opportunity to look at a number of avocado plantings.in that area (particularly Queensland, New South Wales, and Fiji) as well as doing considerable research on various aspects of Phytophthora. I was pleased to see your letter of last September and we certainly appreciate very much your sending the budwood of the Nena variety avocado.

I was also interested in your comments on the avocado descriptions from Peru. With regard to Nabal you might be interested in knowing also that there are quite a few Nabal trees in Australia and also in New Zealand. They are doing quite well and I definitely agree with you regarding this variety. I still think this is one of the best, if not the best, avocado varieties.

With very best regards.

Sincerely yours,

George A. Zentmyer Professor of Plant Pathology

GAZ:hb

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SCHOOL OF AGRICULTURAL SCIENCES CITRUS RESEARCH CENTER AND AGRICULTURAL EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA 92502

December 12, 1966

Dr. Wilson Popenoe Calle de la Nobleza 2 Antigua, Guatemala

Dear Wilson:

It was wonderful to see you again in Honduras, and to be able to attend the Symposium in your honor. This was an excellent meeting and a fine occasion; the honor and recognition for you was certainly well deserved.

I was only sorry that difficulty with my plane reservations, and inability to get reservations out on Sunday prevented me from attending the graduation ceremonies.

You might be interested to know that I isolated <u>Phytophthora</u> <u>cinnamomi</u> from roots of avocado trees in the old avocado grove at Zamorano. The culture looks similar to previous ones from there, and from other areas.

With all best wishes and congratulations on your honors.

Very sincerely yours,

George A. Zentmyer Professor of Plant Pathology

GAZ/dma

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COLLEGE OF BIOLOGICAL AND AGRICULTURAL SCIENCES CITRUS RESEARCH CENTER AND AGRICULTURAL EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY

RIVERSIDE, CALIFORNIA 92502

November 24, 1970

Dr. Wilson Popenoe Calle de la Nobleza 2 Antigua, Guatemala, C.A.

Dear Wilson:

I was very sorry to have missed you on my brief visit to Antigua in July, but understood that you were in Europe. I hope that you had a fine trip and stay there.

There is a possibility that I will be coming down to Guatemala again sometime in January, in connection mainly with our work on a coffee berry necrosis, but also with still much interest in avocados. If the trip materializes I would like very much to see you; do you know whether you will be there in January?

All best wishes.

Very sincerely yours,

George A. Zentmyer Chairman and Professor

GAZ: CW

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COLLEGE OF BIOLOGICAL AND AGRICULTURAL SCIENCES CITRUS RESEARCH CENTER AND AGRICULTURAL EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY

RIVERSIDE, CALIFORNIA 92502

April 13, 1971

Dr. Wilson Popenoe Casa del Oidor Antigua, Guatemala, C.A.

Dear Wilson:

Due to the press of a lot of other obligations here and in Washington and other points, I have had to postpone the visit with you in Guatemala. Also I am involved in a regional conference on <u>Phytophthora palmivora</u> -primarily in relation to cacao -- in Brazil later this month. So now I plan to come down to see you in Guatemala probably about the middle of May -- it will likely be May 17 and 18. Please let me know if this is all right with you. You mentioned going to Honduras later in May, and I want to be sure you will be there when I come down.

All best wishes.

Very sincerely yours,

George A. Zentmyer Chairman and Professor

GAZ:ab

MEMO :

The attached sheets give the most promising locations for collections of avocados and <u>Persea</u> species in Mexico, Guatemala, El Salvador, Honduras, Nicaragua, and Costa Rica, based on discussions of this project with Dr. Wilson Popence in Guatemala recently, also with Dr. E. Schieber, plant pathologist in Guatemala, and Mr. A. Chable, AID Office, Guatemala, and on previous collection locations obtained from herbaria at the New York Botanical Carden, and several other herbaria.

G. A. Zentmyer

May 1971 Wilson: for your information - I you tare any comments - I you tare any comments they would be welcome. they would be welcome.

#### GUATEMALA

#### Collections to emphasize

#### A. Persea steyermarkii -- in order of areas to try:

- Dept. Jalapa between Miramundo and summit of Montana Miramundo: between Jalapa and Mataquescuintla in cloud forest 6 mi south of Miramundo (alt. 2000-2500 m.) fruit Dec. Ridge in cloud forest, 1-1/2 mi south of Miramundo (35 ft tree) known as Aguacate de Montana. Fruit up to 5 cm diameter.
- Dept. San Marcos: trail between Finca El Porvenir and San Sebastian, Volcan Tajomulco - alt. 1300-4000 m. - mountain slopes.
- 3. Dept. El Quiche: moist forest along river from Chajul toward Cotzal (fruit Feb.)

Probably before location 3 - try location in El Salvador = Chalatenango: east side of Los Esesmiles, Lat. 14° 21', long. 89° 09'; alt. 2160-2340 m. - used to be pines near this locality, but they are gone (Flowers, March).

#### B. Persea americana v. nubigena

Dept. Chimaltenango - near summit of mt. north of Tecpan (near sawmill) - Schieber and Dr. Popence know this area. Large trees.

Also: Cerro Chichoy near Chichoy; tree 20 m. in cloud forest along road, Km. 97-98. Alt. 2800 m.

Local names: aguacate de monte; aguacate de montana.

(Also grows on top of Mt. Uyuca in Honduras - Antonio Molina could get seeds for us.)

C. Persea rigens

1. Carrie

Dept. Huchuetanango - vicinity of Maxbal, about 17 miles north of Barillas, Sierra de los Cuchumatanes; alt. 1500 m. (large, avocado-like leaves). Tree 30 ft tall. Rocky limestone jagged forested slopes northeast of Maxbal. Stevermark - July 1942.

Also in Alta Verapaz but even more difficult area to get into. Mr. Al Chable (AID, Guatemala City) says it may be easier to get into the area near Maxbal by going in from Mexico side. There is a good road from Comitan into Las Lagunas de Montebello where there is a Mexican National Park. Chable has camped there. In this area inquiry could be made for this tree similar to avocado - fruit are like avocado but flattened instead of round or elongate. Shape =

It looks as though a better location possibly to get <u>P. rigens</u> would be the Nicaragua location. This is in northern Nicaragua and near a resort hotel (Hotel Santa Maria de Ostuma) alt. 1400 m. According to Dr. Louis Williams there is a big roadside tree 1/2 km. north of Don Salazar's entry road. The hotel is on the road between Matogalpa and Jinotega.

D. Beilschmedia anay -- known as "anay" - pronounced: "aneye"

Dr. Popence knows the location of these trees and could probably get seeds sometime. Try to find this though if possible. Is at entrance to Finca El Compromiso (about 2 miles from Mazatenango coming from Escuintla) which is on left side of road coming from Escuintla. Tall tree 70 ft; fruit purple-black, 4-6" long; edible.

#### Guatemala (contin.)

E. Hacienda Jauja - in Antigua - Dr. Fopence knows and it is well-known hacienda on edge of town, on right hand side of road that goes up to Santa Maria de Jesus. Here, near the main entrance, is huge old (125 years ±) avocado tree. We should get budwood and seeds if possible from this tree (fruit may not be mature until next winter).

In Cuatemala too, local markets should be visited to look for odd types of avocado fruit, especially in the mountain regions (Atitlan, Chichicastenango, Quezaltenango, etc.) - as for some of the smaller fruit (1"-3" in diameter) that may be other species. Buy fruit in markets and extract seeds as with any collection. Try to find out where fruit came from.

#### F. Persea standleyi

Dept. Solola - trail between slopes of Volcan Santa Clara and town of San Pedro, alt. 1900-2100 m. Tree 40 ft. tall; leaves firmly membranaceous; deep green above, paler green beneath. June 6, 1942. (Steyermark) - small fruit = 1 cm ±. Also: Chiquimula, Volcan Quezaltepeque (Steyermark)

#### MEXICO

Collections and areas to emphasize:

- A. Vigorous old seedling trees (culture roots for P. cinnamomi
  - 1. Alamos (Mrs. D. Gordon or G. Roberto Bloor, Obregon 18, Alamos, Sonora) Sonora
  - 2. Uruapan area
  - 3. Others?
- B. Old groves or areas with many seedling trees, where root rot is present preferably, or even some with a variety of seedling types (W. Indian, Mexican, hybrids, etc.) that do not have root rot.
  - 1. Arsola grove, near Ciudad Victoria (Dr. Popence suggests this)
  - Queretaro La Cañada area here had thousands of trees; root rot has been severe here - look this over for survivors.
  - Rodilles grove, Atlixco. This grove had many hundred seedling trees, of variable origin according to Dr. Popence; there is probably root rot there - this should be looked over for interesting types and for survivors of root rot.
  - 4. Dr. Popenoe many years ago took records of over 200 seedling trees scattered through the town of Orizaba - these included West Indian as well as Mexican types, and also <u>Persea schiedeana</u> ("chinini"): The avocado trees in Orizaba (door-yard, backyard trees) should be looked over to see if there are interesting different types still there, as vigorous trees (West Indian types, Guatemalan, Chininis, etc.). Seeds from some different types could be collected, including some Persea schiedeana.
  - 5. Groves with root rot in Michoacan Dr. Calindo knows some of these as in the Tacambaro area. These should be looked over for vigorous survivors, if they are seedling trees, and root cultures made to check presence of P. cinnamomi.
  - 6. There may be similar groves with root rot in the Atlixco area with seedling trees. The Gilly grove there has much root rot but the trees are all grafted so it wouldn't be possible to pick out resistant seedlings and propagate them. The Gilly grove should be visited though to observe the root rot situation.
- C. Native avocados or other Perseas

1. Dr. Popence suggests that the area on the slopes of Mt. Orizaba be explored, going into the area from around Huatusco or Coscomatepec, and inquiring for wild avocados or aguacatilios (checking local markets, etc.) - aguacates de montanas or aguacates silvestris. (See article by Dr. Popence and Dr. Louis Williams in Avocado Yearbook about 1947 and 1948 following trip to Mt. Orizaba area.)

MEXICO - Collections and areas to emphasize (contin.)

- 2. Dr. J. Guevarra of INIA at Chapingo has some knowledge of some native avocados in Mt. Orizaba area.
- Another interesting area for native Mexican type avocados and possibly wild species too, is the area north of Oaxaca - along road from Tuxtepec to Oaxaca (see Mexico sheet p. 2)
- 4. Around Jalapa is another interesting area. Check with Ing. Sigfrido Alvarado M. at Mexican Coffee Research Institute at Jalapa or at Mexico City Office: Instituto Mexicano del Cafe, Insurgentes Sur 421-B, Mexico 11, D.F.; He sent in Beilschmedia seeds from Jalapa area.
- 5. Dr. Popence suggests that the area south of Oaxaca should be worth exploring too for wild avocados - along road from Oaxaca to Pochutla. He collected a small-fruited avocado (about size of a date) in that area, from elevations of 2000 to 9000 ft - known locally as "aguacatillo": common in forests; one area was Cafetal Concordia.

#### D. Persea species

Check locations for other species of <u>Persea</u> - as <u>P. hintonii</u>, <u>P.</u> <u>podadenia</u>, <u>P. cinerascens</u> (for additional types), <u>P. purpusii</u>, <u>P.</u> <u>standleyi</u>, on sheets with locations in Mexico, with botanists - as Dr. E. Hernandez X. at Chapingo to see which ones of these we might be able to collect.

#### EL SALVADOR

#### Collections to emphasize

#### A. Persea steyermarkii

Chalatenango, east side of Los Esesmiles, Lat. 14° 21', long. 89° 09', alt. 2160-2340 m. There used to be a stand of pines near locality, but they are gone now. Flowers - 20 March 1942.

- B. "Aguacate mico" small fruited (2-3" ±) wild avocado, probably <u>Persea americana</u> that grows on slopes of volcano near San Salvador. This is known at Santa Tecla Experiment Station - by Ing. Tamaco, by Armando Alas, etc. Get budwood if seed not mature.
- C. Visit avocado variety planting at San Andreas take root samples from any suspicious-looking trees. Some of young trees in new planting looked a little weak in April but soil was dry at that time.
- D. P. vesticula (formerly P. popencei)

Dept. of Santa Ana, Gearo Monte Cristo, 6000-6500 ft, tree to 75 ft tall, in primary forest; small fruit (to 1/2").

#### HONDURAS

Most feasible collections:

- P. americana -- "Aguacate de anis" or "Aguacate mico" strange type with small, round, hard-skinned fruit, and with strong anise odor in leaves, fruit, and bark. Found in mountains above Lancetillo Tropical Carden; also in Comayagua.
- P. americana v. nubigena (formerly <u>P. gigantea</u>) -- wild type, small round fruit, large trees, growing near summit of Mt. Uyuca. Large trees. Also in El Paraiso: on Montanuela de los Arados south of Guinope.
- P. vesticula formerly called P. popencei by Louis Williams; grows along ridge of San Juancito mountains east of Tegucigalpa; large trees. Small fruit.

#### NICARAGUA

#### Collections to emphasize

- Persea rigens Dept. Matagalpa, near Hotel Santa Maria de Ostuma, on road from Matagalpa to Jinotega, 1400 m. elevation; large roadside tree 1/2 mile north of Don Leo Salazar's entrance road. This species is close to P. americana, and has fruit up to 5 cm. in diameter.
- 2) P. americana v. nubigena

Dept. Madriz - Cut over cloud forest area on Volcan Serrato, about 10 kms south of Sorrato. 1967 L. Williams.

Cloud forest area - Sta. Maria de Ostuma, Cordillera Central de Nicaragua between Matagalpa and Jinotega, Dept. Matagalpa 1500 m. 1963. Flowers June - August.

#### COSTA RICA

Collections to emphasize:

1) Aguacate mico or Aguacate de anise. This is the tree that Wilson Popenoe and Oton Jimenez collected about 50 years ago, and may be similar to the "Aguacate mico" from Honduras. On slopes of Volcan Irazu near Rio Macho. Collection data say: "Near Rio Macho, La Palma"; "Quebrada Los Piedros, Coronado, 1400 mi.

2) <u>P. pallida</u> -- 1400 m. alt. - Valle de Coto, Puntarenas (fairly similar to P. rigens). Only collection.

Region of Zarcero, alt. 5500' along roadside, opposite woodland, in open. Tree 30' - Fruit Sept. 1937.

Also Cartago, alt. 1200 m. - at Orosi.

Also Zarcero, 1880 m., on continental divide, tree in forest, 18 m. tall.

3) P. brenesii -- Tree 5-7 m. Type collection; A. M. Brenes 4451, La Palma, San Ramon, 1150 m. alt., "bois et pasturages," (elongate leaves ± like P. borbonia.

Summit and SE face of Cerro Capete, on eastern spur of Chiriqui Volcano, 9000', tree 10 ft. (Paul Allen - EAP).

4) Hufelandia ovata - Volcan de Poas (Pittier) - 1907

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COLLEGE OF BIOLOGICAL AND AGRICULTURAL SCIENCES CITRUS RESEARCH CENTER AND AGRICULTURAL EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY

RIVERSIDE, CALIFORNIA 92502

May 11, 1971

Dr. Wilson Popenoe Casa del Oidor Antigua, Guatemala, C. A.

Dear Wilson:

My plans now are to arrive in Guatemala City on Wednesday afternoon, <u>May 19</u>, from Los Angeles, then to come on over to Antigua, and hope to spend as much time as possible with you on Thursday and Friday, going over plans for our expanded avocado and Persea collections. I want to get further ideas and locations from you for collections in Guatemala, Mexico, Salvador, Honduras, Costa Rica, and will have a number of listings from herbarium collections to check with you as to the feasibility of reaching some of these areas. I will have one or two technicians or graduate students coming down probably later in June and July, also August, to do some collecting.

Eugene Schieber, the plant pathologist with the Ministry of Agriculture, has promised to meet me and bring me on over to Antigua. I have reservations at the Hotel Antigua. Also I have some plans to make with Dr. Schieber regarding some of our work on coffee, so we may take care of this Wednesday afternoon, then come to see you Thursday morning. I hope this is still satisfactory even though a day or two later than I indicated earlier.

If time permits too, maybe we can get out and look at some avocados, such as Sr. Falla's planting, or anything else you have in mind. I will have to go back to California on the flight Friday evening.

All best wishes.

Very sincerely yours,

in

George A. Zentmyer Chairman and Professor

GAZ:ab

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RIVERSIDE, CALIFORNIA 92502

May 24, 1971

Dr. Wilson Popenoe Calle de la Nobleza No. 2 Antigua, Guatemala, C. A.

Dear Wilson:

I certainly appreciated very much the wonderful opportunity to spend the time discussing avocados and Perseas in general with you last Thursday and Friday. I never cease to be amazed by your tremendous knowledge of this remarkable genus in the Americas and your excellent memory for the many locations where you have collected and observed avocados over the past more than a half century.

Our discussions I am sure will prove to be very profitable. I have now been able to organize our collecting expeditions for the next few months, thanks to you. As a result of our discussions we should be able to get considerable interesting material in Mexico, Guatemala, El Salvador, Honduras, Nicaragua and Costa Rica.

In Guatemala we will concentrate on collecting <u>Persea stevermarkii</u> (trying first the location in Jalapa, then the one in San Marcos), <u>P. americana</u> v. <u>nubigena</u>, <u>P. rigens</u> (we may try the Nicaragua site for this species too), <u>Beilschmedia anay</u>, possibly <u>Persea standleyi</u>, and some vigorous old seedling trees such as the 125-year old tree that you showed me at Hacienda Jauja.

I appreciate too your willingness to help out on this project and to make collections later in the year when some of these (as <u>Beilschmedia</u>, <u>P. americana</u> v. <u>nubigena</u>, etc.) may be fruiting. I will enclose some quarantine tags for these shipments. Please send me the bills for any expenses involved in collecting or shipping the materials.

The priceless book detailing your collections in Mexico, <u>Guatemala and other</u> Gentral American areas in 1918 and 1919, is a fascinating and valuable record of that early history of the avocado. We are very pleased to have it for the library here at Riverside; it has already aroused much interest among our staff and students and with the horticulturists. Thank you very much for giving it to us.

With all best wishes.

Place that me Poperse for I the workerful dimen & refeatments.

Very sincerely yours,

George A. Zentmyer Chairman and Professor

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SCHOOL OF AGRICULTURAL SCIENCES CTRUS RESEARCH CENTER AND AGRICULTURAL EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY RIVERSIDE, CALIFORNIA 92502 May 24, 1971

Mr. Antonio Molina Escuela Agricola Panamericana Tegucigalpa, Honduras, C.A.

Dear Antonio:

I have just had a fine visit with Dr. Popenoe in Antigua, Guatemala, discussing some potential additional collections of avocados and other species of <u>Persea</u> in relation to our avocado root rot resistance program. We are accelerating this program now and trying to get much more material collected this year and next.

There are three collections that I would like very much to get from Honduras. We can pay any expenses you would have in collecting such material and I would appreciate it very much if you could get these:

1) "Aguacate de anise." This is the odd, thick-skinned <u>Persea americana</u> type with the strong anise odor in leaves, fruit and bark. Wilson Popenoe says that it would be fairly easy to get in the hills above Lancetilla, and also that it grows near Comayagua. The Comayagua area would probably be easier for you to get to. I would like to have seeds and also budwood of this type. Budwood can be sent via airmail (with enclosed tag 37-5966) to San Pedro, California. Seeds have to go (also preferably by airmail) to El Paso, Texas (with enclosed tag 53982).

2) <u>Persea americana</u> f. <u>gigantea</u> (or <u>P. gigantea</u>). This, I would assume, could still be collected on Mt. **U**yuca, or are the trees all cut down? I would like to have both seeds and budwood of this type too. This grows in other areas in Honduras too, as you know.

3) <u>Persea popencei</u> (Dr. Kopp calls this <u>P</u>. <u>vesticula</u>). We have never gotten seeds of this species and I would like to get this in both seeds and budwood. I have seen it in the San Juancito Mountains and probably you know other areas.

If possible I would like to have at least 25 or 30 seeds of each type. The seeds seem to ship better and survive fumigation at El Paso better if the fruit is allowed to soften before the seeds are removed -- at least the fruit should be as mature as possible.

Mr. Antonio Molina

I would appreciate very much your help on these collections. Please send me bills for any transportation or other costs involved in making the collections and also costs for shipping the seeds.

Very sincerely yours,

George A. Dentmyer Chairman and Professor

GAZ:ab

cc: Dr. Robert Armour Dean M. Dugger Mr. Oliver Atkins Dr. Wilson Popence

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SANTA BARBARA . SANTA CRUZ

RIVERSIDE, CALIFORNIA 92502

May 24, 1971

Dr. B. H. Waite and Dr. Robert Hunter Universidad de Costa Rica Ciudad Universitaria, Apartado 16, San Jose, Costa Rica, C.A.

Associated Colleges of the Midwest Central American Field Program San Jose, Costa Rica

Dear Ben and Bob:

SCHOOL OF AGRICULTURAL SCIENCES CITRUS RESEARCH CENTER AND AGRICULTURAL EXPERIMENT STATION

DEPARTMENT OF PLANT PATHOLOGY

I have just had a fascinating and profitable day and a half with Wilson Popenoe in Antigua, going over potential avocado and other <u>Persea</u> collections in Mexico, Guatemala, Salvador, Honduras, Nicaragua and Costa Rica. We came up with many possibilities based on Wilson's tremendous and long experience in these areas, as well as the various herbarium specimen locations that I have.

In Costa Rica, following are additional and more specific possible collecting areas, in addition to what I sent you recently:

"Aguacate mico" or aguacate de anise" -- this is the one that Wilson Popenoe and Oton Jimenez collected about 50 years ago. Wilson says that this is up on the slopes of Volcan Irazu near Rio Macho. Notations mention such information as: "near Rio Macho, La Palma"; "Quebrada los Piedros (Coronado), 1400 m." Wilson says that Oton Jimenez and also Luis Cruz know the locations. This is one type I would like very much to get. If seeds should not be available when you find the tree, please collect budwood: 5 or 6 budsticks about 6" long with buds that have hardened, not current growth.

Another species I would like to get is <u>Persea</u> <u>pallida</u>. I already sent you potential locations for collecting this species.

Also I am still interested in avocados growing vigorously in very wet areas, and especially if Ben cultures the roots and finds Phytophthora cinnamomi.

Best wishes, and thanks for the help.

Very sincerely yours,

George A. Zentmyer Chairman and Professor

GAZ:ab cc: Dr. Wilson Popence Dean M. Dugger Mr. Oliver Atkins

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COLLEGE OF BIOLOGICAL AND AGRICULTURAL SCIENCES CITRUS RESEARCH CENTER AND AGRICULTURAL EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY

RIVERSIDE, CALIFORNIA 92502

June 1, 1971

Dr. Wilson Popenoe Casa del Oidor Calle de la Nobleza No. 2 Antigua, Guatemala, C.A.

Dear Wilson:

Just a note to let you know that I did not recover <u>Phytophthora cinnamomi</u> from the root sample from the sick tree at Hacienda Jauja. I am not sure what is causing the trouble there.

Also I took three more avocado root samples from the Falla property (both on San Sebastian and on Arturo Falla's own place). There was no Phytophthora on these either.

Best wishes.

Very sincerely yours,

George A. Zentmyer Chairman and Professor

GAZ:ab

Antigua, Guatemala, 4 June 1971

Dr George A. Zenimyer University of California It Riverside.

Dear George:

Just a note to akknowledge your much-appreciated letter of 24 May, together with copies of letters to Antonio Molina at Zamorano and Bob Waite and Bob Hunter at San José. Bob Hunter is surely the guy to round up the aguacate mico who gats anise. But I would like to see you get from Honduras a few seeds. Because of the 125 inch rainfall at Lancetilla we really must have seeds from there - and we know there was plenty of Phytophthora cinnamomi at our mursery.

Thanks for sending the quarantine tags which I hope to use to advantage.

I am writing right now to say that tomorrow morning I am booked to fly on Pan Am 504 to Miami, thence to Gainesville by train. I hope to spend three or four weeks in Florida, mainly getting myself up to date on avocados and mangos and the work on grapes for tropical America which they are doing at Leesburg.

Of course anything I ship you will be via Air Mail. I learned my lesson the hard way, but it paid off. I have sent seeds of the green zapote, Calbcarpum viride, to New Zealand on two different occasions, at a lost of One US dollar per seed, but they rew - the seeds, not the dollars. They dont grow any more.

Alice joins in best regards,

Faithfully yours,

Antigua, Guatemala 10 Augusth1971

Dr George A Zentmyer University of California at Riverside, California:

Dear George:

After a long sojourn in Florida and two weeks in Honduras I am at home again. I have not thanked you for your letter of 1 June, in which you state that you did not find any Phytophthora cinnamoni on the 125 year old tree or rather, from the soil on the sick tree close to it, at Finca Jauja. Idem, on soil at Finca San Sebastian nor at Arturo Falla's finca Tempiaque in that same region.

Since returning to Central America I have talked with Antonio Molina at Zamorano, who says he is on the lookout for Perseas and will try to turn up a few things. I have also talked with Arturo Falla who says he got you material from an interesting tree at or near Calderas, not far from his property, La Concepcion, where we have the pears and peaches from Ralph Sharpe of Gainesville.

Three evenings ago Gene Schieber dropped in, just a few hours after my sone Hugh had come owwr from Zamorano on his way back to Florida. Gene seems to be much interested in is on the hunt for interesting material. I told him of s me interesting fruits I had, seen in the market at Jalapa, Guatemala a few years ago. We agreed to go down there and look for these if it gan be arranged. These fruits struck me as mainly of Mexican blood, but didnt look like true Mexicans.

On getting home I found the last is ue of the Explorers Journal (Vol XLIX, No. 2, June 1971) published by the Explorers Club, 46 East 70th St, NEW York 10021. (According to the register, only about Digitized by Huffelmstitute for Boundear Documentation Club longer than I have and there Carnegie Mellon Liniversity, Pittsburgh, PA In recent there the Explorers Journal has been getting out some valuable papers. In the number mentioned, page 86 et seq, is "The Chima Wilderness" T. Macdougall who strikes me as knowing his botany quite well. His paper refers to an exploration in southern Oazaca state. I believe I was in this very same region in 1918, having gone into it from Puerto Angel. C.A.Purpus collected in this region many years ago. On p. 99 MacDougall writes:

What may be considered the backbone of the Sierra Madre, between Cerro Baul and Rio Ostuta is surprisingly easy to follow on foot and and the average altitude of some 5000 feet does not vary very greatly at any part. In the vicinity there are fine stands of pine and oak, but as we travel north and west along the creat these give way to typical cloud forest species. On higher parts, to the north, the outstanding tree is the aguacate (persea sp.y. figs. 14 and 15. This ruggedly picturesque tree may well be termed a dominant species here, for it stands out on high ridges, loaded with epiphytes and defies the storms. These aguacates produce a tremendous crop of fruits in season. The flesh is thin but of good quality. It would be interestin to know how this fruit is shared by the animal inhabitants."

Fig. 15 shows a mountain-top covered with gigantic avocado trees which reminds me of the way out Mt. Uyuca at Zamorano used to look before the Geodesic boys felled those wonderful old trees to put up a tower for sighting on other points in connection with mapping.

It would not surprise me if this avocado is not the same form which we have on Uyuca and on Chichoy in Guatemala, and I think it may be the one I got at Toquian Grande above in Tap achila many years ago (see my Mexican notes). In other words, I think it is probably the wild form of our Guatemalan race, and this site i'm Gaxace is the farthest notth of which I have seen any record.

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We have long known that there are cultivars of the Guatemalan race in Oaxaga city, and we know that they have highly developed ones at Atlisco. Were they brought into cultivation from the mountains of Oaxaga or were they brought from from Guatemala where we believe they had been cultivated for 2000 years or more, and dotheless improved by selection of superior seedlings?

I do not feel confident than anything unusual will be found quong those wild trees in Oaxaca, but of course one never knows. It might be worth while to have one of your men get into the region where these wild trees are so abundant. It would especially be interintesting, from the botanical standpoint, to know if this wild form is the same as Williams( P. nubigena of Chichoy and his P. gigantea of Uyuca, which Lucille Kopp reduces to botanical varieties of P. americana.

Thanks for sending me, with your letter of 1 June, the program you are now putting on foot - or have put on foot. As we mentioned when you were down here, I feel our best hope lies in screening thousands of trees, especially where Phytophthora has taken its toll, and secondily, the possibility of finding a hybrid or a species of Persea close enough to americana to be graft-compatible and at the same time <u>Phytophthora</u> resistant. But you have thought about all such points much more than I have, and have done a lot of experimenting. Keep it up! I feel particularly hopeful about Veracruz State and surrounding regions in Mexico, where there are zo many Perseas and closely related plants.

Warmest regards always.

Faithfully yours,

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COLLEGE OF BIOLOGICAL AND AGRICULTURAL SCIENCES CITRUS RESEARCH CENTER AND AGRICULTURAL EXPERIMENT STATION DEPARTMENT OF PLANT PATHOLOGY

RIVERSIDE, CALIFORNIA 92502

August 25, 1971

Dr. Wilson Popence Calle De La Nobleza 2 Antigua, Guatemala

Dear Wilson:

Thank you very much for your good letter of August 10 with the interesting information on avocados in Mexico and Central America. I appreciate very much having your comments.

Antonio Molina has recently sent in a large number of seeds of <u>Persea gigantea</u> from Opalaca Mountain in Honduras and has promised to get material of the "aguacata de anis" also from Honduras later this fall. It is very nice to have the cooperation from Antigua and I appreciate your talking with him.

Ed Johnson, a laboratory technician who works with me here, and Gene Schieber collected a number of interesting avocado and other Persea seeds in Guatemala in late June and July including the one which you had heard about on the Filla property. I will let you know if we find anything in these collections that shows resistance. We also obtained some collections in Mexico this summer and hope to get additional ones in Vera Cruz and Chiapas later this year.

Best regards,

Very sincerely yours,

George A. Zentmyer Chairman and Professor

GAZ: CW

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RIVERSIDE, CALIFORNIA 92502

January 28, 1972

Dr. Wilson Popenoe Casa del Oidor Calle de la Nobleza No. 2 Antigua, Guatemala, C.A.

Dear Wilson:

I was very pleased to hear from Gene Schieber that you are back home in Antigua and getting around in good shape. I was very sorry not to have time to stop off to see you in Guatemala on the way back from the Cacao Conference in Trinidad and from my brief stops in Costa Rica and Nicaragua.

The trip was very interesting, and I was able to make some good contacts in Costa Rica with a botanist who knows the Lauraceae very well -- Sergio Salas who has been working with Les Holdridge and also with the University. He knows good locations for <u>Persea rigens</u>, <u>P. pallida</u>, and also your "Aguacate de anis" and another species of <u>Beilschmeida</u> that grows in Costa Rico, so we should get those materials before long.

I had an interesting stop in Nicaragua too, and collected three different things that they call "Aguacate mico" in the mountains southeast of Managua---between Maragalpa and Jinotega. You probably know that area. Louis Williams collected <u>Persea rigens</u> there several years ago -- near Don Leo Salazar's Hotel de la Montana. I saw Don Leo and made several collections in that area, though I am not yet sure whether one of them is <u>P</u>. <u>rigens</u> and have written Louis Williams for more information.

I hope you continue to recover satisfactorily, and will keep in touch with you regarding our avocado and Persea collections.

All best wishes.

Very sincerely yours,

George A. Zentmyer Chairman and Professor

GAZ:ab

Antigua, Guatemala 5 February 1972

Dr George A Zentmyer Dept of Plant Pathology Unoversity of California Riverside, California.

Dear George:

Many thanks for your letter of 28 January. I am happy to hear that you made some good avcoado contacts in Costa Rica. I do not know Sergio Salas; rather strange that I should not, though on my last couple of trips down that way I have had to limit my elf to the temperate zone fruit work - and I havent done much of that eithe:

You mention <u>Persea rigens</u>. I do not know that species at all, but I wouldnt, because it doesn't seem to be close to <u>americana</u>, <u>fide</u> Dr Kopp's monograph).

It has occurred to me to zsk you if I am right in thinking that P. schledeana is resistant to root-rot. We have not found it a satisfactory rootstock for avocado -neither have you, I believe that avocado grafts grow on it for a while. If I am right in thinking it resistant, how about crossing it with P. americana. I know you have been looking for such a cross in Mexico and perhaps elsewhere, and so have I. The two species may not be compatible, for we ought to have found hybrids by this time, especially in the Orizaba-Cordoba region where there are so many trees of both. Probably I am wrong about schledeana being resistant to root-rot, but if should happen to be right, it might to make some hybrids down here where we have both species, or better, in Mexico where you could cross it with the Mexican race which you folks in California prefer for rootstocks.

Yesterday Alice and I drove down to Arturo Falla's place. You have sen his fine young avocato orchard at Tempisque. That bug which ruins the looks of the trees in many places in Gualemala, and must do a lot of harm to them though my old Fuerte has been full of it (Trioza sp, I used the specific name koebelii back in the good old days but believe it has been changed, and maybe there is more than one species anyway) for many years and still bears fruit when it feels like it. It was a major factor in capting Arturo to abandon his first grove at San Sebastian, or so he says. I dont think it was really killing the trees but it looked mighty bad when he had to show the place to visiting firemen like yourself. Well, it is getting into his new grove at Tempisque already, and we got to talking about it as a problem which we really ought to solve. I have talked to many people about it, here and in El Sazvador during the last 10 or 15 years. Nobody has found any control for it, though a few insecticides like malathion have been tried.

I wish you would get interested in this mather and try to interest one of your colleagues. I know you are going to say it is not your field, but you probably know the man that ought to tackle it. If you could find the right man, I believe we might get Cal Poly to send himmdown here for a year, and it would fall right in line with the philosophy of technical aid which I am trying to build up. We hate to admit it, but the Latin American governments - some of them at least - have not felt that they got enough help out of most of the technicians who have come down from the States to work in a broad field - general assistance in fruit growing, or agricultural economics, and so on. They themselves have put quite a lot of money into this work and we have to admit that

the majority of men who have come fown have not been of great Digitized by Hunt Institute for Botanical Documentation, Carnegie Mellon Oniversity, Pittsburgh, PA

I expounded my views to Pres. Shepard (maybe I havent his name correctly) when he was here a few weeks agd, taking over the agr'l work of ADD, of course as an AID project. I said that I believed we should only have one or two men down here in the field of agriculture on a long term basis, then when a serious problem arises on which the local people want help, and we think we have a man that can do a bang-up job, send him flown for whatever time might be necessary.

Now, this Trioza problem. There seems to be no one here who is interested in tackling it, in spite of the fact that the government has an ambitious avocado program, as you know. I wonder if we cant get somone to solve this problem. It would mean a great deal to the future of the avocado industry here in Guatemala and perhaps elsewhere.

Let me know what you think of this, after you have discussed it with one of your colleagues. Where is Walter Ebeling npw? Maybe he would be the man. I am enclosing a leaf from my old Fuerte tree, which stands 20 feet from where I am sitting as I write this. You know the tree.

With best regards always,

Faithfully yours,

Wilson Popence

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Antigua, Guatemala 5 November 1972

nr George Zentmyer University of California Riverside.

Dear George:

Our friend Luis Sarasola of Rancho California, Almuñecar, Spain is in trouble again - or still. He writes: Our avocado orchard is not doing well. We keep on having cases of Verticillium . We do not know what is behind this. Some think it is the use of chemical fertilizers. Others say we are crazy to use stable manure on our trees. Still others say, too much phosphoric acid. Others say we shouldnt cultivate, it damages the roots. And again, we must not use herbicides.

Luis goes on to say (I am translating, of course), there is no lack of problems. In addition to Verticillium, we have cases of slow decline which look as though they are due to Phytophthora, thouch repeated examinations have failed to establish the presence of this destructive fungus. I have just made a short visit to the islands of La Palma and Gomera in the Camaries, where the soil are loams, the pH is normal or slightly acid. No chlorosis. The avocados grow beautifully. But I saw a few cases of Verticillium wilt, and some apobles of slow decline, several trees in close proximity to each other, which looked to me like Phytophthora. But in general the trees are more healt/hy than at Rancho California.

So much for Luis. I thought you would be interested in his comments and I wonder if you have any new suggestions about control Digitized by Hapt institute for Rotanical Derumentationed about this a couple of years Carnegie Mellon University, Pittsburgh, PA

ago and it seems to me you felt Luis was right in considering that ... what he thinks is Verticillium really is Verticillium, but you could not suggest a sure cure nor did it seem to be very abundant at that time. Since that talk I have visited Rancho California and Luis showed me a few trees which he thought were suffering, which was obvious, but there were not many. A for what he thinks is Phytophthora I am oure you will be interested, unless you already have information from that part of the world. Could he send you rootlets from trees which he thinks are attacked? Or is it just another case of wet feet. They doubtless have a good German pathologist at ghe new experiment station in Velez Malaga, and I would think - if they have one - he could handle the job. I was much impressed by the staff at that place. Four or five German scientists and two or three Spaniards. The Director impressed me as an excellent man. I do noy know how well the work is progressing, but they are the folks who sent a young Spaniard over to Californoa for some months - or were going to, and I think he went, in which case you surely would have met him.

Now for mother matter: I have had a couple of interesting talks with Gene Schieber recently - the lastione a couple of days ago, He had just returned from Gosta Rica. He seems very much intere ted in the work and to mymind ought to be a good man for the job, because he is a pathologist, and because speaks Spanish and can get close to the local gente and find out there are wild avocados et id genus owne. We were talking about further work and it occurred to me to ask what has been done in South America. I am becoming more and more convinced that the distribution of <u>P. americans</u> extended as far south as Colombia and perhaps Ecuador, but it would of course be the West: Indian race as we call it. We know that there were avocados on the

Digitized by Hunt Institute for Botanical Documentation, Carnegie Melloin University, Fausdagt, Maybe the West Indian race isnt of much interest

to us. I dont recall having seen any <u>aguacatillos</u> (small fruited avocado relatives) in Colombia or Ecuador, though I travelled rather widely in both countries. Perhaps there is nothing of interest to you south of Panama but if you have plenty of money, or get it another year, I think it would be worth while to spend a month in Colombia and Ecuador - unless you already have enough information from those regions.

But here is what sticks in my craw. That Duke avocado, which has shown <u>some</u> resistance but not enough. But we know it is a Mexican, and what I am a king myself is, has enough been 'one to explore that country. You and I talked about a thorough gearch in the Queretare valley which used to have literally thousands of avocados (see the foto in my Manuals Then you and I went there there were hardly any left. You talked of sending a man there to see if he could find trees which had stood up when hundres of others in the same region were dead. Was this ever done? And what is the situation in Atlixco? Has Phytophthora ever hit that region? I have a vague recollection that it was found at Gilly's place, Xahuentla. And in the Robles orchard where there were so many hybrids.

As regards Mexican explorations, I have forgotten an awful lot, I p obably shouldnt be sticking my neck out at all, I am now too far out of the picture and unfortunately, to my great distress, cannot hope to get back in again. But I just cannot help feeling that you are going to find a resistant roosstock and that it will come from Mexico, and that it will be a straight drymifolia or a cross between that made and the Guatemalan.

With old-time regards, as David Fairchild used to put it Faithfully yours

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RIVERSIDE, CALIFORNIA 92502

December 27, 1972

Antigua, Guatemala

I plan to come to Guatemala on January 7, and to be in Antigua for most of the time from January 7 on to probably Thursday, January 11. I hope to see you during that time, regarding our avocado rootstock resistance program. Gene Schieber will me meeting me and bringing me over to Antigua.

From Guatemala I will be going on to Costa Rica then El Salvador, and probably coming back to Guatemala for a few more days about January 18.

With all best wishes for the New Year, to you ad Mus. Bopenop

working forward to seeing your. Very sincerely yours,

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George A. Zentmyer

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RIVERSIDE, CALIFORNIA 92502

January 22, 1973

Dr. Wilson Popenoe Culle de la Nobleza No. 2 Casa del Oidor Antigua, Guatemala

Dear Wilson:

It was certainly wonderful to see you and Mrs. Popence again on my recent visits to Guatemala. I appreciated very much the opportunity to discuss avocados with you again, and also to go out in the field with you. I hope that we can have another similar opportunity before too long.

Please thank Mrs. Popenoe again too for the delicious dinner at your wonderful house in Antigua. That was really a rare treat and I enjoyed it immensely.

On the next day, before I took the plane back to Los Angeles, Gene Schieber and I hiked about half-way up Agua. It was a fine hike; it was a beautiful day and we got some fine views of Antigua, Guatemala City, Lake Amatitlan, etc.

With all best wishes.

Very sincerely yours,

George A. Zentmyer Chairman and Professor

GAZ:cw

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RIVERSIDE, CALIFORNIA 92502

June 11, 1973

Dr. Wilson Popenoe Culle de la Nobleza No. 2 Casa del Oidor Antigua, Guatemala

Dear Wilson:

I am planning to stop in Antigua for a couple of days enroute back from a Cocoa Disease meeting in Guayaquil that I have been organizing with Dr. Enrique Ampuero's help. According to current plans I will arrive in Guatemala June 27 and return to California either the 28th or 29th.

Gene Schieber will not be back from a Cocoa Disease meeting in Guayaquil that I have been organizing with Dr. Enrique Ampuero's help. According to current plans I will arrive in Guatemala June 27 and return to California either the 28th or 29th.

Gene Schieber will not be back from the Dominican Republic then but I still wanted to make the stop--to see you and to make a trip out to collect some seeds and budwood of the Matul-oj tree on the slopes of Ocatenango.

I hope that you will be in Guatemala then and look forward to seeing you.

All best wishes to you and Mrs. Popence.

Very sincerely yours,

George A. Zentmyer Chairman and Professor

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RIVERSIDE, CALIFORNIA 92502

May 9, 1974

Dr. Wilson Popenoe La Casa del Oidor Antigua, Guatemala

Dear Wilson:

I neglected to reply to one of the questions in your recent letters-that regarding your two books on your early explorations. I would be very pleased to pick them up on my next visit to Guatemala, and will be sure that they get into the Wm. T. Horne Avocado Collection in the library here, along with the other book of yours on Mexican explorations. I have mentioned these to the librarian here at College of Biology and Agriculture Library, where the other avocado materials are, and he will be very pleased to add them to the collection.

All best wishes,

Sincerely yours,

Stearge Zentmyer Stt

G. A. Zentmyer Professor of Plant Pathology

GAZ:sh