

## AVOCADO CULTURE A New Horticultural Industry

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An increase in material prosperity of a nation is usually accompanied by marked changes in habits of diet. In the United States such a change is now in progress. Less bread and meat and more fresh fruits and vegetables is the order of the day, and the result is a marked improvement in the health of the nation. The rise in popularity of uncooked salads has been accelerated by the rapid development by transportation companies of refrigeration in transit, which permits the widest distribution of fresh salad materials at all seasons of the year.

The avocado, sometimes vulgarly known as "alligator pear" is the aristocrat of salad fruits. It is produced on a handsome evergreen tree which is sub-tropic in character, and will endure about as much cold as the orange tree. The fruit has no sugar, but a rich nutty flavor and contains from fifteen to twenty-five per cent of agreeable eupeptic oil, which has the same digestion coefficient as butter fat. The protein content is from 2 to 3 per cent, the highest of all fruits. The avocado is gently laxative and rich in vitamins.

The fruit remains firm after maturity on the tree, but after being picked gradually softens the rate of softening being retarded by lowering the temperature. It is eaten when the flesh can be easily spread with a fork, and will keep for some time at low temperature, but if kept in a warm place for several weeks gradually becomes rancid and moldy. The single large seed is inedible. Most persons quickly acquire a taste for avocados and become so fond of them that when scarce, very high prices are paid.

This interesting fruit is native in Central America and Mexico. It was highly prized by the ancient Aztec and Mayan peoples. Fruits from the wild trees have been enjoyed by travelers in Latin America for a hundred years. During the last sixteen years certain enterprising nurserymen of Southern California aided by Mr. Wilson Popenoe, Plant Explorer for the United States Department of Agriculture, have made a careful examination of the fruit of many seedlings found growing casually throughout Latin America. The very best of them were introduced into California and Florida, where by skillful breeding, systematic selection and careful propagation by budding and grafting, standard commercial varieties have already become established which are far superior to the wild forms of their native land.

The intrinsic merit of this new fruit is such as to rapidly win permanent habituates. With the increase in consumption and production, large budded acreages of avocado trees are being planted out in both California and Florida. In California particularly, these are practically all trees of the highest quality new standardized varieties.

The many varieties of avocados are classified into three groups: the *West Indian*, a tropical form chiefly grown in Florida, and commonly known as "alligator pear", the

*Mexican*, a small thin skinned group, grown chiefly for domestic consumption and for root-stocks; and the *Guatemalan*, large thick-skinned fruits of highest quality and capable of being shipped from California to Europe in good marketable condition.

It is the Guatemalan and hybrids between it and the Mexican which form the foundation of the new industry. In Florida, the West Indian "Trapp," a very large round green fruit, is the leading variety; while in California the smaller and somewhat obliquely pear shaped green variety known as "Fuerte" is by far the most popular kind for commercial planting. The harvest season in Florida is from August 1st to about February 1st, with the peak of production in September and October. In California, the harvest is continuous throughout the year, with the peak in March, April and May.

In October 1915, a number of earnest and farsighted amateur avocado growers met in Los Angeles and organized the California Avocado Association, with the object of guiding and molding the new industry along practical and scientific lines. Prices received for the first fruits of the new and improved varieties were so high that there was great danger of an irresponsible real estate element running into excessive exaggeration in their use of the avocado in selling indifferent lands. The Association has worked diligently to prevent abuses of this kind and has always held the attitude that the plain truth about avocado culture was good enough. Its influence has been to prevent exploitation and hold back development so as to ensure its following more normal and substantial lines. Strong committees have been continuously working on such phases as research and investigations, varieties, standardization of both fruit quality and packing containers, legislation, educational advertising, quarantine, by-products, etc.

The proper introduction of a new and little known salad fruit to the American Public by a mere handful of growers with very meager funds was a Herculean task, but the faith of the growers in the intrinsic value of the improved varieties has sustained them through many difficulties. The complete chronicle of progress may be found in the Annual Yearbooks of the Association, which have been published regularly since 1915-

One of the greatest difficulties with which the Association has had to struggle has been the tendency of irresponsible growers and dealers to market immature fruit which is sadly lacking in flavor. This abuse of the market was at first easy because the color of the best commercial varieties remains green after maturity, much like a watermelon, and the novice had no way of knowing from inspection at time of purchase whether or not the fruit was mature. After years of effort on behalf of the Association, the avocado was included in the California Fruit and Vegetable Standardization Act, and it became illegal to sell or offer for transportation any fruit which has an oil content in the edible portion less than eight per cent by weight. The California organization went even further, and established the brand name "Calavo", which is indelibly stamped on each individual fruit which meets the high specifications for this brand. Fifteen per cent of oil was the minimum allowed under this brand, which is a guarantee to the consumer that the fruit is fully mature. Recently different minimum oil standards have been set up for different varieties.

The establishment of high standards greatly strengthened the market and the confidence of the buying public, but at the same time resulted in quantities of fairly good fruit being retained at the packing-houses. Looking toward the utilization of this, much

investigation of possible by-products has been carried on. Ice cream stock, canned sandwich spread, and stock for soda fountain use are the most promising developments. Research is now in progress looking toward the separation and utilization of the oil from cull fruits.

In California, the avocado flourishes best near the Southern Coast line and within influence of the sea. It may be grown, but is not so well adapted, to the dry heat of interior districts. It is particularly suited to somewhat elevated lands along foothills a few miles back from the sea. Good avocado lands are limited in extent and are only available where an abundance of irrigation water is to be had. Some of the best lands are very steep, and require terracing of the hillsides, the trees being planted along the edges of the terraces. The trees need little cultivation, but require generous quantities of farm manures and humus forming materials rather than chemical fertilizers. An orchard comes into bearing commercially the fourth year from planting the budded trees, and may be considered in full bearing at twelve years of age when they should average one hundred pounds of fruit per tree, although there is much variation between trees and from year to year.

Usual distances of planting allow for from 76 to 90 trees per acre and more—if double set on terraces. At present, there are about 4500 acres planted in California, less than 800 of which are in full bearing.

In its native land the avocado is subject to a number of insect pests, which are very expensive to successfully combat. The Quarantine Committee of the California Avocado Association stands squarely behind the State and Federal inspectors at all ports of entry, and thanks to their vigilance, the improved varieties so far introduced have been brought in with a clean bill of health. At the present time, there are no serious insect pests or diseases of the avocado in California, and growers of this fruit are relieved from the heavy expenses for spraying and fumigating to which orange and lemon growers are subject. Inasmuch as serious avocado pests exist in Hawaii, there is ample warrant for the inspection of hand luggage and confiscation of avocados from travelers coming from Hawaii to California.

The year 1927 marked the introduction of the Standardized California Avocado into the populous markets of the Eastern Seaboard. Following trial shipments by express, the first full car of avocados left Los Angeles for Eastern markets in December 1926. In the spring of 1927 solid car shipments by freight began and it has been amply shown that if intelligently handled from field to packing house, the fruit carries well by freight and arrives in excellent condition. By way of experiment, successful shipments have been made to different parts of Europe.

It is a far cry from the desultory seedling "ahuacate" trees growing in sleepy Guatemala to the highly developed commercial orchards of standard varieties covering the hills of Southern California. This is a young and virile industry, characteristically American in spirit and entirely new in method. It is rapidly winning its way into American markets with an opportune product. It is already a justification for the faith of the founders of the California Avocado Association.