California Avocado Society 1968 Yearbook 52: 139-144

AVOCADOS IN ST. CROIX, U.S. VIRGIN ISLANDS

R. M. Bond and A. L. Frederiksen
Formerly, Officer in Charge and Horticulturist, respectively, Federal Station, ARS, USDA, St. Croix, U.S. Virgin Islands.

"Native" (1) Avocados:

The wild avocados in St. Croix (and until recently, all yard trees) are seedlings, of pure West Indian type. The local name for avocado is "pear." The fruits vary from inverted heart-shaped through pyriform (commonest) to bottle-shaped. The bearing season is from late June to mid-September, depending mostly on the tree, but partly on the season. Almost all are loose-seeded, and the natives know that the fruit is ready to pick if they can make the seed rattle.

Most of the fruits are green when ripe, but a few trees bear fruits that turn purple. There is no local prejudice in favor of either color, but a very strong one in favor of large size, and an even stronger one in favor of thin-skinned fruits that peel easily. Most of the avocados favored here weigh about 18 ounces, though a few trees bear fruit of only half a pound, and still fewer of *2*½ to 3 pounds. The quality of the local avocados is from barely fair to very good. Most trees on St. Croix give evidence of having been planted (i.e., they are near houses or ruins, or are in straight rows). Truly wild trees occur mostly in the northwest part of the island, on soils derived from Cretaceous volcanic rocks, some on hillsides, but mostly in the neighborhood of intermittent water courses. Two trees, one extremely old and large, produce seedlings that seem to have some resistance in Phytophthora root rot (2).

Use:

Virgin Islanders are now so Americanized that many avocados find their way into salads, but their usual use is as a raw vegetable with salt and black pepper on it. Properly prepared salt codfish, tropical yam *(Dioscorea alata)* and avocado make a meal fit for a king, or at least for a politician. A good sized piece of avocado is usually put into each plate of pigeon-pea soup as it is served, along with two or three teaspoons of sugar. This soup contains ham, pigeon-peas *(Cajanus cajan),* tannier (the starchy root of a plant related to taro), and a kind of winter squash, locally called "pumpkin"; the soup usually has small dumplings in it. This combination sounds horrifying to a newcomer from the States, but, astonishingly, is delicious.

Marketing:

No figures are available for the per capita consumption of avocados in the Virgin

Islands, but it must compare favorably with any place in the United States. About the middle of May, the first avocados arrive, in sailboats, from the British island of Dominica. They are loose in boxes, or gunny sacks, or even piled in the hold. Quantities are small, and they are quickly sold. About the end of June local fruits become available, and take over the market through September, except for a very occasional lot from one of the other islands, including Puerto Rico. Late fruits come in decreasing quantities, mostly from Puerto Rico and the British Virgin Islands, until about the first of December. Supermarkets may bring in a few boxes of "Calavo" ‘Fuertes' during the winter, but they do not sell well, being too oily and much too small for the local taste, and usually rather "beat-up" after their long trip.

In 1962 the experiment station had an unusually heavy crop of winter avocados, so in early March we made a demand-survey with the help of two markets in St. Croix and one in St. Thomas. The fruits were presented in plastic bags, and small taste samples were offered on crackers. Each market sold several hundred fruit in less than two days. Fruits went slowly when offered at 60 cents for a bag containing one large, two medium or three small avocados, so after a few hours the price was lowered to 59 cents, after which they were snapped up. The large size were 'Hall' and weighed two pounds or more each, and the medium and small were all the other varieties, totaling about 2½ pounds per bag. The large size was sold out first. We gave out postage-paid questionnaires to each purchaser, in an effort to learn varietal preferences, but all varieties were reported to be liked equally, and the "Remarks" section, especially from hotels and restaurants, usually only requested more avocados of any kind.

Experimental Program:

With the idea of getting better quality, extending the season, and encouraging commercial planting, the Federal Experiment Station in St. Croix began introducing avocado varieties in 1953. Our plan was to put out three trees of each new variety in the station field. These were grafted on to native seedling rootstocks. Budwood was obtained from California, Florida, Puerto Rico, and from native selections, and new varieties were added from time to time. The first trees were set in the field in November 1954, and 'Simmonds.' 'Pollock,' 'Butler,' 'Hickson,' 'Booth 7,' 'Booth 8,' 'Taylor,' 'Irving,' 'Lula' and 'Utuado No. 1' (a Puerto Rican selection) first bloomed in the spring of 1957, and 'Simmonds,' 'Pollock,' 'Booth 7,' 'Lula,' and 'Taylor' produced fruits.

By the time the experiment station was closed (November 1, 1966), 51 varieties had been accessioned (Tables 1 and 2). The 31 varieties that were planted in the field are shown in Table 2. No variety with appreciable Mexican ancestry has been satisfactory. Seeds of 'Ryan,' 'Irving,' and ‘Itzamna' often sprout in the fruit before it is mature enough to pick, and many fruits of these, and of 'Regina' and 'Emerald,' rot instead of ripening. 'Hass' has never borne fruit here. It is so dwarf that we had hoped to use it in a "sandwich" graft to try to control rank growth of such varieties as 'Lula,' 'Booth 7' and 'Booth 8,' but the experiment could not be completed. Though most of the varieties listed in Table 2 are well known, (3) their behavior in St. Croix often differs from that in their usual range.

'D.W.I. Bank’ has the best flavor and texture of any avocado variety we have tasted in

the West Indies. It originated from the seed of a fruit brought by sail boat to the port of Frederiksted from one of the neighboring islands. The fruit was so good that Miss Winnie de Castro and Mr. Ira Ross used part of their lunch hour to plant the seed in the back yard of the Frederiksted Branch of the Danish West Indies Bank, where both were employed at the time (about 1920). The original tree was damaged by hurricane "Betsy" in 1956, and was later cut down to make way for new construction, but we obtained budwood in good time, and there are now more than 50 grafted trees of the variety growing in the Virgin Islands.

Table 1. Unsuccessful Avocado Introductions

A. No take

Variety	*Source of Budwood*
Bacon	University of California, Riverside (UCR)
Clifton	UCR
Corona	Orchard in Goleta, California
Elsie	UCR
Fuertes	Orchard in Goleta, California
MacArthur	UCR
Semil 23	University of Puerto Rico, Isabella (UPRI)
Semil 44	UPRI
Wilson Popenoe	UPRI
Zutano	UCR

B. Grafts took, but died later

Dickinson	Federal Station, Mayaquez, Puerto Rico (FEM)
Iskal	FEM
Johansen	Local, St. Croix
Kanan	FEM
Lamat	FEM
Manik	FEM

Source of Seeds

C. Seeds grew and were used as stock, but identity lost

Duke	UCR
Ganter	UCR
Topa Topa	UCR

Variety	Apparent Ancestry	Source	Date Received	Yr. first Fruited	Fruiting Season	Fruit Quality	(No. weighed)	Alternate A Erratic E
Annaly	WI	Local	1954	1960	July-Nov.	Poor to Fair	1.39(730)	R[1]
Avila	WI	UPRI*	25-VI-59	1962	Aug.-Dec.	Fair	1.34(192)	R[2]
Booth 7	GX	UFH**	6-1-54	1958	Dec.-March	Good	.86(434)	A[3]
Booth 8	GX	UFH	6-1-54	1959	Nov.-March	Fair	.80(523)	A(E)
Butler	WI	UPRRP***	8-x-54	1957	Aug.-Dec.	Good	1.11(835)	R(A)
Choquette	WIX	Amcet Nursery	-VIII-56	—	?	?	—	[4]
D.W.I. Bank	GXWI	Local	28-V-56	1962	Sept.-Nov.	Excellent	1.20(254)	R(E)[5]
Emerald	M	UCR****	15-1-54	1965	Dec.-Feb.	Poor		?
Fuchs (Fuchsia?)	WI	Amcet Nursery	-VII-56	1960	July-Sept.	Good	.95(405)	A(R)
Gregory	G	Local	-XI-58	1964	Dec.-Jan.	Very good	.83(103)	R[5]
Gripina 4	WIXG(XM?)	UPRI	25-VI-59	1965	Jan.-Feb.	Good		?
Gripina 5	G	UPRI	25-VI-59	1964	Dec.-Jan.	Good	.76(97)	?
Hall	WI(XG?)	UPRRP	8-X-54	1960	Dec.-March	Very good	1.15(645)	A
Hass	MXG	UCR	15-1-54	Never fruited				[6]
Herman	G	Amcet Nursery	-VII-56	1960	Dec.-Jan.	Fair to good	1.23(9)	E[7]
Hickson	G(XWI?)	UFH	6-1-54	1957	Nov.-March	Fair to good	.90(1174)	A[8]
Irving	M	UCR	15-1-54	1959	Never ripened			?
Itzamna	GXM	UFH	6-1-54	1959	Never ripened			?[9]
Lula	GX	UFH	6-1-54	1959	Jan.-May	Fair to bad	.87(1441)	A(E)
Melendez 2	WIXG	UPRI	25-VI-59	1962	Dec.-Jan.	Good	1.10(131)	A(R)
Miguelito	WI	Vieques I., PR	-XII-61	1965	July-Sept.	Very good		R[5]
Nabal	G	UPRRP	8-X-54	1960	Oct.-Dec.	Good	1.03(381)	A
Pollock	WI	UFH	6-1-54	1957	July-Sept.	Very good	1.17(2039)	R[10]
Regina	MXG	UCR	15-1-54	1966	Dec.-March	Good		?
Rincon	MXG	UCR	15-1-54	1964	Never ripened			?
Ruehle	WI	UFH	11-4-63	Not yet fruited				
Ryan	MXG	UCR	15-1-54	1959	Never ripened			?[11]
Semil 34	WIXG	UPRRP	8-X-54	1960	Dec.-April	Very good	1.07(300)	R(E)
Simmonds	WI	UFH	6-1-54	1957	June-Sept.	Good	1.20(1464)	R
Taylor	G	UFH	6-1-54	1958	Jan.-May	Good to V. good	.87(817)	A[12]
Utuado 1	WIXG(?)	UPRRP	8-X-54	1958	Nov.-March	Very good	1.05(1238)	R
Waldin	WIXG(?)	UFH	6-1-54	1960	Oct.-Jan.	Good	.93(366)	E

[1]Budwood taken from a very old but healthy tree in hopes of seedling resistance to root-rot. [2]Fruit pale yellow-green. Has consistently been stolen—we don't know why. [3]But flesh thin and seed large. [4]Dead 15-111-57. [5]See text. [6]very dwarf. [7]Shy and irregular bearer. [8]High per-

[1] Budwwod taken from a very old but healthy tree in hopes of seedling resistance to root-rot.
[2] Fruit pale yellow-green. Has consistently been stolen- we don't know why.
[3] But flesh thin and seed large.
[4] Dead 15-11-57.
[5] See text.
[6] Very dwarf.
[7] Shy and irregular bearer.
[8] Higher percentage of blemished fruit, many of which rot during ripening.
[9] Ripens in P.R.; perhaps would here if we can tell when to pick.
[10] Best summer variety.
[11] Discarded 1964.
[12] Large seed, thin flesh.
** University of Puerto Rico, Isabella.*
*** University of Florida, Homestead.*
**** University of Puerto Rico, Rio Piedras.*
***** University of California, Riverside.*

The fruit is a flattened sphere and a few reach two pounds in weight. The flesh is thick and yellow, the seed medium sized and right, and the green skin, though thick, peels easily. The tree is low, spreading and, extremely vigorous (4).

'Gregory' originated from an imported, grafted tree in the yard of the late Mr. C. William Gregory in St. Croix. It was sent him as a gift, and he did not know where it was obtained, nor what its name was, if it had one. The fruit is nearly spherical, the skin is hard and woody and cannot be peeled, and therefore is not thought much of by West Indians, though the flavor is very good. It is not the same as any of our named varieties, and we cannot find any variety description that seems to fit it. The tree is spreading,

more erect and less vigorous than 'D.W.I. Bank,' and bears heavily.

'Miguelito' is the apotheosis of West Indian avocados. It originated from a seedling yard tree at the home of Mr. Miguel Simon, Jr., in the town of Isabella Segunda on the Puerto Rican island of Vieques. The fruit may attain a weight of three pounds, and is nearly cylindrical, with a long, thin neck, and a perfectly loose seed when mature. The skin is very thin, and peels easily. Flavor is good, though very low in fat. Obviously it is hopeless commercially, but both Spanish-and English-speaking West Indians consider it magnificent.

Despite the enthusiasm with which the station's off-season avocados have been received, only two people have made even semi-commercial plantings, the larger of which consists of 110 trees. The prospect of preparing the land, buying and planting the trees, and caring for them for 5 or 6 years before receiving any return is not attractive to our people. The rich ones don't need to go to so much trouble for income, and the poor ones feel that they cannot tie up so much money for so long a time.

Other Countries:

Our work in agriculture, including avocados, was well known throughout the Caribbean, and we received many requests for plant materials, all of which were filled in so far as possible. Avocado bud-wood was sent on request to Grenada, St. Lucia, Martinique, Guadeloupe, Montserrat, Antigua, St. Kitts-Nevis, the British Virgin Islands, Jamaica, and Costa Rica. The largest shipment, enough for 500 trees, was to Martinique, where an orchard had been destroyed by a hurricane. The original request was for budwood of 'Lula,' but they finally let us fill the order in part with 'Utado 1' and 'Semil 34' when we insisted that they were better.

Pests and Diseases:

Pests are not serious, although the Avocado Girdler *(Helipus squamosus)* occasionally causes damage to young trees, and the larvae of a long-horned beetle *(Batocerus rubus)* virtually destroys an occasional tree, usually an old one, though neighboring trees commonly remain unaffected. The only serious disease so far identified (by Dr. George A. Zentmyer) (5), is the familiar avocado root rot, caused by *Phytophthora cinnamomi,* which has killed one tree of 'Hall,' and appears to have affected trees of several other varieties, though laboratory identification has not been made.

REFERENCES

(1) Little, E. L. and F. H. Wadsworth, "Common Trees of Puerto Rico and the Virgin Islands," Agriculture Handbook No. 29, Forest Service, U.S.D.A., Washington, D.C., 1964, state that the avocado is not native in the West Indies.
(2) Letter from Dr. George A. Zentmyer.
(3) Ruehle, G. D., "The Florida Avocado Industry," Bulletin No. 602, University of Florida, 1958; Bulletins of the University of California, from 1923 on, by K, Ryerson, R. W. Hodgson and others; Yearbooks of the California Avocado Society; Pennock,

W., T. Soto, R. Abrams, R. Gandía Caro, A. Perez and G. C. Jackson, "Variedades Selectas de Aguacates de Puerto Rico," Boletín No. 172, Agri. Expt. Stat., University of Puerto Rico, 1963.

(4) Frederiksen, A. L. and A. Krochmal, "New Avocado Varieties for the U.S. Virgin Islands," Caribbean Agriculture 1(4): 293-300, Hato Rey, Puerto Rico, 1963.

(5) Zentmyer, G. A., "Avocado Root Rot in the Caribbean," Caribbean Agriculture 1(4): 317-323, Hato Rey, Puerto Rico, 1963.