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Bud Selection in Avocado Varieties

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A. W. CHRISTIE: While the Variety Committee has done excellent work in preparing Reports for a number of years past, it has now reached the stage that future progress must, of necessity, receive some scientific attention on the part of scientific men who have the facilities and time to go into it more than the committee who can devote only an occasional day to it. Other industries have learned this lesson years ago and have done something about it and profited by it.

We have with us today Mr. A. D. Shamel, of the United States Department of Agriculture and any of you who are at all familiar with the citrus industry know his work on bud selections and other things in the citrus industry which have been of very great value to the citrus industry, and that value will unquestionably grow. We are happy that Mr. Shamel has seen fit recently to interest himself in this same problem as it pertains to avocados and we are very glad to have him here with us today. He will speak to us on "Improving Avocado Production Through Systematic Bud Selection."

A. D. SHAMEL (Remarks, before reading his prepared paper): Mr. Chairman, Ladies and Gentlemen: I have heard it said in the East, some years ago, that there is a tendency to say the most on that about which we know the least. Knowing as little as I do about the subject that has been assigned to me, I am going to try to guard against too much fluency by reading a few notes that I have written out on the subject—a very brief paper.

I was present at a meeting in Mr. Rounds' office, when someone asked me to make a few remarks on Bud Selection, which I did to the best of my ability. Then Carter Barrett said, "Won't you come to our next Association Annual Meeting and repeat those remarks?" Well, I guess Carter had me down and I couldn't say, "No."

(Reading of paper):

The speaker has been asked to say a few words on the subject of bud selection and its possible application to the avocado. I have little first hand information on the avocado upon which to base the remarks; therefore, a brief discussion of

bud selection from the standpoint of our experience during the past quarter of a century with several other horticultural crops that are propagated vegetatively may serve as a background for consideration.

"BUD SELECTION" DEFINED

The term "bud selection" is being used in this discussion in the sense of the systematic selection of buds from superior plants that are usually propagated through budding, grafting or other vegetative means, somewhat in the same way that the term "seed selection" is often used with plants that are commonly reproduced sexually. A clear understanding of this point of view will be helpful in avoiding confusion and in understanding the following remarks.

Thus far, we have usually been asked to consider the possibility of systematic bud selection for maintaining or improving the efficiency of rather old varieties for profitable fruit production. However, our avocado varieties are of comparatively recent origin so that the problem is a somewhat different one from that which we have been studying in some other fruit bearing varieties of horticultural crops. For this reason and from the fact that the speaker knows little or nothing about the performance of avocado varieties these remarks should be interpreted accordingly.

The avocado has become one of my favorite foods through the opportunities that I have had of consuming it rather freely during recent years here and in tropical America, including Central America, Cuba, Puerto Rico and Mexico. My taste for it has grown steadily with the passing years and I have become what is sometimes known as an "avocado addict." I mention my personal experience in order to emphasize the fact that while the common use of avocado in the southwest is a relatively recent practice, the desire for and the habit of eating them was rather quickly acquired in my case, as is doubtless the experience of many others. For this and other reasons I am convinced that the avocado has come to stay and that its consumption will doubtless increase as the years pass. If this assumption is correct then the performance of desirable and dependable avocado varieties will become more and more important to the industry.

We know that certain horticultural varieties, as for example, the Washington Navel orange, tend to degenerate in fruit producing efficiency without the use of systematic bud selection during successive bud generations, through the unintentional perpetuation of inferior strains that originate from undesirable bud mutations. It is believed that it is possible to improve the fruit producing efficiency of varieties, at least in some instances, through the discovery, selection and propagation of strains that originate from desirable bud mutations. These statements, while not universally accepted, are coming to be more and more recognized as proven principles of fruit tree propagation by many of our leading horticulturists and fruit growers as shown by an ever increasing number of state experiment station and other publications on various phases of this subject.

BUD SELECTION STARTED EARLY

It seems fortunate that the leaders of the avocado industry are considering bud selection in the pioneer stage of the industry because it may be possible through this means to avoid some of the serious mistakes that have occurred in the propagation of some other important commercial fruit varieties. This is the speaker's personal opinion and he does not ask you to agree with him without a full consideration of the facts of this rather new practice, new at least in the sense of its application to the standardization

and improvement of commercial horticultural crops. It is interesting and natural that the practice of bud selection is being worked out primarily in California, the premier commercial fruit producing state. While many errors have been made and no doubt others will be made in the future, considerable progress has been accomplished along this line during the past quarter of a century or more of sustained effort. In applying this experience the possible study of systematic bud selection in avocado varieties and the following suggestions are offered for consideration.

In the first place all important progress in bud selection thus far in other fruit varieties has been made through an intimate knowledge of the vegetative and fruiting characteristics of the plants over a considerable period of systematic study. This intimate knowledge may be obtained in several ways but it has often been helpful to obtain careful individual-tree performance records over a reasonable period of years from which safe conclusions can be drawn as to tree performance and fruit characters under the conditions where the records were obtained.

Tree performance records may consist of picking records showing the quantity and commercial quality of the fruit that is produced by each tree for several successive seasons. In other cases, estimate yield records made at the proper time of year have been found to be satisfactory for this purpose. These records may be obtained from all of the trees in the grove or from a few selected trees that are particularly interesting. In the case of the performance records of an outstanding tree, or of a few trees, it is desirable to include records of several comparable normal trees in order to furnish a basis for drawing conclusions.

After the performance records and notes of trees and fruits have been obtained it is necessary to compile them systematically in order to deduce dependable information from them. This will require careful consideration but it is time well spent. It may be possible in some instances to correlate vegetative and fruit characters with the quantity or quality of production, and to distinguish those that are likely to be inherent from those resulting from environmental influences and which are not transmitted through bud propagation. A systematic study of this kind is helpful providing it is carried to its logical conclusion, not only from the bud selection point of view but also from the standpoint of the reaction of trees under observation to local climatic, cultural and other environmental influences.

ON LOOK-OUT FOR UNUSUAL FRUITS, ETC.

A sharp lookout should be maintained by all growers and other interested persons for unusual fruits or other tree characteristics. These can be recognized most easily when the normal forms are clearly in the mind. The unusual trees, branches of trees, or limb sports, and individual fruits may be of considerable interest. For example, there are now more than fifty known red-fruiting strains of the Delicious apple variety that originated in this way, some of which have already become of considerable commercial importance in certain apple growing districts. A record of the location of each unusual tree, branch, or individual fruit should be kept so that the tree, branch or location of the individual fruit variation can be readily found for further study and observation.

In the case of individual-tree and limb variations it may be desirable to conduct progeny tests of those which apparently have some commercially valuable characteristics. While such a test requires some time and expense, there does not seem to be any adequate substitute for it. In most cases acceptable progeny performance data can be obtained during a period of a few years' fruiting of the progeny trees. Since time and expense are involved in making these progeny tests, it seems logical that only the most carefully selected trees or limb variations be subjected to this test.

In conclusion the speaker suggests that at least two things are essential in order to aid growers in making the most of their efforts along this line, viz., first, a trained man to head up the work, and second, facilities for testing bud selections or progenies. These considerations are up to the industry itself should they be thought important enough to warrant the expense and effort. The development and maintenance of standardized varieties adapted to cultural and market conditions are fundamentally important considerations in any fruit industry. It is believed bud selection may be of some assistance in this direction with the avocado. The experience of our workers in this field is available in assisting growers in starting bud selection studies. The success of such studies will depend upon the united efforts and support of the growers themselves.