

EVALUATION OF AVOCADO VARIETIES AND ROOTSTOCKS

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Mr. Chaffee C. Young, in his Report of the President to the California Avocado Society on June 6, 1953, quoted the following paragraph from a pamphlet titled "Varieties of the Avocado":

"I believe that it can safely be said that the most important problem which we and other growers are facing today is the question of varieties. I have just had this brought home to me very forcibly by finding, when I came to prepare a list of all the varieties which have been planted in California, that the number totals well above 80. How is a prospective planter to know which of these is best suited to his needs? And how are we to reduce that enormous number to the 10 or 15 choice varieties which we will ultimately want to cultivate?"

Mr. Young then went on to say "That quotation is from a paper read at a meeting of the Avocado Growers Association in Los Angeles on October 23, 1915, by F. O. Popenoe, President of the West India Gardens at Altadena. That was 40 years ago, and we apparently aren't any closer to the solution of that problem than we were then. There were about 160 varieties packed in California last year. The number will probably be larger this year because of the increase of new varieties."

For my own edification I looked into the record to find out how many varieties were delivered to packers that year (1952-53). The number was 178. Deliveries of named varieties amounted to approximately 770,000 field boxes of fruit. Additionally, there were deliveries of about 3,400 boxes of fruit from an unreported number of seedling trees. Every seedling tree, whether it has been registered with a varietal name or not, is essentially a different variety, so the actual number is something larger than 178.

I find, upon going into the records, that, on the average, 8 new varieties have been registered every year for the past 20 years. If registrations continue at this rate, we can expect to have over 250 named varieties to contend with 10 years hence, instead of the 178 of today. The variety situation, therefore, would seem, superficially at least, to be growing worse instead of better. In my opinion, however, it is the other way around.

The avocado industry in California is comparatively young, and still in a state of flux. That there are so many varieties, with more entering into the picture each year, is neither surprising nor cause for alarm. It is, in fact, a healthy sign, for it indicates that an intensive search for better varieties is going on all the time. It is the growers themselves who are most keenly aware of the need for better varieties and who continue to add

new names to the growing list. We would not wish it otherwise, for the greater the number of persons searching for the ideal variety the greater the probability that it will be found.

When there are as many varieties being grown as there are today, they tend, in a sense, to compete against one another, with the poorer giving way to the better. The qualities which are desired in tree and fruit are well known, and need no elaboration here. The varieties which average high in all desirable attributes are more likely to survive the process, even though there may be others which score higher in one or two but fall way down in others.

The body which evaluates varieties in competition and effectuates the screening process is the Avocado Variety Committee of the California Avocado Society. This active and capable committee, drawing upon the accumulated experience of its individual members, the experience of numerous growers, and the experience of the field representatives of packers' associations, is fully prepared, I am sure, to tell a prospective grower which 150 varieties out of the 178 he ought not to plant. It can also tell him which varieties are likely to prove best for given seasons of fruit maturity in given agricultural areas. Its recommendations are to be found in its reports in the Society's yearbooks. The most recent report lists only 6 varieties which are recommended for the various avocado growing areas of the State.

The remaining 20-odd varieties are being grown by cooperators scattered throughout the avocado region of the State, and are under the constant scrutiny of the Variety Committee. The Citrus Experiment Station is one of the cooperators in this program. New varieties which are registered and promising new seedlings which appear either by chance or in a breeding program will be put out on test in representative areas to determine their value for commercial planting.

In a final analysis, then, I think it can be said that the avocado variety situation is well in hand. It is true that we do not have a superior variety for every season and location, but the machinery for obtaining it is in full operation. The variety *Fuerte* dominates its season and area, and the variety *Hass* is rapidly rising to dominance for its season and area. It is not unreasonable to expect new varieties, as good as and possibly better than those two, to originate by breeding or by chance, and, eventually, to gain ascendancy in other seasons and areas. And when this occurs, we can expect to see the plethora of lesser varieties which presently continue to be grown gradually forced from the scene.

If the variety problem is of greatest concern to the industry, then the next most pressing is the matter of propagating rootstocks clonally, so that the best combinations of varietal tops and rootstocks might be reproduced many times over.

At present, propagation of varieties to produce trees for orchard planting is almost exclusively by budding to seedling trees. Seedling trees are genetically different from one another and highly variable even though they derive from the same parent tree. Each exerts a different influence on the variety budded to it. This accounts in large measure for the great disparity in the performance of different trees of the same variety growing side by side in the same orchard.

The avocado is notoriously difficult to root by means of cuttings and layers. Researchers

at U.C.L.A. and the Citrus Experiment Station have demonstrated, however, that clonal propagation of varieties and seedlings can be done by these means. The methods used experimentally are somewhat exacting, and are not considered practical for ordinary nursery practice.

The next big step is to find a way to translate the results of research into an efficient, relatively inexpensive means of mass producing own-rooted clonal material. When this is done, it will be possible to compare the performance of various varieties on their own roots and on genetically identical rootstocks. It will make it possible to compare identical combinations of varietal top on a given rootstock in various climatic zones and soil types. In other words, it would provide the means for determining what rootstock is best suited to insure maximum performance of a given variety under a given set of environmental conditions, and for multiplying that particular combination for orchard planting.

The search for new and better varieties must be a continuing one. Likewise, the search for the best rootstock for a given variety and the means of reproducing it many times over must be a continuing one. For, the closer we come to integrating the ideal variety on the ideal rootstock with season of fruiting in the agricultural area of maximum performance, the greater the probability for continuing expansion and prosperity of the industry.