

Book 1

Chapter 1

History of the Avocado Industry in California

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Discovery of Avocado in the New World

Avocado is native to the New World, originating in southern Mexico, Central America and the West Indies. The fruit has long been used as a food by Native Americans in these regions and was known by the Aztecs as “ahuacatl”. Avocado was first mentioned in print in the report *Suma de Geographia* by Martin Fernandez de Enciso, published in Spain in 1519 (Popenoe and Zentmyer 1997). He observed the fruit growing in what is now Santa Marta, Columbia during an expedition with the Spanish explorer Juan de la Cosa. A more extensive description of avocado was written by Gonzalo Fernandez de Oviedo (1478-1557), historian for the conquistadors traveling with expeditions led by Hernando Cortez in 1519. His account was published in 1526 in the *Summario de la Natural Historia de las Indias*:

“They are large trees, with broad leaves similar to those of the laurel, but larger and more green. They bear pears weighing a pound and even more, though some weigh less, and the color and shape is that of true pears, and the rind somewhat thicker, but softer, and in the center of the fruit is a seed like a peeled chestnut...and between this and the rind is the part which is eaten, which is abundant and is a paste similar to butter and of very good eating and of good taste, and such that those who have these fruits guard them and esteem them highly and the trees are wild as are the others which I have mentioned, for the chief gardener is God, and Indians apply no work whatever to them. These pears are excellent when eaten with cheese, and they are gathered before they are ripe and stored, and when treated thus they ripen perfectly for eating but after they have reached this stage they spoil quickly if allowed to stand.”

The Spanish name, Aguacate, was first used in 1550 by Pedro de Cieza de Leon (1518-1554), Spanish conquistador and historian, in a journal of his travels. (The Spanish apparently couldn't pronounce the Aztec name 'ahuacatl'. 'Ahuacatl' in the Aztec language meant 'testicle', most likely because of the shape of the avocado fruit.) He noted that at that time the avocado grew in Panama, Ecuador, Colombia, and Peru.

Avocados were encountered continuously by various explorers during the sixteenth century from Ecuador and Peru northward through Central America and Southern Mexico, as far north as Mexico City. Avocados were also encountered by explorers and travelers in the West Indies, although Popenoe and Zentmyer believed that they were introduced to these islands after the Conquest by Spain. George Washington wrote in 1751 that he had tasted “agovago pears” in Barbados as they were popular and abundant in the marketplaces.

In the 1700's the European sailors called avocados 'midshipman's butter' because they used them as a spread on hardtack.

The First Plantings in California

The first plantings of avocado in California probably occurred around 1850. It was reported in the California State Agricultural Society Report for 1856 that an avocado tree was grown by Dr Thomas White in San Gabriel (Butterfield 1963). This tree produced no known progeny, but other seedling trees were planted throughout Southern California by people interested in exotic fruit. It is recorded that three seedling avocado trees were brought in from Mexico and planted in Santa Barbara by Judge R. B. Ord in 1871. These trees are generally considered to be the foundation of the avocado industry in California. (Ryerson 1923).

In 1963 Butterfield reported that the oldest living avocado tree in California was probably at the University of California, Berkeley near the creek east of the Center Street entrance. The tree was thought to be a Guatemalan seedling brought to California by Tulio and Pedro Ospina of Guatemala (College of Agricultural Reports, 1879, p.76). At the time of Butterfield's report, the tree had only a few branches left alive.

In 1892, Juan Murrieta of Los Angeles became interested in avocados and brought in a large number of thick-skinned fruit from Atlixco, Mexico. From these he distributed seeds to his friends and he planted the others. From this selection came a number of the first varieties that looked interesting in California.

Nurseryman Kinton Stevens set out 120 seedling trees in Montecito in Santa Barbara County in 1895, establishing the first avocado orchard. The orchard prospered initially but died after several drought years.

Also planted in 1895 was a Mexican seedling given to George A. White for his ranch in Santa Barbara by Francisco Franceschi, an importer of subtropical fruits. In 1940 it was reported that the tree had been bearing since 1900 and, by October, 1937, had grown 56 feet high and had spread over a 50 foot lot. The trunk diameter was 37 inches four feet off the ground (Van Rensselaer 1940).

The first "commercial" avocado orchard of budded trees was planted in 1908 by William Hertrich for Henry E. Huntington on his estate in San Marino, Los Angeles County. During this time the chef at the Los Angeles Athletic Club saved seeds from avocados imported from Atlixco in the State of Puebla, Mexico (Coit 1963). The seeds were given to Hertich, grown in pots, and eventually four hundred seedling trees were planted and later budded to varieties then available. The orchard was heavily damaged by the catastrophic "1913 Freeze", but was rebuilt; a few of the trees still exist on the grounds of the Huntington Library. Other trees that had been planted in various locations in Los Angeles and had survived the freeze fruited well and demonstrated that avocado was adapted to the region (Coit 1963).

J. Elliot Coit reported that he gave fruit to Professor E. J. Wickson at U. C. Berkeley and he "liked it and considered it suitable to grow in home gardens by those who liked it". But, he also said

“there was no prospect for commercial culture because it contained no sugar and fruits were supposed to be sweet--the sweeter the better” (Coit 1963).

Despite the remarks by Wickson, the possibility of growing avocado on an extensive, commercial scale began to be discussed. The development of the avocado industry gathered steam after several nurserymen began exploration in some of the best avocado districts in Mexico, and a freak accident (as a result of the freeze of 1913-14) led to the selection of the ‘Fuerte’ variety.

Development of Superior Varieties

Frederick O. Popenoe, owner of the West India Gardens nursery in Altadena, Los Angeles County, sent his son, Wilson Popenoe, and his employee Carl Schmidt, on collecting expeditions in 1911 to find superior selections of avocado that might be productive in California. Carl Schmidt sought out fruit that looked good in the market places, then tried to follow the trail back to the tree to sample budwood for shipment to California. Schmidt was familiar with the avocados sent from Atlixco and he did most of his collecting in this region. One of the budwood samples taken from a tree in the backyard of Senor Le Blanc in Atlixco was labeled “No. 15” – a producer of fruit of exceptional quality. These buds were grafted onto seedlings at the nursery in Altadena. A devastating freeze in the winter of 1913 killed most of the avocado trees in the nursery, however “No. 15” survived. A batch of 50 nursery trees of the hardy new No. 15 variety were reluctantly accepted by grower John T. Whedon in lieu of varieties ordered earlier, but frozen in the nursery. F. O. Popenoe, noting their hardiness for having survived the freeze “named them ‘Fuerte’ after the Spanish word for strong” (Poole and Poole 1967).

“The Fuerte trees were planted on Whedon’s place near Yorba Linda (Orange Co.) on March 12, 1914, thereby establishing the first orchard of the cultivar that would come to be for many years the industry’s principal, market-preferred variety—the variety, indeed, upon which the California avocado industry was built, and that was introduced and grown successfully in many other countries” (Shepherd 1991).



The Parent 'Fuerte' Tree in the Garden of Alejandro LeBlanc, Atlixco, Mexico, December 1918

This small orchard was to prove profitable for Whedon. As described by Poole and Poole, “When his orchard came into production he had standing orders from hotels in Los Angeles and San Francisco who were willing to take all he could ship, paying as much as \$12.00 per dozen. Because of the Fuerte’s cold resistance and high quality fruit, the buds from his trees were in great demand, and in some years, he realized as much as \$6,000 from buds alone (Poole and Poole, 1967).

Other nurserymen also brought in important selections. E. E. Knight of Yorba Linda brought in budwood of superior varieties from Guatemala, including selections that would later be named Queen and Linda (Hodgson 1947).

The United States Department of Agriculture’s (USDA) Dept. of Plant Exploration and Introduction noted that private nurseries could not be expected to do a complete exploration of Mexico and Central America for promising avocado varieties, so they hired Dr. Wilson Popenoe for nine years to do a thorough exploration of all of the known avocado areas. Popenoe introduced many selections but none became as famous as the Fuerte (Hodgson 1947). Hodgson noted that “the avocado growers of California and Florida early had the best that the world affords in the way of varieties upon which to build a commercial industry”, an important contribution from the USDA.



Plant Explorer Wilson Popenoe Ready for a Day's Hunt, 1918

Noting the success of Whedon and others, interest grew in the avocado and soon ten nurseries were growing budded trees. Nurseries were using Mexican type rootstocks because they were abundant and more tolerant of cold weather than the Guatemalan rootstocks. Enthusiasm grew but there was a great deal of confusion concerning varieties; it was soon realized that some sort of organization was required to help make this a successful industry (Coit 1963).

Formation of the California Avocado Association

The first association of California avocado growers began with a meeting on May 15, 1915, at the Hotel Alexandria in Los Angeles. Its most important result was the formation of a California Ahuacate Association for the purpose of "...the improvement of the culture, production and marketing of the Ahuacate". The word "ahuacate" was used because it was the word in common use in Mexico for this fruit. Following spirited debate, **Avocado** replaced **Ahuacate** as the official name of the association *and* the fruit (Shepherd 1991). The word "avocado" was apparently a new word not found in dictionaries at the time, and the Association eventually informed the dictionary publishers of the correct spelling and definition, and that the plural form would be "avocados", not "avocadoes". Coit (1963) noted "It was early decided that any member caught using the detestable term 'alligator pear', then in common use in Florida, should be severely reprimanded".

On October 23, 1915, the first semi-annual meeting of growers was held with Edwin G. Hart as the first president and chair of the Board of Directors. At the end of the year there were 74 members composed of growers, researchers and others interested in avocado. The Association was renamed the California Avocado Society in 1941.

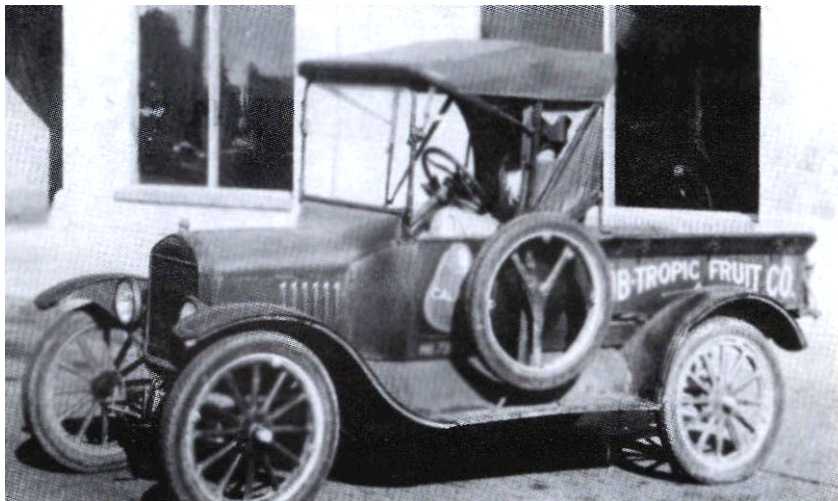
This organization has been the main driving force for variety improvement, grower education and working with the University of California on research solving cultural problems. The California Avocado Society is famous worldwide for its production of useful and informative Yearbooks. The Yearbooks serve as a library of information for growers and researchers in California and worldwide. Over the years the Society has sponsored many grower meetings, and

since 1990, the Society has co-sponsored six meetings a year with the U. C. Cooperative Extension farm advisors to present timely cultural and research information to growers.

The Variety Committee

In 1916, nurseryman F. O. Popenoe published descriptions of 86 varieties. Nurserymen and growers were rapidly coming up with new varieties along with “overly optimistic claims”, and it was apparent that a variety committee was needed to evaluate the varieties, standardize the names and publish recommendations for growers (Coit 1963). The Variety Committee, under the auspices of the Association (later the Society) has functioned since this time and provided an invaluable service to growers.

In 1926, Dr. I. J. Condit (with the help of the Variety Committee) published a list of 400 named varieties. In 1933 the Committee revised the list and reduced the number of varieties. In 1936 the Association started a seedling registration. To be registered, the “owner of the seedling suggested a name, which would be adopted and made official by the Association only if it conformed to the rules of horticultural nomenclature”. The name had to consist of only one word (not a verb or adjective), could not have been used previously, and a description of the tree and fruit, its location and owner’s name and address were submitted. One of the problems eventually solved by the Variety Committee was the argument over thin-skinned Mexican varieties vs. thick-skinned Guatemalan varieties. Coit reported the Committee eventually settled on the use of hybrids ‘Fuerte’ and ‘Hass’, each of which had good qualities of both avocado races (Coit 1963).



Store Door Avocado Delivery, About 1915

Organization of the California Avocado Grower’s Exchange

One of the original purposes of the Association was to market fruit, but with high prices (\$0.50 to \$1.00 per large Guatemalan fruit) and a shortage of fruit, growers found it fairly easy to do their

own marketing (Coit 1963). By 1922, however, growers were faced with a very heavy fruit set and the Association's directors decided that the members needed to try cooperative marketing. Arrangements were made with the American Fruit Growers packinghouse in Los Angeles to pack and sell fruit from all of the members on a commission basis. The plan didn't work because "some members ignored the rules and sold their best grade to old customers and took the low grade and cull fruit to American Fruit Growers."

At that point the Association's board of directors examined the idea of cooperative marketing set up under California law much like Sunkist and the Walnut Grower's Exchange. By the summer in 1923, it was felt that the crop of avocados in sight made urgent the formation of an organization solely devoted to the marketing of avocados. The California Avocado Exchange was formally established on January 24, 1924 to handle cooperative marketing, and the Association retained all of its previous functions except marketing (Coit 1963). J. Elliot Coit worked as the coordinator between the organizations for the next twenty years, while George B. Hodgkin served as general manager of the marketing cooperative until 1956. The name of the Exchange was changed to Calavo Growers of California in 1927 (Shepherd 1991). In addition to the exchange, a number of independent packing houses developed which gave growers marketing alternatives.



California Avocado Growers Exchange Office and Packing House, Los Angeles, 1925

Introduction of the 'Hass' Variety

The green-skinned 'Fuerte' was a favored variety by consumers in the early days, but it, and many of the other new selected varieties, was plagued by short harvest seasons and erratic yields. The black-skinned 'Hass' variety was selected by a stroke of luck in the 1920's at the farm of Rudolph Hass in La Habra, California. In 1926 Hass bought Guatemalan avocado seedlings (thought to be of the 'Lyon' variety) from the Rideout nursery in Whittier and planted them at his new grove. On the recommendation from Rideout, Hass planted three seedlings in each hole with the idea that the strongest would be grafted and the other two pulled out. The seedlings were to be field-grafted to the popular 'Fuerte' variety, but after three attempts, Hass could not get the Fuerte buds to take on one of the seedlings. After the last attempt at grafting, Hass let the seedling tree grow, but the tree was ignored. Hass thought the fruit was ugly, with rough purple-black skin. According to Charles Hass, Rudolph's son, "My brothers kept telling him, Dad, it tastes great, you gotta try it!" Rudolph eventually tasted the fruit, liked the creamy flesh, the nutty taste, the lack of fiber and the 18% oil content, and the long harvest season. His new selection, which he

named after himself, was granted U. S. Plant Patent No. 139 on August 27, 1935. Hass made a deal Harold H. Brokaw, a nurseryman in Whittier, to grow and promote the Hass avocado, but by the time the patent expired in 1952, Rudolph Hass had made only \$4800 on the new variety (Dillow 1996). The original 'Hass' mother tree lived in a suburban setting in La Habra Heights until 2002 when it died from avocado root rot disease; the tree was 76 years old. Harold Brokaw's nephew, Hank, removed the wood from the dead tree and it is now kept in storage and occasionally pieces are used by the California Avocado Society for plaques and other special items.

Market acceptance of the dark-skinned variety was slow as the consumers had learned to recognize "green" as the proper color for an avocado. Steady promotion by packers and growers gradually resulted in increased market acceptance so that, by 1957, 'Hass' comprised 15% of the crop in California. By 1972, forty years after its introduction, 'Hass' surpassed 'Fuerte' in total volume marketed from California. By 1990, 'Hass' accounted for 83% of California's avocado production (vs. only 2% for Fuerte). By the end of the crop year 2010-2011 'Hass' comprised 94.5% of the avocados grown commercially in California.

'Hass' is also dominant in the mountainous state of Michoacan, Mexico (the main area in Mexico growing fruit for export) and other subtropical avocado regions in the world, but the variety does not fruit and grow well in the more tropical regions such as southern Florida, the Caribbean islands, and Hawaii. West Indian varieties are more commonly grown in these tropical areas.

Root Rot becomes Epidemic

In the late 1930's growers began to notice a decline and tree death in some areas of their groves. The problem was called "apoplexy", "asphyxiation", "decline", "melanorhiza" or "waterlogging". (Shepherd 1991). Finally, in 1939, a graduate student from South Africa, V. A. Wager, working at the Citrus Experiment Station in Riverside, proved that the cause of the problem was the fungus *Phytophthora cinnamomi*. The California Avocado Society donated \$3700 to the University in 1943 to begin research on this devastating disease. Dr. George Zentmeyer at U. C. Riverside began a comprehensive program in 1948 to study the disease. This work eventually included studies on the life cycle and biology of the fungus, factors affecting disease initiation and development, and all phases of disease control including resistant rootstocks, fungicides, biological and cultural control and disease prevention. Dr. Zentmeyer retired in 1981 but continued to work on avocado root rot research projects and writing until his death in February 2003.



Avocado tree showing the effect of root rot disease

The avocado root rot research program at U. C. Riverside came under the direction of Dr. Michael Coffey during the 1980's, and later under the direction of Dr. John Menge in 1990 and Dr. Greg Douhan in 2006. Emphasis has been on selection and breeding of more tolerant and resistant rootstocks, and biological, chemical and cultural control. Significant progress has been made on the understanding of this disease and several new rootstocks with increased resistance to the disease have been introduced to the industry, but avocado root rot is still the most important disease problem in California avocado production.

Production research funding was dramatically increased beginning in 1972 when the marketing order was amended to create an industry Production Research Committee. Funding for research was continued by the California Avocado Commission (CAC) when the marketing order became inactive. From 1990 until 2000 the CAC contracted with the California Avocado Society to manage the research program. Since 2000, management of the research program has been done by the Production Research Committee of the CAC. Funding for avocado research in 2001 was second only to citrus research funding for industry-sponsored research funding for tree crops in California. Funding from the industry to the University has enabled research on many other worthwhile projects, including breeding, pest control, irrigation, fertility, pruning and post-harvest studies.

Issuance of the Marketing Order

Almost all market development during the first forty years of the industry was done by the growers who had organized, first with the Association then later with the Cooperative, Calavo Growers of California. As the number of independent packers increased and the production increased, it was perceived that an industry-wide program of advertising and promotion was needed for the industry to remain successful. An Avocado Promotion Committee was formed in 1958 and in 1959 a proposal was placed before the growers to apply for a State Marketing Order that would allow for mandatory assessments to pay for promotion, advertising and market development. Calavo growers were opposed to the Order, as were most avocado handlers (Shepherd 1991).

A voluntary program was proposed that would have been managed by the handlers under an organization known as the California Avocado Development Organization (CADO). Funding

would come from assessments from the growers, but it was agreed that 95% of the crop must participate in order to make this industry-wide program work; this level was never reached and the CADO plan was dropped. CADO still exists as a forum for discussion among handlers (Shepherd 1991).

With the failure of the voluntary plan, Calavo and the Avocado Promotion Committee petitioned the California Department of Food and Agriculture to issue a state marketing order, which was approved after hearings in October, 1959. An injunction forced by a small group of handlers delayed the order until October 1961.

The marketing order was managed by a new organization of growers and handlers known as the California Avocado Advisory Board. Their purpose was to design and implement promotion programs funded by assessments on grower receipts. Unfortunately, state marketing orders are often encumbered with bureaucratic problems from Sacramento, so the industry leaders petitioned for the establishment of a commission, which was created in September, 1977 by Assembly Bill 1602. Again, opposition within the industry delayed the operation of the California Avocado Commission until August 1978.

The California Avocado Commission Board of Directors is composed of ten growers of commercial avocados from five districts (2 per district), four handler representatives and a public member. Through innovative promotion programs, the Commission has largely been successful in the introduction and establishment of the avocado to the American diet. Strong demand has been built for the California avocado both in the domestic market and some foreign markets. In recent years the Commission has been faced with many thorny issues, including convincing local bureaucracies that avocado growers can only be successful if they have affordable water, and informing leaders in Washington

D. C. about the dangers of importing potentially insect-infested fruit from Mexico and Central and South American countries.

The Challenge from Foreign Countries

The avocado industry has long been concerned with the importation of avocados from foreign countries. The concerns came from two angles. The first concern was that foreign fruit may introduce new pests or diseases that would be difficult, if not impossible, to control. Second, fruit produced in countries with low labor costs and low water costs (in many cases there are no costs for water) would compete with unfavorable results against California fruit at the marketplace.

During the early fruit explorations in Mexico and Central America, it was discovered that some fruits being sent to the United States contained species of seed weevils that were not known to occur in the United States. On February 27, 1914, the USDA imposed a quarantine on avocados grown in Mexico and Central America to prevent the introduction of seed weevils, stem borers and other pests. Not only did this quarantine keep out the unwanted pests but, as an important side benefit, it allowed the young California industry to nurture and grow without excessive competition. The complete quarantine lasted until 1997 when the USDA decided to amend it and allow Hass avocados from certified "pest-free zones" in Mexico to enter nineteen states in northeastern U.S. and the District of Columbia during the months of November through February. The purpose of the change was to satisfy requirements of the North American Fair

Trade Agreement passed by Congress in 1994, yet still keep Mexican fruit away from the avocado production areas in California and Florida.

On November 1, 2001, after formal requests by the Mexican government, USDA/ APHIS (Animal and Plant Health Inspection Service) published in the U.S. Federal Register the “Mexican Avocado Import Final Rule” which increased the number of states where Mexican Hass avocados could be distributed to 31 states. The additional states in the proposal included Idaho, Utah, Montana, Wyoming, Colorado, North Dakota, South Dakota, Kansas, Nebraska, Minnesota, Iowa, and Missouri. The Rule also lengthened the time of the shipping season through April 15 of each year. On December 18, 2001, the California Avocado Commission filed a lawsuit in federal court asking that the rule be declared invalid based on phytosanitary issues – namely, the importation of fruit from areas that are known to have seed weevil, stem borers, and/or fruit flies put the California industry at risk.

Mexico was (and still is in 2012), the largest producer of avocados in the world, with production at 940,000 tons in the calendar year 2001. During 2001 the United States was second with 164,500 tons. Other countries included Indonesia (130,000 tons), Chile (120,000 tons), and Peru (89,800 tons). Although avocado production from Mexico is high, the domestic market in Mexico takes most of the fruit.

Other avocado-producing countries, namely, Chile, New Zealand and the Dominican Republic, have access to ship avocados to all states in the U.S. Chile has made the most out of this opportunity. Starting in 1985, Chilean avocado growers began shipping Hass avocados in the fall and winter months to the U.S. in such quantities that California growers no longer found a home for their winter greenskin varieties. In the winter of 2002-03 Chile shipped 157 million pounds of Hass to the U.S., more than a third of the annual Hass production from California. Chile is expected to increase shipments as more of their groves reach maturity, and they are expected to lengthen their season. Industry analysts expect that California growers will only have the summer months to ship fruit without competition from Chile.

Understandably, California avocado growers fear competition from Mexico, but they also fear pest introductions. With rapid movement of goods in the United States, Mexican avocados imported into Utah can be trucked into Los Angeles in less than a day. Avocado consumption in California is much higher than those other states, and fruit tend to get sold and moved to the good markets.

Is there a legitimate fear of pests? California growers have already had to deal with devastating pest introductions from Mexico and Central America. Two of the most important pests were Persea mites and avocado thrips, probably introduced in illegal shipments of fruit or plants from infested areas. These pests have been difficult to control since most groves are planted on steep slopes and are difficult to spray from ground equipment. In addition, spraying pesticides usually upsets the delicate biological pest control on which growers rely.

Are there pests in areas where fruit is shipped from Mexico? In a report published in 2001 by the California Avocado Commission, “Nearly 700 fruit flies and 2,120 weevils have been trapped since 1997” in the municipalities approved for shipment of avocados to the U.S. (California Avocado Commission, 2001). The point is made that the McPhail trap used in these pest surveys only catches a small percentage of the pests actually present in the grove.

The Federal Marketing Order – Hass Avocado Board

As more avocados from foreign countries entered the U.S., many California growers began complaining that the assessment paid to the Commission to promote generic avocados were in fact also promoting avocados from Chile and other countries. Growers and marketers were also concerned that, with the increasing foreign fruit in the market, a billion pounds per year could eventually lower fruit prices, possibly forcing an end to production in California. Under the leadership of Charley Wolk, chairman of the California Avocado Commission, the “Hass Avocado Promotion and Research Order” was proposed to USDA to authorize a marketing assessment on all Hass avocados sold in the U.S. The assessment would primarily for promotion and expansion of avocados in the U.S. The Order was approved by a referendum of producers and importers and passed by an 86.6% vote on July 29, 2002. This federal promotion order would be administered by 12 members of a board composed of 7 domestic producers and 5 importers, under the supervision of the USDA. This board was officially seated on March 18, 2003. Producers and importers would pay an initial assessment of 2.5 cents per pound on domestically produced and imported Hass avocados. The money is collected by U.S. Customs as avocados are imported and sent to HAB. Then 85% of the money collected is returned to the avocado associations representing each country for their promotion efforts. Domestic producers also pay 2.5 cents per pound on Hass avocados, of which 85% is rebated to the California Avocado Commission for their use in promotions, research and information for consumers.

The goal of the Hass Avocado Board was to increase consumption of Hass avocados in the U.S. Trade promotions in the U.S., especially in areas that were not consumers of avocados, were successful. It’s a good thing, because the vision of the California Avocado Commission was correct in that eventually 1.3 billion pounds of fruit were sold in the U.S. market in 2010. The movement of fruit to the markets turned out to be relatively smooth and with the planning by the Hass Avocado Board and the various trade associations, dumping of fruit in the market during Superbowl weekend and Cinco de Mayo was avoided.

The mission of the HAB changed somewhat in 2010 (as reported by Chairman Jim Donovan in the 2010 Annual Report).

“HAB’s mission has always been quite straightforward: To increase consumption of Hass Avocados in the United States.

This means focusing on long-term, demand-building activities rather than on promoting immediate sales, a job that the Californian, Chilean and Mexican avocado communities have done extremely well over the years. In addition and following the direction of our stakeholders, the emphasis on nutrition research and communication continues to expand and now represents almost half of all activities for 2011.

The 2011 Marketing Program reflects this long-term view with three core objectives: 1) to enhance the marketing effectiveness of our stakeholders; 2) to establish a compelling, ever-stronger nutrition research platform; and 3) to provide relevant information and data to facilitate stakeholder decisions.

These three objectives and their supporting activities speak to both our mission and a 2011 marketing budget that is less than half of that available in 2010. Specifically, they steer HAB away from trade promotions – an area of considerable emphasis for our sister associations – and keep the concentration where it belongs: on a sustainable, longterm path toward increasing demand and consumption.”

Following this change in tactics, HAB funded three interesting research projects aimed at providing information for dieticians.

1. A research project at Pennsylvania State University that will evaluate the benefits of one avocado a day on heart disease risk factors beyond the known advantages of monounsaturated vegetable oils.
2. A study at Loma Linda University in which researchers will evaluate whether one half of an avocado a day promotes feelings of fullness and promotes food intake control.
3. Researchers at Ohio State University will determine whether adding one avocado a day to carotene-rich meals enhances fat-soluble vitamin adsorption and promotes cardiovascular health.

In 2012 the Hass Avocado Board represented importers from Mexico, Chile, Peru, Dominican Republic and New Zealand, and domestic producers in California.

Chronology of Selected California Avocado Industry Highlights

1856. Dr. Thomas White first reported planting avocados in San Gabriel, California.

1871. Three seedling avocado trees planted in Santa Barbara by Judge R. B. Ord marked beginning of interest in avocado cultivation in California.

1895. Nurseryman Kinton Stevens planted 120 Mexican-race avocado seedlings on his property in Montecito, Santa Barbara County, to establish the first “orchard” of avocados in California.

1906. First commercial orchard of avocados in California was planted by William Hertich on the estate of Henry E. Huntington in San Marino. Seedlings from avocado seeds collected by Huntington from the Jonathan Club (Los Angeles) were grafted to cultivars favored at the time.

1910. Frederick O. Popenoe founded West India Gardens nursery in Altadena, Los Angeles County.

1911. Budwood of seedlings discovered in Atlixco, Mexico, by Carl Schmidt (employee of West India Gardens) introduced into the United States and propagated by West India Gardens, including No. 15, renamed ‘Fuerte’ in 1913.

1913, January. Major freeze devastated susceptible plants throughout California, severely damaging avocado plantings and nurseries, including the Huntington orchard and West India Gardens.

1913, March. John T. Whedon accepted from West India Gardens 40 Fuerte nursery trees in lieu of freeze-killed trees ordered earlier, planting them on March 12 to establish the first commercial orchard of the Fuerte variety.

1914, February 27. Quarantine imposed by United States government on avocados grown in Mexico and Central America to prevent introduction of avocado pests not found in the United States.

1915, May 15. California Avocado Association organized at an advertised meeting held in the Alexandria Hotel, Los Angeles.

1923. Formation of cooperative marketing association of California avocado growers initiated by California Avocado Association, motivated by prospective heavy crop on trees. Part-time manager employed (George B. Hodgkin), and organization of "California Avocado Growers' Exchange" accomplished in August. Office established in packinghouse of American Fruit Growers, Inc., 2160 East Seventh Street, Los Angeles.

1924, January 21. California Avocado Grower's Exchange incorporated in California.

1924, May 15. Exchange "on brink of disaster" with over-supply of avocados coming in on top of inventory of softening and decaying fruit. (The 'disaster' was averted.)

1924, June 1. Exchange moved closer to market (1405 East Eighth St., Los Angeles) began direct dealing with buyers, started promotion campaign (publicity, \$200 of purchased advertising, store displays, recipe booklets and leaflets, and recipe bags).

1924. Exchange opened and for six months operated retail avocado store in Los Angeles. Operation continued by private parties.

1925, July. California statutory standard of avocado maturity enacted, requiring minimum of 8% of oil by weight in edible portions of fruit.

1926. Rapid refractometric method for avocado oil content determination officially adopted, replacing earlier time-consuming "soxhlet" method.

1926. Development of avocado ice cream base and avocado sandwich spread initiated by Exchange as products of cooperative research program with University of California.

1926. Program of research on vitamin content of avocado commissioned by University of Southern California.

1926, December 17. First full carload of avocados from California shipped to Chicago. About same date, first half carload shipped to New York.

1927, January 28. First full carload shipment of California avocados shipped into New York market. (Sales report stated: "...the market in the east doesn't want black fruit.")

1927. Successful experimental shipments of California avocados made to London, Paris, and other European markets.

1927. California Avocado Grower's Exchange renamed: Calavo Growers of California.

1929. Tariff on imports of foreign avocados sought by California and Florida growers. (Cuba was a major exporter to the U. S.).

1933. U. S. Customs Court ruled Cuban avocado could continue to enter the United States duty free. Imports of Cuban avocados totaled 7.5 million pounds in the year.

1934. Buildup of latania scale on avocados became a serious problem for California growers, effectively controlled in a few years by natural means.

1935. California avocado crop nearly quadrupled 1934 crop production, under-developed demand resulted in low unit returns and a temporarily demoralized industry.

1935. Board of directors of Calavo Growers of California considered proposal of a marketing order for the California avocado industry and other industry-wide programs, endorsing none but "leaving the door open" for future reconsideration.

1936. Program of regular market-developmental shipments of avocado (small quantities) begun by Calavo Growers of California to England, France, Germany, and Panama.

1937, January 8-22. Low temperatures during the longest cold spell on record caused major damage to avocado fruit and trees in most avocado-growing areas of California. The loss of crop was estimated to be 33%; 3.2% of industry's trees died.

1937. Calavo Growers of California filed a legal brief attacking duty-free entry of Cuban avocados into the United States.

1940. The University of California began a long-term study to ascertain the best method for avocado fruit maturity determination and a proper basis for standardization.

1942. V. A. Wager, South African plant pathologist, identified *Phytophthora cinnamomi* as cause of avocado root rot disease.

1942. Low-cost nutritional values of avocados were promoted-"the five vitamin fruit" – in response to government call for greater production of high-nutrition foods. Biological assay of avocado vitamins was initiated. Experiments were begun for large-scale production of avocado oil in view of war-created shortage of fats and oils.

- 1943.** Nutritional research revealed nine important vitamins in avocado in appreciable quantities.
- 1944.** Comprehensive five division, two-campus “avocado tree decline research” program begun by University of California with financial support by the industry.
- 1944.** George A. Zentmyer appointed to staff of division of plant pathology of Citrus Experiment Station, Riverside, succeeding late Prof. W. T. Horne; thereafter served as principal investigator of avocado root rot disease until retirement.
- 1947.** Extensive experimentation with acetate and foil wrapping of avocado fruit and various coatings initiated. Results were largely negative, and practices were adjudged economically infeasible.
- 1949.** California avocado crop significantly reduced and damaged by a major “freeze”.
- 1950.** Pasadena Research Laboratory of the U. S. Dept. of Agriculture announced development of a commercial avocado paste.
- 1951.** Etiolation technique for rooting of avocados successfully developed by E. F. Frolich, University of California at Los Angeles, laying groundwork for commercial propagation of clonal avocado rootstocks.
- 1951.** Frozen avocado paste test-marketed in San Diego. Reception positive, but production problems caused termination of the project.
- 1957.** Representatives of Florida avocado industry filed suit challenging California law requiring that all avocados sold in California contain a minimum of 8% oil.
- 1958, December.** Three-judge federal district court ruled that it did not have jurisdiction in the Florida v. California suit and required the plaintiffs either to appeal to the U. S. Supreme Court or to attack the California standard in California courts.
- 1958.** Informal industry committee of growers formed to study problems affecting grower prices and possibilities of an industry-advertising program. The committee became “permanent” later in the year as the “Avocado Promotion Committee”, with grower Walter Beck as chairman.
- 1959, January.** Florida plaintiffs challenging provisions of the California Agriculture Code relating to avocado maturity decided to appeal to the United States Supreme Court.
- 1959.** A divided industry considered proposals to request issuance of a State Marketing Order for California Avocado Promotion. Opponents proposed the creation of a voluntary organization of avocado handlers (California Avocado Development Organization) to handle advertising and trade promotion, to become effective if a set sign-up level were achieved. The CADO plan received the endorsement of the Avocado Promotion Committee. The required sign-up was not achieved. The Committee, Calavo Growers of California, and others petitioned the Director of the California Department of Food and Agriculture to issue a marketing order.

1959, October 7. The Director of the California Department of Food and Agriculture issued a marketing order for California avocado advertising, promotion and marketing research, to become effective February 1960. Implementation of the order was delayed by a court injunction obtained by a group of avocado handlers.

1961, October. The California Supreme Court ruled against the challengers and the marketing order became effective. An advisory board was formed (November 10); Walter R. Beck was elected chairman and Ralph M. Pinkerton was employed as manager.

1963. The United States Supreme Court, in the suit brought by Florida plaintiffs, upheld the constitutionality of California law requiring 8% oil content in avocados sold in California.

1964. Commercial freezing of table-ready avocados by cryogenic methods developed by two California avocado growers, Hirtensteirner and Miller, was initiated by Calavo Growers of California and Frigid Foods, Inc. in partnership, test marketed in September in New York, Chicago and Dallas.

1968. The California avocado crop was significantly reduced and damaged by a major “freeze”.

1972, January. By referendum, a Production Research Committee was established under the state marketing order to administer funds generated by assessment of growers, initially at the rate of 0.4 cents per pound of avocados marketed.

1973. The California Legislature enacted a statute requiring certification of packed avocados to be in compliance with state regulations.

1973, September. Florida avocado growers again sued to nullify the California requirement of 8% oil in avocados, on this occasion prevailing. Grounds in this suit were different from those considered in 1963.

1976-80. Industry expands to 80,000 acres with over 8,000 growers. “Gold Rush” euphoria eventually turns to market glut and low prices (Affleck 1997).

1977, September 2. California Governor Edmund G. Brown Jr. signed California Assembly Bill 1602 authorizing a California Avocado Commission.

1978, April 27. Two California avocado growers sued the director and a bureau chief of the Department of Food and Agriculture in an attempt to block formation of the California Avocado Commission. A restraining order issued in June prevented the counting of referendum ballots. A ruling against the plaintiffs, July 3, upheld the constitutionality of the Commission’s establishment and dissolved the restraining order.

1978, August 4. The California Avocado Commission was made operative, the Director of the Department of Food and Agriculture having determined that the referendum vote was favorable, and eventually took over all functions previously performed under the state marketing order.

1981. An Avocado Inspection Committee was established by California Senate Bill 70 to be an independent advisor to the Director of the California Department of Food and Agriculture, with power to assure enforcement of avocado maturity standards and other elements of the Agricultural Code.

1984, November 1. The California Avocado Commission contracted with the California Avocado Society to develop and manage the industry production research program funded by Commission-collected grower assessments.

1990, December 20-23. The California avocado crop was significantly reduced and damaged by a “freeze” rated by some as the most severe since 1913. At least 20% of the statewide avocado crop was lost. In parts of Ventura and Santa Barbara Counties, crop losses were total.

1991. A new mite pest of avocado was discovered on backyard avocado trees in Coronado and La Jolla, near the port of San Diego. The mite, named Persea mite, infested almost every avocado leaf on every tree in San Diego County within 2 years. The mites were quickly moved to the other avocado-producing counties, most likely in picking bins. Many groves had to be sprayed with Omite by helicopter in the early years of infestation, but the pest eventually came under fairly good biological control.

1992-1998. Significant amounts of Hass avocado imports from Chile begin to show up in U.S. markets. Importation of foreign fruit in the California off-season for Hass supplants the market for the greenskin avocado varieties. Shipments from Chile for the fall of 1998 estimated at 60 million pounds.

1996. Another new pest, avocado thrips (*Scirtothrips perseae*) arrived in Ventura County and quickly spread to all groves. The pest eventually spread to the other avocado-growing counties, probably on infested fruit and picking bins. Groves in the more coastal climates had up to 100% losses in scarred fruit. Research on biological and chemical control is a high priority in the research program.

1997, February 5. USDA approves Rule to allow importation of Mexican avocados to nineteen states in the northeastern U. S., and the District of Columbia, during the months of November through February. Only groves in Mexico that are inspected and certified to be free of seed weevil and stem borer are allowed to ship to U.S. California Avocado Commission launches program to monitor USDA enforcement of rules and regulations to make sure Mexico ships fruit free of quarantine pests.

1997, November. First shipments of avocados from Mexico arrive in the U.S. Thirteen million pounds of fruit from Mexico arrive during the winter of 1997-1998.

2002, May. USDA announces it will conduct a referendum on the establishment of a Federal Promotion Order for the purpose of assessing all Hass avocados sold in the United States. The California Avocado Commission initiated the request for the promotion order because assessments from the California growers were paying for almost all of the promotion for Hass avocados in the U.S., in the face of increasing shipments of Hass avocados from Chile, Mexico, Dominican Republic and New Zealand. The promotion order would authorize an initial

assessment of 2.5 cents per pound on fresh avocados produced in and imported into the U. S. The promotion order would be administered by a new National Avocado Board.

2002, July 29. The Hass Avocado Promotion and Research Order passes in a vote of Hass avocado producers and importers.

2002, November. A Mexican Fruit Fly infestation is discovered in the Valley Center region of San Diego County. All fruit in a 130 sq. mile quarantine zone are restricted from moving out of the quarantine zone; fruit in core areas (1 mile diameter zones surrounding each fly find) are not allowed to be harvested. By February 2003, over 270 flies are found, along with maggots in grapefruit. Growers in the region incur staggering financial losses. An estimated cost for the entire quarantine program, including monitoring traps, treatments (ground and air), fruit loss, inspector overtime, inspector living expenses (USDA brought in inspectors from around the United States) and grower meetings exceeded \$30 million. It was later discovered by USDA researchers that Hass avocados, when hard and freshly harvested from the trees, are not hosts for Mexican fruit fly.

2007, January. A devastating freeze occurs in many of the avocado producing areas from San Luis Obispo to San Diego. Temperatures at one of the farm advisor trials in San Diego were measured at 18°F during the night, freezing the three-year old avocado trees to the ground.

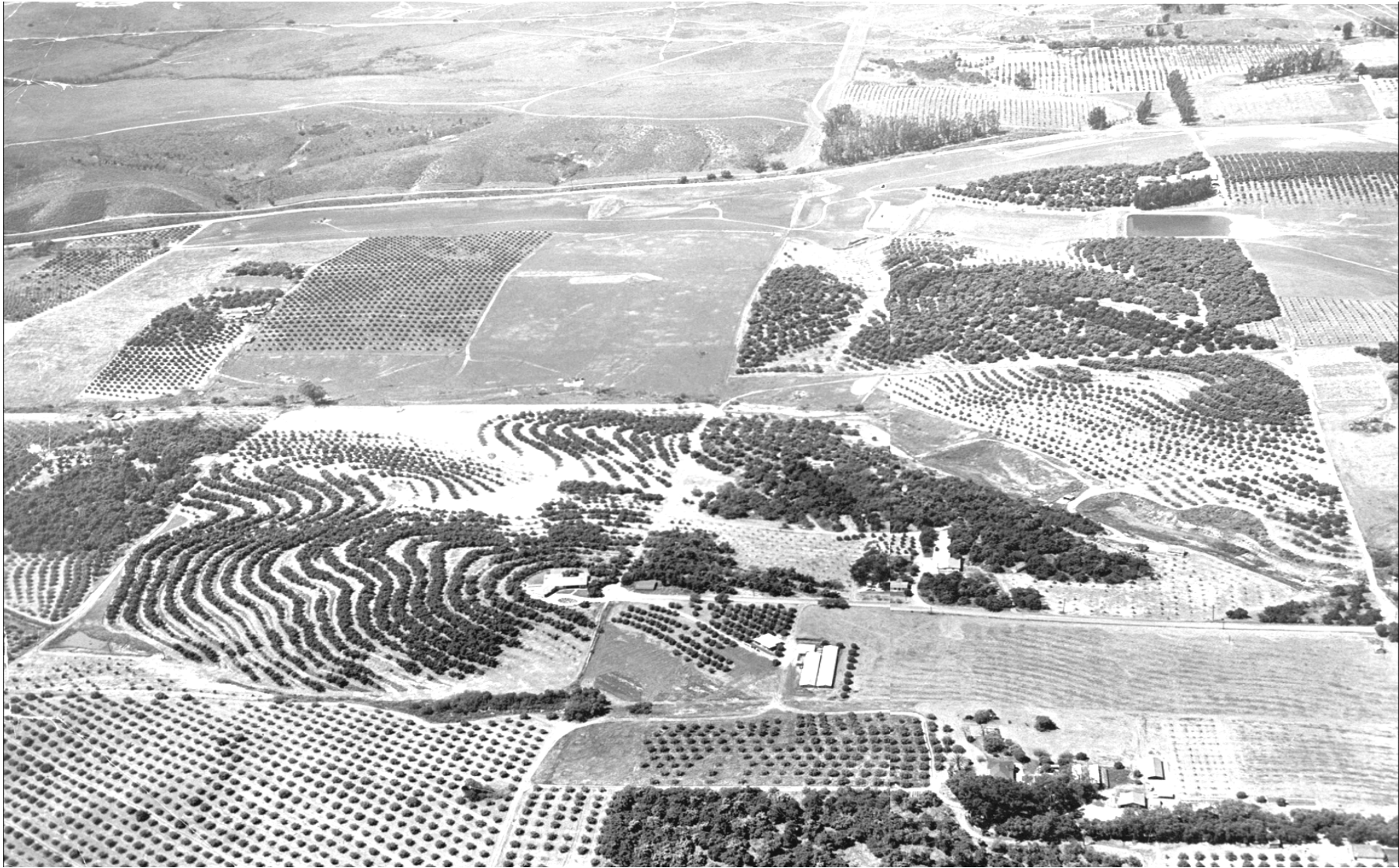
2007. After several years of drought in California, reservoir levels were dangerously low. Growers who were part of the interruptable agriculture water plan were forced to cut back water to their groves by 30% or face paying stiff penalties. Growers tried to cope by using the time to stump back trees that had grown excessively tall, but water districts found that they were not bringing in enough money to meet their fixed costs. The result was an increase in water rates.

2007. The departure of Mark Affleck, 20-year President of the California Avocado Commission, provided an opportunity for growers to re-organize the board, re-evaluate the production research and move to less expensive headquarters in Irvine, CA.

2010. The state declared that the drought was over and growers could now buy all the water they wanted. However, the water districts did not lower their water costs. This set up a downward spiral of groves going out of business (in San Diego County).

2012. Water costs in Fallbrook reached \$1100/ac ft, and \$1300-1400/ac ft in the Valley Center Water District.

McDonald Avocado Ranch in Fallbrook (1948) showing furrow irrigation on contour of hillsides (*Courtesy James McDonald, Fallbrook CA*)



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