

## AVOCADO OBSERVATIONS

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Mr. President, Members of the California Avocado Association, Gentlemen and Ladies:

It is a great pleasure to me to have the privilege of meeting with you again and of renewing my acquaintances with you and with the industry you represent. This great banquet which is one of the largest and most enthusiastic agricultural functions of its kind that it has been my privilege ever to attend, testifies to the growth and condition of the industry. In the early days of the Association in 1916, when it was my privilege to preside over the Association as its president for a short period, I recall to have explained the "halting steps" and occasional errors of the Association to its extreme youth and likened it to the young parrot which a lady purchased from a dealer and found to be already addicted to the habit of swearing. She returned it to the dealer with the statement, "He swears badly." "Oh, never mind that," the dealer replied, "he is a young bird and will do much better as he grows older." Ten years ago the Association was young and we had little foundation of knowledge and no precedents on which to work. As it has grown older, difficulties have been solved or are in the process of solution and the "halting steps" have grown firmer and more decided. The Association has improved with age. It is surprising that an industry still young and small can attract such a gathering as this.

It has been several years since I have been able to attend one of your meetings and yet surrounded here, as I am, by such men as Popenoe, Hardin, Taft and Elliott, all of the "old guard," I feel very much at home. The Association has grown sturdy in its riper youth and some of us have meanwhile advanced to old age but a ripe age of experience I hope that will enable the imparting of some valuable knowledge to the younger generation.

### **The Avocado in South Africa**

As your president has stated, it has been my privilege recently to visit various countries of the world where avocados are or might be grown and you are naturally interested in the condition of avocado culture in other places. The avocado, as you know, is a native of America and it is only comparatively recently that it has been introduced into other countries, and only in a few places has its culture become established as a commercial industry.

My travels took me mainly to South Africa where, under the direction of the Department of Agriculture of the Union of South Africa and of the Colony of Rhodesia, I was especially concerned with the study of the Citrus industry. I visited many estates all over

the country and I thus had opportunity to inspect many plantings of Subtropical and Tropical fruits.

I did not learn when the avocado was first taken to South Africa but it must have been at least fifty years ago as quite large old plantings exist in some places and the markets of South African cities are well supplied with fruits during the main season of ripening. The West Indian type was the only one introduced until very recently and no fruits of the Mexican or Guatemalan types were found in the markets. Importations have been made from California within the last ten years of the best varieties of Guatemalans and Mexicans as recommended by this Association and these are being gradually propagated and tested. The first fruits of the Puebla variety ripened while I was there, and seemed to reproduce the characteristics of this fruit as they are known in California in size, color and oil content. The range of the period of ripening has not yet been determined though the first fruits ripened there in May which is the late fall season.

The largest grove of old avocado trees that I have ever visited is in the vicinity of Durban in Natal and contains about 70 acres of trees that are probably from 25 to 30 years of age as they range in size from about that of the original Taft tree at Orange, California, to as large as the original Chappelow seedling at Monrovia, California. This is a grove of seedling West Indian types containing no named varieties. The fruits in this grove were approaching maturity when I visited it in March and exhibited the usual range of variability in shape and size ordinarily shown by seedlings. They were mainly pyriform but some trees produced nearly round fruits.

As the fruits in this grove ripened, specimens from a number of the best sorts were sent to me for examination and trial. Of some 35 different sorts thus tested, all were fairly good acceptable fruits, but all lacked the characteristic nutty flavor of the Guatemalan varieties as grown in California. They were apparently all low in oil content though no determinations of the actual per cent of oil present were made. They were found to vary greatly in flavor and there was certainly abundant opportunity to select and propagate superior sorts that would greatly improve the crop.

One of these fruits tested had flesh resembling a peach in texture and somewhat in flavor and this sliced and served with cream and sugar was found to be a very delightful dessert fruit. It seemed so different from the ordinary avocado in juiciness, flavor, and texture as to lead one to question whether it could be really an avocado, though it was clearly merely an extreme variation of this fruit. I suggested to the owner the desirability of propagating this seedling as a dessert type of fruit, advocating its use in that way. Indeed, I wonder why we might not use the avocado to some extent in this way. True, it is an oily fruit but we like cream pies. We must discover all ways of serving this nutritious fruit in order to extend its uses to the utmost to suit all tastes.

Apparently the avocado up to the present time has been grown in Africa only for home use, not for export, and little thought has been given to it as a possible commercial industry. The markets to which South Africa in general caters, are all foreign, English and Continental, and growers as a whole give little consideration to their home markets, though these are becoming important. Some small shipments have been made to England, a sea journey of 16 to 20 days, and this is entirely feasible with proper storage facilities, but an export industry cannot yet be said to have started.

So far as I was able to observe no methods of culture have been developed that would be of any special interest to California growers. Irrigation methods, where used, are simple and crude and tillage is mainly by hoes only and is designed merely to keep the large weeds down.

Of the other countries visited by the writer the avocado is found in abundance only in Hawaii. It has been introduced into India, the Malay Straits Settlement, Java, China and Japan, but in none of them has the cultivation extended to any important extent. In India where the evidences of extreme poverty frequently are visible on every hand, it would seem that the avocado which is capable of producing a crop of exceptionally high food value per acre might be one of the most important of all fruits to grow.

It is not probable that the production of avocados in any of these countries will for many years, if ever, have any direct influence on the American markets. Were it not for the presence of the Mediterranean fruit fly in Hawaii and the consequent exclusion of the fruit from that territory in American markets, we would probably meet serious competition from that source. Until about two years ago, avocados were regularly shipped to Californian markets from Tahiti and I have several times purchased Tahitian fruit for class work at the University in Berkeley when no other West Indian types were available. About two years ago the fruit fly was discovered in Tahiti and this source of possible competition is removed at least for the present. The Mediterranean fruit fly and another rather similar fruit fly are present also in South Africa and in some sections are very serious on guavas, mangos and some other fruits. They injure avocados to some extent but did not seem to be causing much damage to this fruit during the year of 1925 when my observations were made.

### **Avocado Root-Stock Problems**

As all of you are interested in improving and safe-guarding the avocado industry in California there are several problems that I desire to discuss briefly.

In the Citrus industry considerable attention has been given to root-stock problems and until recently we thought that fairly definite and satisfactory conclusions had been reached. The lemon groves have been gradually deteriorating in some sections and recently the conclusion has become prevalent that this deterioration is traceable to the stocks on which they were propagated. The sour orange stock which after 40 years of extensive trial in many parts of the world, and which had come to hold first place in the consideration of growers is now being challenged and rather generally condemned, particularly for use with lemons. Growers are reverting to the belief that the sweet orange stock which they had heretofore largely discarded is to be preferred or that some other stock, such as grapefruit, might be even better. It is not necessary for us here to go further into the analysis of this situation as the case is intended merely to introduce the subject of avocado stocks. In the citrus industry today, after many years of experience, growers are almost as doubtful regarding the effect of different stocks as are the avocado growers who are just starting their experience. If the avocado industry is to go forward without a general setback it is necessary that definite information regarding stocks be obtained and it is important that a plan of organized experimentation be devised and put into operation that will ultimately help to solve the

stock problem and avoid the confusion that now exists in the citrus industry.

First and foremost it is important that every grower should know what stock his trees are budded on. This is just as necessary as it is to know the variety of the top. If citrus growers today knew what stocks their trees were on it would doubtless be possible by a careful survey and study to determine the superior one and the industry could go forward with assured certainty. Unfortunately, however, growers know only that they have used sour, sweet or grapefruit stock and have no idea of the type of stock further than this. Many cases exist, indeed, where it is not even known what general type the stock is; that is, whether it is sweet or sour, etc. This ignorance and uncertainty makes comparison very uncertain and at most one can compare only sour, sweet, grapefruit and trifoliata and this means but little.

It must be recognized in avocados, as has now come to be recognized in citrus, that to use Mexican stock as such, means almost nothing, as the individual seedlings of the Mexican type differ widely from each other in many characters that will doubtless make them react differently when the same variety is budded on them.

In order to arrive at an understanding of stocks the speaker would urge that in all propagations of avocados made hereafter, named stock varieties be used and that only trees on such named stocks be purchased. But if you exclaim that we have no named stock varieties and this would be impossible, I would reply that it is true we have no named stock varieties but as we largely grow in California all the seeds we use as stocks it is entirely feasible and means only a little more trouble or care to use named sorts. I am outlining in a separate paper which I hope to have printed elsewhere in the Proceedings of the Association a plan or scheme of operation to which I have given considerable thought and which I propose to commend to you for careful consideration. I hope that a general interest in avocado stocks may be aroused and that all growers planting out new acreage may be interested in the stock situation sufficiently to demand that their trees in the future be grown on known stock varieties.

A second problem on which data should be accumulated is to determine whether or not it is possible to propagate certain or all of our important varieties by cuttings, growing them thus on their own stocks without the necessity of budding or grafting. Olives, figs, grapes and the varieties of many other subtropical fruits are propagated commonly in this way, and the evidence now available indicates that certain citrus varieties may also be propagated in this way and grown successfully. This should be tried experimentally with all important avocado varieties.

### **Marketing Difficulties**

I have noticed one difficulty in connection with the handling of avocados in the retail markets to which I wish to direct your attention in the hope that some corrective method may be devised. Several times I have purchased avocados in the market, picking out those that I judged from their mellowness to be in prime eating condition, only to find on cutting them a soft discolored pulp, immediately below the skin and a green leathery unripe and inedible flesh within. What was the trouble? Merely the multiplication of such finger pressing as I gave the fruit to determine its ripeness. One individual handling over

the fruits and testing their mellowness by squeezing would do but little damage but when the fruit is displayed in open baskets in conspicuous places in the grocery or fruit stores as is usually the case, every customer that comes in is interested and takes his or her turn at squeezing, and "believe me" our American ladies who do the marketing are good squeezers and soon the poor fruit is literally squeezed to death, and in consequence is mellow and ripe and just ready, not to eat, but to be discarded. The avocado is largely as yet an unknown fruit in the markets and those who buy such fruits for their first trial do not know that anything is wrong and immediately conclude that they don't like avocados. I know of a number of incidents of this kind and I believe it is a common experience. Now, I don't blame our ladies and I would not for the world change their squeezing habits,—the habit is merely misdirected in this case. Avocados should not be displayed where they can be "manhandled" or "womanhandled" at will, but should be protected and the ripe fruits ready to be sold for immediate consumption should be selected out once a day by the dealer, who should know how to choose them. Even the dealer handling over the fruits and choosing out the ripe ones for each customer as they come reduces the freshness and quality of the fruit. I presume this is a problem of education to be handled by the dealers service bureau of your exchange as the industry develops, but it is a problem on which all of us may have an influence and we must all be teachers and preach the avocado gospel.

It is an interesting fact that almost everyone who comes in contact with the avocado industry becomes a radical advocate of its value. I thought that two years of absence from direct contact with the industry would cure some of my superfluous enthusiasm, but the industry was born of enthusiasm and stimulates enthusiasm. Fortunately for those in the industry, there is foundation for this enthusiasm. It is the type of industry California needs; it is a fine wholesome fruit that the world needs in quantity; it is a crop capable of producing a tremendous quantity of actual food per acre. Calculations indicate that in production of food value per acre it ranks one of the first, if not actually first, among all the food crops of the world. It is well supplied also with necessary vitamins and is mainly eaten, uncooked so these are not destroyed before they are used as occurs so commonly with various vegetables.

Our enthusiasm therefore is wholesome and proper and we can "boost" with a free conscience that "boosting" is justified. I can only say in conclusion that I am pleased to be able again to give some part of my energy to the industry and to express the hope that the Experiment Station, over which I at present preside as director, may be able to assist in the solution of some of your problems. I wish you, as individual growers, and the industry as a whole, every possible success.