

Marketability of Avocado Varieties

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During the first ten years of the life of the California Avocado Association, the attention of members was occupied mainly with production problems. During the next five years marketing problems assumed relatively greater importance. The Variety Committee began to differentiate between commercial varieties and those which, while highly satisfactory for amateur production and home consumption, possessed qualities which obstructed their success in the marts of trade. By 1930 it had become evident that if the commercial industry which was rapidly growing, was to be a financial success, it would have to be based on varieties which possessed good marketability or were readily vendible.

In May 1930 "Marketability" was defined by the writer as "The size, shape, color, and appearance of a variety, together with its ability to endure harvesting, handling, packing, and shipping, cold storage, distribution, and exposure at retail, and still give sufficient consumer satisfaction to bring repeat orders and build up the industry." This definition has been of great value in clarifying our ideas and focusing attention on the qualities of the fruit necessary for financial success.

After five years of experience in evaluating the factors of marketability, it is my purpose now to discuss each characteristic separately and in detail in regard to its relation to marketability. Before doing that however I wish to emphasize the fact that California avocados must necessarily meet severe competition in the market. Competitive supplies come from Cuba and Florida and consist largely of the West Indian type which is not produced in California. Advertising and publicity are quite necessary if the consumption of California avocados is to be increased in the face of West Indian competition. In order that the benefits may be more largely enjoyed by California growers who pay for the advertising, it is important that the type of fruit marketed from California shall be as distinctive as possible. Instead of encouraging the production of varieties the characteristics of which approach the West Indian type, we should concentrate on varieties which differ from that to the greatest degree. Inasmuch as the three chief characteristics of West Indians are large size, low oil content, and summer maturity, we should be most interested in varieties of small size, high oil content, a preponderance of which mature in winter and spring.

SIZE

A high priced commodity can be easiest sold in small units. Large sizes call for higher unit selling prices and consequently meet with more sales resistance. The thrifty housewife resents waste which often occurs when part of a large avocado is put away

for later use and finally is found discolored and unattractive. Hotel and restaurant chefs prefer to standardize on one small size for all types of servings. Chain stores show a decided preference for very small sizes with their attractive low unit prices. The small sizes of many California varieties provide a unique advantage over competitive supplies, and this should be capitalized on. Six, eight, ten, and twelve ounce fruits are considered best for California commercial shipments.

SHAPE

The typically pyriform avocado is easily packed and is most acceptable on the market. Bound or long necked fruits are undesirable. A moderately oblique axis is considered to be an advantage as it is more characteristic of California varieties and does not detract from ease of packing or appearance on display.

SKIN CHARACTERISTICS

If California had early produced a dark colored Guatemalan variety of outstanding marketability, it would have been fortunate because that would have been an additional characteristic to distinguish it from West Indian fruit, most of which is green. It happens however that Fuerte, a green variety, was early recognized as of excellent marketability, and this year the Fuerte together with other green varieties account for 83.8 per cent of the California crop. It is now too late to attempt a change in color, and at least as far as Eastern markets are concerned, green will be considered standard. However, inasmuch as most West Indian varieties are light green, a more distinctive and desirable color for California varieties would be dark green.

The thickness and texture of the skin is a factor of very great importance. The skin should be tough enough to withstand handling incident to picking, packing, and marketing; and at the same time be sufficiently pliable to yield readily to hand pressure when the fruit begins to soften. It is absolutely essential that inexperienced retailers be able to easily and accurately distinguish the breaking point. It may be pointed out that while in California experienced consumers may occasionally buy firm fruit and hold it till in ideal condition for use; Eastern consumers practically all buy soft fruit for immediate use. In many cases retailers will not stock fruit until it is soft and therefore limit their orders to the probable sales of one or two days. Such hard shelled varieties as Mayapan and Kashlan are of very poor marketability because they will not be accepted by the retailer unless they are soft, and we as growers know that they are by that time rotten on the inside, however good they may appear on the outside.

It is absolutely essential for good marketability that the fruit show signs of age deterioration on the outside first. This factor is one of the reasons for the success of the banana industry. The banana turns brown on the outside while it is still good inside. That is one of the big market advantages of the Fuerte.

The avocado variety which turns dark around the seed, or the flesh of which goes rancid from age while the outside appearance is still normal, is sure to make all kinds of trouble on the market and will destroy rather than build up demand. We learned that lesson through the fiasco of the Spinks variety.

The surface of the skin should be reasonably smooth and attractive. Rough, knobby, or warty surfaces are undesirable in packing and handling and unattractive in general appearance.

FLESH

It goes without saying that the presence of stringy fiber in the flesh is highly objectionable. Fortunately many of our varieties are relatively free from fiber. The color of the flesh is not of great importance, but a deep yellowish green color is more to be desired than a light green, or the dead grey color which is sometimes met with.

Flavor is of course most important. It may be either rich and satisfying or weak and insipid. Separate factors which combined make flavor are usually spoken of as nutty, oily, sweetish, bitter, soapy, watery, astringent, etc. Flavor is profoundly affected by the condition of the fruit as to maturity. Our accepted method of measuring maturity is by the oil content. While I am not ready to say that the higher the oil content, the better the flavor; it is true that in general the higher oil content varieties, those ranging above 16 percent, are better flavored; although there are a few notable exceptions such as the Matney variety for example. To a Californian accustomed to eating high oil content varieties, the West Indian fruits seem insipid, sweetish, and watery. California growers would do well therefore to concentrate on rich, nutty, high oil content varieties.

In order to prevent deception and the sale of grossly immature fruit, the avocado was included in the California State Standardization Law in 1925. In that law the sale of immature avocados was prohibited and all avocados were considered immature which contained less than 8 percent of oil by weight. For ten years this law has worked very well and a tremendous amount of grossly immature and windfall avocados have been kept off the market. Recognizing that the State Law provides a minimum standard which must be kept low to avoid being discriminatory, Calavo Growers set up special standards for different brands of fruit packed by them. These vary with the variety, and may be changed from time to time as conditions warrant. It would be well if a similar procedure were to be followed by other shippers who might wish to establish high quality brands for advertising purposes.

From time to time some growers, feeling that the Fuerte, for example, is not at its best at 8 percent, have proposed a change in the standardization law which would raise the minimum oil content of Fuerte to 12 percent thus singling this variety out for special treatment under the law. The result would be the weakening or actual destruction of the law in its application to all varieties. Only two courses are open to us. Either we must have one oil content as a minimum standard for all varieties as at present, or immaturity must be based on a certain percentage of the maximum oil content of each variety. Under the latter plan there would be endless confusion due to difficulty of setting up maximum oil contents for seedlings and new and little known varieties including those from Cuba and Florida. Such a proposition simply could not be made to work. It has not been an easy matter to develop efficient machinery of enforcement with the law as simple as it is now. I asked one of the most experienced inspectors who happens to be also an avocado grower, how he would carry on should the law be changed as proposed. He replied that he would simply have to throw up his hands. We should

remember that as growers we are very close to the industry and have a tendency to raise standards higher than is practicable for the trade generally.



Picking Scene in Orange County Grove.

There is some very good evidence to show that a definite oil content is in fact a reliable measure of palatability regardless of whether the variety is extremely rich or only bland at maximum maturity. I have here a chart which shows graphically the relation between oil content and palatability. In these graphs there have been combined the averages of all the thousands of maturity and tasting committee tests which have been carried on by Calavo Growers over a period of ten years. This shows that at 8 percent Fuerte and Anaheim are about equally palatable. If a 50 percent maximum oil content maturity standard were to be adopted with 12 percent for Puerte and 6 percent for Anaheim, there would be a great divergence in their respective palatability. Such a law would actually be a measure of grades rather than a means of preventing deception. The minimum standards in the California Standardization Law should be considered purely a **minimum** to keep grossly immature fruit off the market. The classification of above minimum fruit into divisions or brands of differing quality is certainly a proper function of packers and shippers. It should not even be attempted by the state government.

I can remember when previous to 1925 many tons of grossly immature Spinks and Challenge windfall fruit was marketed in Los Angeles in November and December. The deception was so disastrous that the marketability of good fruit was ruined for several months. As chairman of the committee which finally secured the inclusion of the avocado in the State Standardization Law, I heard all the discussions which led to the adoption of 8 percent as the minimum standard. I believed then and I believe now that

this standard is fair. Ten years of enforcement has proved that it is workable, and that it accomplishes the desired result. Let us not attempt a change unless a full discussion by all growers and shippers shows conclusively that a change is actually necessary.

SEED

The smaller the seed the better. However inasmuch as the seed is not seen till after the fruit is bought and taken home, the bad effect of an excessively large seed on marketability is slow in making itself felt. Consumers will learn in time to discriminate against those varieties in which the size of the seed is excessive. The size of seed varies in different varieties from about 7 percent of the weight of the fruit up to about 35 percent. The variety committee has been in the habit of considering a seed as small if below 15 percent; medium if between 15 and 20 percent; and objectionably large if over 20 percent.

In the early days a loose seed was considered very objectionable. On account of lack of conclusive evidence that a loose seed injured marketability, the committee while still penalizing a fruit for loose seed, is not inclined to be as severe on this account as formerly. Avocado seeds are covered with membranous coats which may adhere either to the seed or the flesh lining the cavity. For good marketability it is important that on opening the fruit, these seed coats adhere to the seed, leaving the cavity clean.

SEASON OF MATURITY

California is the only commercial avocado growing section where harvest continues throughout the year. However, on account of severe competition in Eastern markets during the summer and early fall, our principal sales during that period are limited to the region west of the Rocky Mountains. Fortunately this area includes two excellent avocado markets, Los Angeles and San Francisco. Most of our best known summer varieties such as Anaheim, Nabal, Linda, and Queen are too large in size for best marketability. We need a small green variety of good shipping quality for marketing at that time. The volume of shipments in summer must continue much less than winter and spring because shipments are not only limited to the western half of the country, but they must compete with a larger list of other fresh fruits and summer vegetables.

UNIFORMITY OF MATURITY

Many seedlings have the habit of maturing at one end first. If picked when the early end is mature, the other end remains hard and does not soften. If left on the tree till the late end is mature, the early end is cracked and rotten. This habit is of course fatal to good marketability, but it is not at all uncommon and quite a number of otherwise promising seedlings have to be discarded on that account.

KEEPING QUALITIES

A good market avocado should remain firm for a long time before softening in order that

it may be picked, packed, and distributed in a firm condition. It is very important that it not only endure cold storage well but that it should soften without loss of flavor or good appearance on removal from cold storage. This quality is possessed by the Fuerte to an exceptional degree, and is lacking in Anaheim, Dutton, and some others.

After the avocado is picked from the tree it continues to live and breathe (respire) for a time, the length of time depending on temperature. Life processes are accelerated by high and retarded by low temperatures. But it is still a living thing. As these life processes slow down due to senile decline, enzymatic changes cause the flesh to soften. Gradually the oil is released from its previous position in the cells where it was protected from oxidation and finally becomes subject to rancidification. In some varieties enzymatic darkening of the cut surface of the flesh takes place very quickly. This is objectionable. The variety which does not discolor quickly on standing after being cut permits the housewife to prepare the salad before the meal and leave it on the sideboard for an hour or so or until time for serving. The variety which turns dark and unattractive under such circumstances will be objected to on that account.

SUMMARY

For best marketability the variety should meet the following specifications:

1. Size 6 to 12 ounces.
2. Shape, typically pyriform.
3. Color, dark green.
4. Seed, less than 12 percent of fruit, tight, with seedcoats adhering to seed.
5. Skin, medium thin, tough with smooth surface, yielding when softening.
6. Flesh, oil content 16 to 22 percent, free from fiber, deep yellowish green.
7. Flavor, rich and nutty, free from sweetness, bitterness, soapiness.
8. Must have the quality of remaining good on inside until after final decomposition is quite apparent on the outside.
9. Evenness of maturing and softening over all parts of the fruit.
10. Long keeping qualities in both common and cold storage.
11. Cut surface should remain bright and attractive several hours. Among present varieties, the Fuerte comes nearest to conforming to these specifications, and that is why it is so successful in the markets. In studying new seedlings in our search for one which bears better than Fuerte, or matures at a different season, we should value them according to how they meet these specifications, and in addition are easy to propagate and are good thrifty growers and regular and heavy bearers.