

Report of the Variety Committee

Adopted at the 23rd Annual Meeting, Saturday, May 21, 1938, San Diego

The past year has been one of great activity and considerable achievement for your variety committee. Perhaps the greatest factor involved in this has been the effect of the 1937 freeze on industry acceptance of certain varieties. This will be brought out rather forcefully in the consideration of varieties in a detailed manner.

During the season which closes with the rendering of this annual report, a number of field trips have been held in the producing counties under the auspices of the county avocado department committees, most of which have been attended by your chairman and other members of the general committee. Two meetings of the Association committee were held to study policies, outline objectives, check on organization and correlate field information through general discussion. Complete minutes of such meetings have been kept and are available.

In addition, this report is based on the generous response from all portions of the field to a questionnaire sent out to the full list of committee cooperators, numbering forty persons, who cover the territory from Oroville in northern California to San Diego. This questionnaire covered some twenty-five specific points in regard to varieties and policy and gave a definite basis upon which to estimate local standing of the more important varieties and seedlings.

The past season has also shown a notable increase of seedlings submitted for test, and information volunteered by the rank and file of the growers.

THE COMMITTEE

The organization and personnel of the Association's committee has remained very much as during the past three years, but has been strengthened by the addition of an extra member from both San Diego and Orange counties. It is to be hoped that this enthusiastic and hard working organization may be allowed to continue its activities by the local departments, which are responsible for the appointment of their representatives.

VALUABLE OBJECTIVES

The committee is still working toward the accomplishment of the objectives outlined during the past two years, namely—the discovery of Fuerte-like fruits, which will show better-bearing habits in many sections than the Fuerte does at present and which may lengthen the season of that type of fruit; a study of better-bearing strains of the Fuerte; the discovery and testing of smaller-sized Guatemalan type fruits of high quality, greater

frost resistance and longer picking-season to supplement the Fuerte season; and the discovery and testing of better thin-skin type fruits to improve the situation for producers in cold areas. Work is also being done, both by the University and privately, to determine the worth of certain stocks for nurseries.

That California is looked upon as the fountain head of avocado information by all avocado growing countries is shown by the considerable foreign correspondence carried on by the Secretary of the Association and the chairman of the committee. To mention a few, the past year has seen letters exchanged with Florida, Mexico, Brazil, Chile, Palestine, Barbadoes, Hawaii, China, the Argentine and Kenya Colony. Much of this correspondence deals directly with variety problems.

LISTING OF ALL VARIETIES

The last Yearbook contained the monumental, corrected check list of varieties which was edited by Mr. C. S. Pomeroy, under the supervision and with the assistance of the committee. It will probably be unnecessary to repeat this list, at least for many years, and it is the intention of the committee to reduce it, for publication, to a point where it will include only those varieties which have practical application to California conditions.

VARIETIES HAVE DIFFERENT BEST-GROWING ZONES

Evidence continues to accumulate, proving that some varieties are quite restricted in their local adaptation. Local adaptation is often confined to very small areas of a few square miles. In discussing climatic conditions, the designations used in the 1937 report will be followed. These are the **southern coastal**, the **transitional** and the **interior areas**. Transitional is preferred to intermediate, as being more descriptive of the wide and rapidly changing variations in conditions, as one proceeds from the coast to the interior.

Growers and prospective growers are again advised that they must determine insofar as possible the suitability of their location for any given variety, if they expect commercially successful results. **No one variety is successful in all locations.** Constant study is still necessary to solve varietal problems of a general nature, as well as to find suitable varieties for areas where present varieties fail to produce satisfactorily.

EVALUATING A PROMISING VARIETY

In studying the worth of any variety or new seedling for continued trial, many factors have to be considered, some of which it may be desirable to review. The tree must be of a vigorous type of growth and tend to produce a compact head, from which the fruit may be picked with a minimum of cost. The fruit must be of fine quality and flavor, attractive in appearance and mature at a desirable season. It must show good keeping-qualities to allow it to be handled satisfactorily by dealers, and the flesh should not oxidize or darken for a considerable period after being cut. The fruit should have a long maturity or picking season to allow orderly marketing and should be distinctive in appearance.

Insofar as possible, there should be a high degree of resistance to frost injury.

The committee is giving much greater consideration to fruits showing the ability to hang on the trees in good marketable condition for from three to six months than to others which have to be picked within sixty days after reaching the picking stage. Such fruits, with a peak of production often within a thirty-day-period, constitute a serious hazard to orderly marketing should any considerable acreage be brought into production. ^

LOCAL SEEDLINGS MORE PROMISING

There is a general agreement within the committee that the best source of new varieties to provide a solution for certain California varietal difficulties, lies in the chance seedlings developed in California. The mechanical difficulties of artificial hybridization of the avocado are very great and such work in any event would have to extend over a period of years before any proven result could be had. Search for, and introduction of, new varieties from foreign sources is under many great disadvantages. In most such countries, the trees are so poorly cared for that an investigator finds it almost impossible to determine what such a variety might do under California conditions. This is perhaps notably true of such a district as that at Queretaro, the great source of thin-skinned fruit, where the condition of most of the trees is such that no fair indication of their real size and quality, under good cultural conditions, is possible.

A careful study of the field notes of Wilson Popenoe and others serves to emphasize a very vital consideration; the conclusion that we have more favorable conditions for creating valuable new varieties in California for California conditions, than anywhere else in the world. A study of this information shows that throughout Mexico and Guatemala, the two races of avocados which form the basis of the industry in California do not exist together, save in one spot, at least to any appreciable extent. That spot is the valley of Atlixco, where the general ratio of thin-skins to thick-skins is about four to one. And, out of Atlixco, alone, have come around twenty-five of our leading California varieties. More notably, the two most successful varieties for many years came from that district and are of a leather-skinned type which, to many, indicates a crossing of the two races. I refer to the Fuerte and the Puebla.

HYBRIDS DEVELOPING HERE

What do we find happening in California today? A constantly increasing number of the so-called leather-skinned type of fruit in the new seedlings offered for test which, in many cases, definitely partake of characteristics of both races. The explanation is that nowhere, save in southern California, is there such a great mixture of the two races creating possibilities of crossing.

On the basis of the success of the Fuerte, and the favorable reaction to other fruits of the same general character, the indications are that fruits most suited for success in California are of that type. The combination of characteristics of the two races gives a more desirable season, greater oil content and richness of flavor and greater resistance to cold, yet leaves a skin that handles more satisfactorily commercially; also a better size to attract the consumer, whose preference is clearly indicated to be for medium

sized fruits.

GROWERS URGED TO REPORT PROMISING FRUITS

Thus, while the committee welcomes any attempts to bring new varieties of valuable character into the picture from the other two indicated sources—namely, introduction from abroad and artificial hybridization, its efforts will be mainly concentrated on a study of and a search for chance seedlings in California, which offer hope of being improvements on those with which the industry is now working. The committee most earnestly solicits the continued support of all growers in these efforts, through the calling to its attention of any seedlings that meet the conditions specified.

Along these lines, the committee hopes to be able to try, on a very limited local scale, during the coming year, one of the original projects of Knowles Ryerson, which was an inventory of the seedling avocados in southern California. If successful in this venture, such inventory will be gradually made, over all the producing areas.

Because of the freeze, emphasis has been laid upon the search for better thin-skins, as many homes might have the advantage of having their own fruit for a portion of the year, if there were sufficiently good varieties available. At present there is no generally acceptable thin-skin variety. A few have come to the attention of the committee during the past season, and one, in particular, is being studied with great interest.

PROGRESS IN ERADICATING SUNBLOTCH

Too much stress cannot be placed upon the desirability of steps toward the elimination of sunblotch through greater care in propagating new nursery trees and the selection of budwood and scions which are used to top-work older trees. Nurserymen and others have shown a much greater effort to comply with this recommendation during the past year.

TREE-PRODUCTION RECORDS VITAL

Emphasis is again placed on the necessity for tree records from both the committee and grower standpoints. To the committee, such records would allow of much sounder conclusions; and to the grower, faced with the thinning of an overplanted grove or the topworking of undesirable varieties or "boarder" trees, it would allow intelligent decision as to which trees to eliminate. As an example, one of our growers has kept actual count of all his fruit from each tree in his grove of Fuertes for the past five years. Two of these trees have never had a fruit, a half dozen more have never had more than five fruit any one year, while others have run four and five hundred fruit.

The reaction of many growers to such a program is usually that they cannot take the time necessary for such records and in most cases that may seem to be true. However, if they would form the habit of making a written record each year in such a simple manner as a crop estimate for each tree just prior to picking—grading them "good", "fair" or "poor", it would usually be sufficient for all practical purposes. We are quite as

much concerned with consistency as actual volume.

REGISTER SEEDLINGS

Growers who have promising seedlings are urged to register them with the committee to eliminate name confusions and to place them before the growers in such a way that they can be constructively studied. Tours of inspection are already being arranged to visit seedlings already registered, and where they have failed to live up to early promise, to eliminate them from the active files. This is being done through the county committees.

The committee is trying to build up a complete file of segregated variety information. The amount of detail work in such a project is enormous and the problem is to find someone capable of doing this work, who has the time to devote to it.

STRAINS OF FUERTE

A close watch is being kept on the so-called strains, notably that being propagated at Camarillo known as the "Cole" strain of the Fuerte and those in Los Angeles County known as the "Burgess" and "Carr" strains. The Cole strain in Ventura County is now in its sixth year and producing very consistently in that locality and under those conditions. The committee would point out that until such trees have two or three years more to demonstrate performance in other localities that there is no promise of more than a local solution of this bearing problem of the Fuerte.

DARK-SKINNED SEEDLINGS MAY HAVE PROMISE

A note of warning is sounded against too much discrimination against new seedlings because the outside color may be dark. It is true that today the green fruit is in the favored position because of the performance of the Fuerte variety and its consumer acceptance, and that the black fruits are under a cloud because of such poor fruits as the Spinks and Button. But, after all, the dark fruit, given equal quality and performance with the Fuerte, could be the ideal fruit, and such a fruit might yet win a place in the sun, and in fact is quite likely to do so. Investigators are trying to keep an open mind in the matter.

PUEBLA SEEDLINGS ARE COLD-RESISTANT

During the past season, your chairman has been intrigued by a study of the row of Puebla seedlings planted at the Riverside Experiment Station by Professor Home to afford material for his pathological studies. Detailed data were mailed out to the list of cooperators on this study and are available. Briefly the situation is as follows. Out of a hundred odd trees planted in nursery form, and now intensely crowded and all from Puebla seed, nearly every possible variation of size, shape and color appeared. With the exception of about half a dozen trees, all produced fruit superior to the average thin-skin variety on the market last fall. With the exception of about the same number of

trees, none showed any effect from the very low temperatures at the station, and all set a fair to good crop in spite of that freeze. Most of this fruit was or could have been picked before the danger of frost or bad winds was very great and the trees themselves are not much affected by cold.

The suggestion of your chairman is that those growers having cold spots that are now wasted or who are considering windbreaks might do well to try some Puebla seedlings under such conditions with the idea of getting a better proportion of good trees than from ordinary thin-skins and incidentally contributing possible new profitable varieties. Such trees could be planted quite closely and thinned or topworked later, if necessary.

APPRECIATION, ALTADENA MARKERS

The committee wishes to thank Messrs. Shamel and Pomeroy for the notes on their investigations that have been supplied it, and to express the hope that, with their other duties, they will be able to carry on such work in the future.

In line with the Atlixco ceremonies, it is suggested that it might be well to consider marking the two trees now existent in Altadena, which were of the first buds of the Fuerte from Atlixco.

NEW PROCEDURE FOR TESTING VARIETIES

One of the important new projects of the committee, in which Dr. Coit has been largely instrumental, has been the formulation and acceptance by the Association's Board of Directors of an agreement with the University of California's Division of Subtropical Horticulture, whereby the committee will act as an intermediary between the industry and the University in the trial of new and promising seedlings under the same growing conditions at the Westwood Campus. Bud wood of such seedlings as the committee deems worthy of trial under the conditions at Westwood, where time, money and room are at a premium, will be supplied to the Division of Subtropical Horticulture, under number, for impartial study. This will give a fair test under the same conditions.

In addition, the same budwood will be supplied to certain registered cooperators located all the way from San Diego to Santa Barbara, who will give such seedlings trial under widely varying climatic conditions. The Association will accept no legal responsibility in the matter but will endeavor to protect the propagation rights on new seedlings, where desired, by a simple agreement that none of the wood from such trial trees will be sold, given away, or used by the experimenters unless such wood is released by the original owner through the committee. This matter came to a head too late this spring to put it into actual operation, but will be initiated this fall or next spring, when budwood is again available.

COORDINATING AGENCY, MORE RECORDS NEEDED

Two years ago it was thought that much of the work of this committee might have to be shifted to certain governmental agencies—such as the U.S.D.A. and the University of

California in the near future, because of the detail and the amount of record-keeping essential to doing a satisfactory job. However, this work requires more time than the volunteer workers can give. Therefore, it is my personal opinion that our Variety Committee will continue to be a vital factor for many years to come.

There is a great need for a coordinating agency in this work and one to keep all records together in one place. Primarily this is an industry problem and should not only be carried on by the industry but supported by it. There is great need for trained clerical help in connection with records as well as time in the field by a trained man. Such work could only be successful with the fullest measure of the present cooperation from the interested growers and workers, but the present fine results they are giving the industry could be greatly augmented if better and more complete records could be kept.

STATUS OF COMMERCIALY-PRODUCED VARIETIES

(In the case of the better known varieties where descriptions are readily available, such descriptions are omitted.)

FUERTE—Still very much the leader in commercial production. While not suited to some districts, because of poor bearing habits under certain conditions, its position was greatly strengthened by its ability to withstand the 1937 freeze and the remarkable comeback most trees of the variety have made. It still has the best season and consumer acceptance, and trees are being planted and topworked to this variety more than any other in those districts which have proved favorable.

PUEBLA—In some areas in the transitional zone, the Puebla is still profitable, perhaps more so than the Fuerte, but in coastal areas and large sections of San Diego county, it is being topworked because of poor production, and the decline of the trees and fruit, when some seven or eight years of age. Growers having Puebla trees that are doing well should find them quite profitable, especially if the present trend in other districts continues.

New planters should study their local situation very carefully before planting this variety. Frost resistance about the same as Fuerte, but apparently set a crop after the freeze in many places, where the Fuerte failed to do so.

NABAL—Has received a serious set-back due to its demonstrated tenderness to frost in the 1937 freeze. Plantings should probably be restricted to the most protected areas. In most cases, the Nabal seems to be definitely alternate in bearing-habit, and in some places refuses to bear satisfactorily. An excellent fruit, but somewhat too large. Probably the best of the established summer varieties, but likely to be superseded by some of the new, promising seedling varieties.

QUEEN—Practically all the remarks on the Nabal also apply to the Queen.

BENIK—In same status as Queen and Nabal, with the added disadvantage of being a somewhat weak tree, and in most places not a heavy bearer. Good market acceptance.

DICKINSON—Still the leading income-producer on the coastal plain of Ventura county, but definitely unsuited to most other districts.

ANAHEIM—The most susceptible to frost of all varieties; and, while up to the time of the 1937 freeze it was holding its own on the basis of high, consistent production, has slipped badly in most places because of extreme tenderness.

MURRIETA GREEN—Still has fine market rating, but quite susceptible to frost and very difficult to propagate. Suited to the most protected spots only and should be grown only as a topworked tree on old roots.

THIN-SKIN TYPES

There is no thoroughly satisfactory thin-skin variety of fruit known at present. It is an important gap and has greater attention from the committee at present than most other phases of its work. Such fruit, to merit attention, should weigh at least five ounces.

TOPA-TOPA—A large, black, thin-skin fruit, maturing in September and October; of fine appearance, but only fair quality. Trees are vigorous and frost-resistant and fairly consistent in bearing habit. Does fairly well in all areas but best in transitional and interior districts. Makes good stock for nurseries.

DUKE—A green, thin-skin maturing in August, September and October, reasonably free from exterior defects and one of the most wind and frost-resistant varieties. The quality of the fruit is good in the true interior districts and brought excellent prices during the past season, but is poor close to the coast. It often does not bear under coastal conditions. Report from Oroville indicates poor shipping qualities.

BENEDICT—A small, black, fall fruit of good quality and good bearing habits as reported from Oroville where it is being planted in considerable quantities. Very frost-resistant.

EXPERIMENTAL VARIETIES THAT SHOULD HAVE FURTHER TRIAL

Some of these varieties have considerable promise in certain districts, but no general statement can be made as to satisfactory behavior as most of them have been tried in local areas only. In planting or topworking to these varieties, growers should look upon them as experimental and not plant too heavily.

HASS—A seven-ounce, black fruit with leathery skin, very small seed and of high quality. Its small size is very distinctive during the season of its maturity—May to November—when most fruits are large. Tree erect, vigorous and somewhat slender. Oil content runs over 20%. Not as hardy as Fuerte, but parent tree at La Habra Heights stood 22 degrees in 1937 with the loss of foliage only. Twigs unaffected. Failed to set crop after freeze; but is coming back nicely this year. Rather heavy plantings are being made in its home area.

EDRANOL—A green, late spring and summer fruit, size 9-12 ounces, with consistently small seed and of highest quality and flavor. The tree is vigorous, upright and inclined to slenderness. Grafts easily, but does not bud so well. One of the more promising new varieties and is best suited to coastal and transitional areas. Mature in May and June at Vista and as late as October at Goleta. Rather extensively planted at Goleta. Showed

much better frost resistance in 1937 than other Guatemalan type fruits. Notably better than Nabal.

RYAN—A green thick-skin of medium size with leathery skin and marked tendency to large seeds. Summer season. Quality fair and marketability good. Trees are vigorous and upright and have a good record for heavy, consistent bearing. Showed almost equal resistance to frost with the Fuerte in many places during 1937 freeze. Rather heavily planted at La Habra Heights and suited to transitional areas.

LEUCADIA—A black, fall fruit, similar to Puebla. Very little, if any, anise in leaves. Good quality in many places and very vigorous grower. Originated at Encinitas and looked upon favorably for some time in the south coastal areas as substitute for the Puebla. Has not borne well the last two or three years at Carlsbad, though performing well at Vista. Bears well at Goleta (Nov.-Feb.); overlaps Fuerte season in Santa Barbara and Ventura counties. Has so far failed to set crops at interior points such as Pasadena. Very fair frost resistance.

MacARTHUR—A medium sized, bell shaped green fruit of good quality for late summer. Fair marketability on basis of restricted tests. Originated on Shedden property at Monrovia, but has attained prominence in the close-to-ocean-areas of Santa Barbara and Ventura counties, where it grows with exceptional vigor and fruits consistently. Showed excellent frost resistance. A small percentage of the fruits show a tendency to have the seeds sprout, but if handled properly this is not a serious fault. Season August, September and October at Santa Barbara.

HENRY'S SELECT—Both the tree and fruit similar to Puebla for which it may be a substitute. Originated on the Jones property at Escondido. Quality good, considerable proportion of loose seeds. Attractive appearance. Has not borne as heavy crops at Vista the past year as Leucadia.

HAZZARD—A green summer fruit, about size and general shape of Fuerte, but with more pebbled skin. Good quality and bearing habits, but tender to frost. Originated at Vista and may be good for coastal and transitional areas.

PATENT 100 (GANO)—Of medium quality and size, thick-skinned, seed medium to large. Attractive external appearance and good bearing and growth characteristics. Frost resistance at point of origination in Whittier only slightly less than Fuerte, but showed more tenderness on young trees elsewhere. Many reports of unsatisfactory growth of young trees from scattered areas and considerable criticism of the manner in which fruit softens. Caution in planting is advised. Season July and August.

MILLIE C.—A black summer fruit of fair quality being planted to a, considerable extent in the Carlsbad area. Caution in planting is advised on the basis of present data.

JUAN—A green summer fruit of size and appearance suggestive of the Fuerte. Originated at Stone Canon Reservoir site of Bureau of Water and Power in Los Angeles by Henry Murrieta. Now in its third year of bearing with a consistent record. Moderate frost resistance. Erect and vigorous tree. Fruit of fine quality. Late summer at Bel-Air. Worth further trial in coastal and transitional areas.

CLIFTON—A green thin-skin of high quality. About size and shape of large Puebla. Originates at Glendora. Tree good grower under difficult conditions. Should have

extensive trial when the owner decides to release it for propagation.

HEWITT—A black thick-skinned fruit originating at San Diego. Season June-September. Oval in shape and weighs about ten ounces. Frost resistant. Flavor good and oil test 15%. For trial in coastal areas.

UNREGISTERED SEEDLINGS, PROPAGATED AND IN BEARING

HOIT—A seedling of the Fuerte. Season October and November. A green, necked fruit of fine quality and flavor but apt to check on blossom end, if allowed to hang too long. Tree slender and vigorous. Very precocious and prolific and much more frost resistant than Fuerte. Grown in considerable quantity by Mr. Statom at Alta Loma. Parent in Pasadena. Grown scatteringly elsewhere. May be excellent for home gardens in exposed places in the interior.

ELEVADO—Grown scatteringly through transitional area. Very thin green skin but attractive in appearance and size. Bears heavily and consistently, and flavor and quality very good. Originated in North Whittier Heights. Heavy crop last fall, set after freeze, brought excellent prices at Azusa. Has been set out for over ten years. Is in bearing on ranch of Mrs. R. J. Waters at Azusa.

Registered subsequent to Report.

MIDDLETON—A black, pyriform leather-skin fruit, 8 ounces in weight, of excellent flavor and good quality. It matures just before the Fuerte. Tree tall and rangy. Good frost resistance. Good bearing record. Fruit brought excellent prices last fall. Considerable criticism of fruit cracking in many places, but this may be due to allowing fruit to remain on trees too long. Propagated for some time. Original tree at Pomona.

Registered subsequent to Report.

UNNAMED SEEDLING—Grown at La Mesa, by Mr. Lodge of Rockleigh Dahlia Gardens. Tree 12 feet high, 15 feet wide. Very compact. No anise in foliage. Seven years old. Fruit does not darken after being cut for ten days. Fourth season in 1937. Crops have shown consistent increase as follows: First year, three; second year, 40; third year, 50; fourth, 100. Stood frost much better than oranges. A green fruit—shape oval; averages 8 ounces in weight. Flesh light colored and fruit uniform in size and shape.

CARTER BARRETT, Chairman

List of Committee Members:

Carter Barrett	C.A.A.
Dr. J. Eliot	C.A.A.
Prof. Robert W. Hodgson	U.C.L.A.
A. D. Shamel	U.S.D.A.
C. S. Pomeroy	U.S.D.A.
B. C. Stephens	Calavo
M. B. Rounds	L.A. Co. F.A.

H. E. Wahlberg	Orange Co. F.A.
V. F. Blanchard	Ventura Co. F.A.
Jean C. Miller	San Diego Co. Asst. Farm Advisor
H. B. Griswold	Ch. L.A. Co. Avo. Dept.
H. E. Marsh	Ch. of Orange Co. Avo. Dept.
A. J. Thille	Ch. Ventura Co. Avo. Dept.
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Elwood E. Trask	San Diego Co.
C.S. Crawford	Orange Co.

"C.A.A."—California Avocado Association.

"U.C.L.A."—University of California at Los Angeles.

"U.S.D.A."—United States Department of Agriculture.

"F.A."—Farm Advisor.

"Ch."—Chairman. Avocado Dept., Farm Bureau.