

THE AVOCADO IN AUSTRALIA

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It was my good fortune, in April, 1960, to be given a trip to Australia to study the macadamia in its native environment, observe macadamia growing and processing, and collect propagation materials of promising varieties and selections for trial in California. The trip was of two and one-half months' duration, and included brief stop-overs in New Zealand and Hawaii in the return passage. It was sponsored jointly by the University of California and the California Macadamia Society. Accompanying me were Col. Wells W. Miller, President of the California Macadamia Society and, for many years, a Director of the California Avocado Society; Mrs. Storey, and Col. Miller's fifteen-year-old son, Read.

In the course of our macadamia explorations, we did find time to make observations on avocados in some of the localities where our activities took us. This is a brief report on our observations. But first, a few notes on what part of Australia is concerned, and on the climate and soils of the region.

The territory covered in our macadamia explorations extends for a distance of about 350 miles along the coast of eastern Australia, and inland for various distances ranging from 20 to 80 miles. Roughly, it is bounded on the north by the Burnett River, which empties into the ocean at Bundaberg, Queensland, on the east by the Pacific Ocean, on the south by the Richmond River which empties into the ocean at Ballina, New South Wales, and on the west by the Great Dividing Range.

The climate of the region is more nearly tropical than subtropical even though it falls outside the latitudinal limit of the true tropics (23°27' S). Bundaberg lies at about 25° S. and Ballina at about 29° S. latitude. Daily summer (January-March) mean maximum temperatures are of the order of 80°-88° F., with occasional extreme highs up around 100° F. Winter (July-September) mean maximums are of the order of 68°-75° F. Winter mean minimum temperatures range around 48°-53° F. Severe frosts are said to be unusual, but they do occur on the coastal flats and in "pockets" which collect and hold cold air flowing down from the highlands of the mountain ranges and associated spurs.

The coast ranges intercept moist air carried by the prevailing easterly winds, resulting in average annual rainfalls of 55 to 70 inches, depending on location. Some rain falls every month, but most of the annual total falls during the summer, while winter and spring may be relatively dry. Tree crops are generally grown without irrigation, but short-term vegetable crops often need irrigation to carry them through the dry months.

Horticultural crops are produced mostly on the loams and clay loams which have been developed on the coastal ranges. Most of these soils are basaltic in origin, with excellent seepage and drainage characteristics. The soils considered best are quite red

in color.

Although the general area in which we worked is frequently compared with southern California, actually it is more nearly like the southernmost end of Florida. Tropical trees and plants which grow in southern Florida but which are decidedly unhappy in southern California thrive in this part of Australia. Among such trees and plants are the mango, lychee, papaya, banana, tropical custard apple, passion fruit, pineapple, and many others. It is in this area that the avocado thrives, and representatives of the three races, West Indian, Guatemalan, and Mexican, as well as various hybrids, are to be seen in cultivation.

We had our first introduction to avocados in Queensland on Anzac Day (Monday, April 25) which coincided with our first week-end in Brisbane. We were taken on a delightful outing by Col. Frank V. Sharpe, which included a stop at an orchard at Eagle Heights on Mt. Tamborine, about 40 miles south of Brisbane. Col. Sharpe wrote about this orchard in the 1950 Yearbook (1).

The orchard is presently owned by Mr. James C. Wilson, with whom Col. Sharpe was formerly in partnership. There is a large block of several hundred trees which were introduced from California by Col. Sharpe when he began the enterprise about fifteen years ago. Varieties represented are: Anaheim, Benik, Duke, Edranol, Fuerte, Hazzard, Hass, Hellen, Jalna, Mary Martin, Mexicola, Nabal, Northrop, Panchoy, Puebla, Rincon, Ryan, Spinks, Topa Topa, and Zutano. There is also a new block of trees now about two years old which constitutes a trial of newer varieties. They were obtained through Mr. Frank Thayer of Carpinteria, California. Varieties represented among these well-grown trees are: Bonita, Corona, Emerald, Habco, Harms, Mesa, Regina, and Shepard.

As in California, most of the planting is in Fuerte, Nabal, and Hass, the varieties against which all other varieties are judged. Fuerte is the only one which is marketed in Sydney and Melbourne, and to be marketed it must have an oil content of not less than 12 per cent.

Col. Sharpe and Mr. Wilson have introduced a seedling which originated on the place as a new variety with the name Sharwil (Fig. 1). This appears to be a very fine fruit which matures later than Fuerte and about the same time as Hass; i. e., September-November. The fruit was immature when we saw it, but it appears to be a green-skinned variety with a very small seed. It is being tried experimentally in different parts of Queensland and northern New South Wales, and deserves introduction and testing in California.

In addition to the orchard Mr. Wilson has a nursery area (Fig. 2) containing at least 2,000 grafted trees. In fact, on the day of our visit, he was preparing about 100 trees, 3-4 feet tall, to be shipped barerooted to a customer elsewhere. He informed us that as the avocado becomes better known in Australia, the demand for grafted trees both for orchard and for home planting continues to increase.

The day after this trip we moved our headquarters to Nambour, about 75 miles north of Brisbane. Here we saw several large Fuerte trees and a large Nabal tree, all loaded with fruit, on the grounds of the Department of Agriculture and Stock.

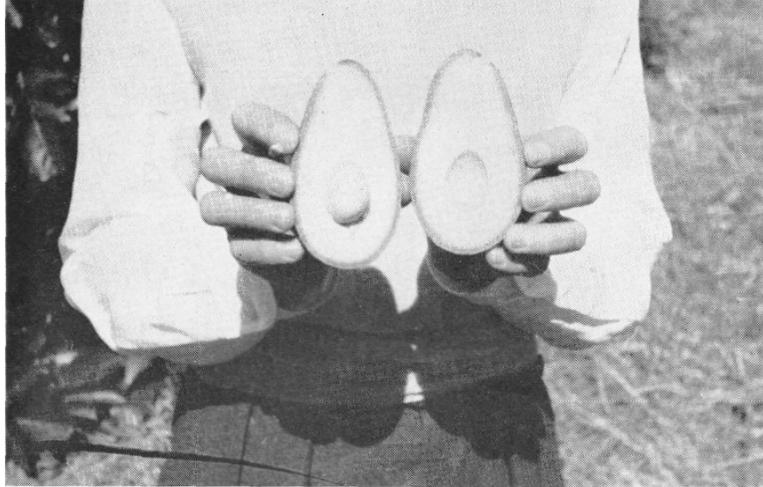


Figure 1.—The Sharwil avocado, a new Australian variety.



Figure 2.—Mr. James C. Wilson's nursery and orchard at Eagle Heights, Mt. Tamborine. In picture, left to right, Col. Frank V. Sharpe, Mr. J. C. Wilson, Col. Wells W. Miller.

On the way back from one of our early macadamia explorations we stopped off at the place of Mr. William Collins and his son at Flaxton. Mr. Collins is a pineapple grower, but as a sideline, has 150 12-year-old avocado trees. The varieties represented are Fuerte, Hass, and Anaheim, and a local variety called Wilsonia. The surprising thing to me was to see pineapples and avocados growing side by side, for in Hawaii the pineapple is a principal host of **Phytophthora cinnamomi**, and it is virtually impossible to grow avocados on lands formerly occupied by pineapples. Mr. Collins assured me, however, that **Phytophthora** was no problem to either crop; either conditions are favorable for plant growth even if **Phytophthora** is present, or the organism is not present or fails to become pathogenic in the particular environment.

Some weeks later we had a brief glimpse of a fairly young well-grown avocado orchard belonging to Mr. Neil Buchanan near Goomboorian, about 150 miles north of Brisbane

and about 20 miles inland from the seacoast. No one was available for information, but Mr. Len Trim, Senior Advisor with the Department of Agriculture and Stock at Gypie, estimated there to be more than 100 trees. They appeared to be about five years old. This orchard was of particular interest because it is the only one in Queensland being grown with supplemental overhead irrigation.

A most impressive orchard was that of Mr. George H. Schulz at Glasshouse Mountains, about 50 miles north of Brisbane. Mr. Schulz is a young pineapple grower who became interested in the avocado about 10 years ago. He now has an orchard of 500 trees ranging downward in age from 8 years old to newly planted. As noted elsewhere, root rot did not seem to be a problem with avocados and pineapples growing together.

Initially, Mr. Schulz started with a number of varieties, mostly of California origin, which he obtained from local Australian sources. Among these varieties were: Anaheim, Fuerte, Hass, Hazzard, Hellen, Nabal, Wright, Zutana, and Sharwil. In 1957, through correspondence with Dr. B. O. Bergh of the Citrus Experiment Station, he acquired the following additional varieties for trial: Bacon, Bonita, Elsie, Frey, Harms, Mayo, Mesa, Rincon, and Wurtz. It would be of interest to have Mr. Schulz report on the performances of all the varieties in a future yearbook.

In addition to growing pineapples and avocados, Mr. Schulz is now propagating avocado trees for future planting and for sale. This year he has grafted about 3,000 trees. He grows seedlings both in containers and in nursery rows, and tip-grafts to the desired varieties when they are about lead pencil thickness, using plastic budding tape as binding material. He reports that pure Mexican seedlings do not make as good rootstocks as other types, and, latterly, has gone to the use of Nabal seedlings almost exclusively.

Toward the end of our stay in Queensland, we participated in an avocado field day at the Redlands Experiment Station about fifteen miles south of Brisbane. This attracted about 100 growers and persons interested in avocados. As part of the morning's program I was asked to talk on "Developments of the Avocado Industry in California," and was followed by Col. Miller who was asked to talk on "Functions of the California Avocado Society." The afternoon program consisted of demonstrations of topworking avocado trees by Mr. James C. Wilson, and of packing avocados in single layer containers by Mr. M. J. Hurley (Fig. 3). Following the talks and demonstrations, the experimental orchards were opened for inspection.

The trees in the orchard were about 4-5 years old, and in fine condition (Fig. 4). Varieties represented were: Fuerte (Cole and Newman strains), Hass, Edranol, Ryan, Zutano, Hazzard, Hellen, Anaheim, Habal, Rincon, Sharwil, Greber, Alsopp, and Sweet Apple. The last four are varieties of Australian origin.

In New South Wales we did not see any commercial avocado planting. We did see an experimental planting at the Durambah Demonstration Farm of the Department of Agriculture. Here there were some magnificent specimens of 16-year-old trees of the following varieties: Fuerte, Hass, Linda, Dutton, Hellen, Queen, Blackeman, Mayapan, Dickinson, Eastwood, and DeMolle. Mr. Charles Eady, Fruit Officer with the Department of Agriculture at Murwillumbah, said that there had been some planting in this part of New South Wales, but that the trees tended to decline in 8-10 years, possibly due to

root rot, and prospective growers had become discouraged about further plantings.



Figure 3.—Mr. M. J. Hurley discussing packing at Avocado Field Day, Redlands Experiment Station. In background, Mr. C. N. Morgan, Chairman of the Field Day.



Figure 4.—Avocado orchard at Redlands Experiment Station, with some of the visitors watching a topworking demonstration.

Now for a few remarks on general observations.

The region which we visited in Australia is well-suited climatically to avocado production. Excepting the far north coastal area of New South Wales, root rot does not seem to be a problem. In the course of our travels we saw a large number of avocado trees, doubtless mostly seedlings, growing in dooryards.

Until the early 1940's, the avocado was virtually unknown to the Australians, and even now it is only slightly known. The occurrence of numerous home garden trees suggest

that it is becoming better known all the time. Orchard and home planting will continue to increase as the fruit, and especially the ways to use it, become better known. According to Mr. Keighly Ward of the Queensland Department of Agriculture and Stock, there are presently about 100 growers who market avocados, and only about 400 acres of commercial orchards for supplying a population of 10 million people. Most of the production is used in Queensland, and only about 150,000 pounds of fruit are sold annually in Sydney, a city almost as large as Los Angeles with a population exceeding two million. It is my impression that the Australians are not eaters of salads in the forms that we know them, so a great deal of educational and promotional work would have to be done to open up the potentially large market for avocados. This goes not only for Sydney, but also, for Brisbane, Melbourne, Adelaide, Perth, and other sizeable cities.

There are few old, large trees, so production figures are hard to come by. However, in several instances we were told that 6-8 year-old Fuerte trees bore about 60 pounds of fruit. Nabal did much better, but as with us, it tends to be alternate bearing, whereas Fuerte does not. Mr. Hilary White of Redlands reported a yield of about three tons of Fuertes to the acre on trees about eight years old.

It will be noted that, excepting a few varieties of local origin, all varieties presently in commercial production or on trial originated in California. Not much information was available on variety quality, and performance. We did notice, however, that in most localities the shape of Fuerte was shorter and fuller than what we think of as typical pyriform, more closely approaching the shape of our off-blooms. We noticed, also, that Zutano and Bacon tended to end-spot at Mr. Schulz's orchard. Zutano and some of the thin-skinned West Indian types were said to lack promise as varieties because of susceptibility to the Australian fruit fly **Strumeta trioni**.

As for prices, according to Mr. Schulz, he receives anywhere from 6 cents a pound for seedling fruits up to 50 cents a pound for Hass. The wide variation in price depends on variety and whether fruit is plentiful or scarce in the market. The fruit is retailed in fruit stores by the piece, not by the pound. Prices on avocados, depending largely on size, ranged from around 40 to 70 cents apiece. Most of the ones we tried were acceptable, but we did have a few which obviously had been picked so prematurely that they did not ripen properly and were hardly palatable.

There is now in Queensland an Avocado Advisory Committee to the Department of Agriculture and Stock. Mr. S. A. Trout, Director of Horticulture, is on this committee with the following named gentlemen: Mr. T. English, Mr. J. C. Wilson, Mr. C. N. Morgan, and Mr. H. Grozman. This committee corresponds in function to the Avocado Research Advisory Committee of the California industry to the Director of the University of California Citrus Experiment Station. Its existence is evidence of growing awareness of the avocado as a new crop for the tropical and subtropical regions of Australia, and the need for research to aid in its sound development as a new agricultural industry.

LITERATURE CITED

1. Sharpe, F. V. The avocado in Australia. Calif. Avocado Soc. Yearbook 35:124-125. 1950.