

Avocado Varieties & Cultural Practices of Southern California



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Beauty & Benefits in Your Garden

- Fruit color and terrific Taste
- Spring and Fall colors of the tree
- Generally a smallish tree (*depending on variety and pruning*)
- Healthy Fruit with the 'right' kind of oil

California Avocado FAQ's

'The California Avocado Belt': Avocado trees produce fruit from San Diego to Morro Bay (*due to coastal influences*), about 300 miles.

Fallbrook, CA: known for its avocado groves and claims (*without any official recognition*) the title "*Avocado Capital of the World*".

2013 State Fruit: California Lt. Gov. Gavin Newsom issues a proclamation declaring avocado the State Fruit.

1871: Judge R.B. Ord brought avocado trees from Mexico to his Santa Barbara home.

'Fuerte' (*Spanish for strong*): a green-skinned avocado, (1911) propagated in a California nursery, survived the 1913 devastating freeze (*about the time the first commercial plantings had gone in*); that killed almost all the other avocado trees in California.

'Bacon' avocado: No, it doesn't taste like bacon. Named for James Bacon, Buena Park, CA, introduced 1951; variations/seedlings of 'Bacon' include '**Jim Bacon**' and '**Jim**' avocados.)

Some Vocabulary (part 1)

- **Alternate bearing:** A tendency for a single tree and/or variety to produce a greater than average crop one year and a lower than average crop the following year. Proper tree health/maintenance, sufficient irrigation, good pruning practices, and ‘thinning’ fruit (*at pea or marble-sized*) may help.
- **Avocado ‘cukes’, ‘cocktail’, or ‘finger’ avocados:** Small, seedless, avocados, cucumber-like in appearance and size - prized by chefs as a garnish.
- **Climacteric fruit:** Avocados **mature** on the tree but will further **ripen** off the tree; examples include bananas, apples, peaches, persimmons, tomatoes. (**Non-climacteric** = pick ripe: cherries, citrus, strawberry.)
- **Commercial ripeness:** A crop picked while still hard and/or can ‘handle’ commercial harvesting, processing, packaging, and shipping rigors; as opposed to ‘**tree-ripened**’ where the fruit is picked at it’s optimum maturity for flavor (*sugars, acid, aromatic compounds [phenols] combined into aromas and taste qualities.*)
- **Cultivar or Variety:** Any of a developed and marketed (*for flavor and/or commercial interests*) type of avocado (*Hass, Gwen, Holiday.*) Fruit tree cultivars **may be patented or registered** and ‘scion’ **should not** be freely exchanged among gardeners; patented varieties often take decades to develop and market.
- **Drop fruit:** Temperature extremes, overall tree health, and/or insufficient water management create an ‘environment’ where the tree, in an attempt to remediate the condition, ‘sacrifices’ the fruit for survival of the tree. When heat spikes are anticipated, watering the trees (*and other fruiting and non-fruiting plants*) a couple of days **before** may give the plant additional reserves.
- **Easy peel:** With some avocado varieties, the skin slips off easily; with others, the skin needs to be peeled away.
- **NPK:** Abbreviation for **Nitrogen, Phosphorus, and Potassium** - the three most important plant macronutrients crucial for plant growth, without any one plants can’t survive. Shown as numbers like 10-15-15 or 3-12-12.

Some Vocabulary (part 2)

- **Pit rattle:** Some varieties (*Mexicola, Ettinger*) grow with extra ‘space’ between the seed and the ‘flesh’; when the avocado is shaken, the seed ‘rattles’ inside.
- **Ripening:** Unlike many fruits, avocados are not edible directly from the tree. Only after its stem is severed will avocados begin ripening process - ethylene (*gas*) process induces softening of fruit tissues so it can be eaten. Some ripen in a few days while others may take up to a week or more. To speed up the process, place avocados in a sealed paper bag with an apple or two.
- **Rootstock:** Any variety of rooted seeds or ‘clonal reproduction’ selected to provide the ‘base’ for a known variety or cultivar of avocado (*like Hass, Fuente, Gwen.*) An avocado’s seed takes years before it bears fruit (*if at all*) and it **will not** be a genetic duplicate of the ‘parent’. Typical rootstock for SoCal is Duke 7, Topa Topa, D9, and others as required by soil composition, pest/disease resistance, and preferred growing habit. Rootstock ‘trials’ can often take years, if not decades, to develop new suitable varieties.
- **Scion or Budwood:** A small stick (*with 4-6 buds*) or a single ‘bud’ of a known avocado variety grafted in various ways to ‘rootstock’. (*Example: Hass scion grafted to Duke 7 rootstock.*) Selection based on flavor, yield, average size, or other unique qualities.
- **Seed to flesh ratio:** The proportion of seed (*some are quite large*) to the avocado’s edible flesh; also often referenced with the amount of ‘skin’ or ‘peel’. Percentages vary greatly from ‘type’ (*Mexican or Guatemalan*) and variety within those types.
- **Surface Roots:** Avocado trees have the majority of their root system (*approximately 95%*) in the first 12 inches of soil. It’s critical the soil around the ‘dripline’ of the canopy doesn’t get compacted – mulch, mulch, mulch around avocados.

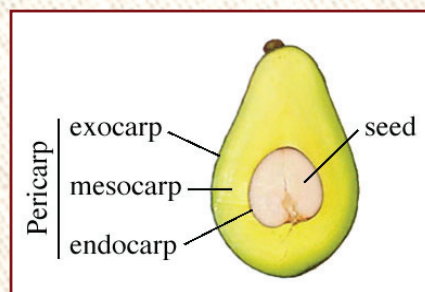
What Kind of Fruit is This?

By W. B. Storey

Question: What kind of fruit is the avocado? A single-seeded berry.

Question: Why a berry?

A fruit is the matured ovary of a flower. Basically, it consists of the ovary wall, or pericarp, which encloses one or more seeds (*see figure*.) The pericarp is differentiated into three layers of tissues: the outer layer is exocarp, which commonly is called the skin or rind. The middle layer is mesocarp which, generally, makes up the bulk of the pericarp. The inner layer is endocarp which, in some fruits is tough, leathery or hard, in other fruits is soft or fleshy.



All fruits may be classified into two broad categories: dry and fleshy. The avocado falls into the latter category.

There are two main classes of fleshy fruits: drupes and berries. Drupes are characterized by having a fleshy mesocarp but a tough-leathery or bony endocarp. They are said to have "stones" or "pits" rather than seeds (*example: peaches*). Also, a drupe usually has only a single seed. Berries, to the contrary, are characterized by having a fleshy endocarp, as well as mesocarp, and may have more than one seed.

If one examines an avocado fruit cut longitudinally, as above, the exocarp is the skin or rind. It may be very thin as in Mexican race avocados or thick and almost woody as in some of the large Guatemalan fruits. The mesocarp is fleshy and makes up the bulk of the pericarp. The endocarp is thin, often not well differentiated from the mesocarp, and sometimes imperceptible. In some soft ripe avocados, it may adhere to the outer seed coat when the seed coat when the seed is removed from the fruit, giving the seed a sort of frosty appearance.

Now, if we go back to the introductory questions, we can see why the answer to what kind of fruit it is and why it is a berry? It's because it fits all the botanical criteria for that class of fruits.

Source: W. B. Storey. 'What Kind of Fruit is the Avocado?', California Avocado Society Yearbook 1973-74. p. 70-71

Avocados – Where Did They Come From?

Avocado Ancient History

The avocado (*Persea americana*) originated in south-central Mexico sometime between 7,000 and 5,000 B.C., but it was several millennia before this wild variety was cultivated. It is the only important edible fruit of the laurel family, *Lauraceae*.*

Archaeologists in Peru have found domesticated avocado seeds buried with Incan mummies dating back to 750 B.C., and there is evidence avocados were cultivated in Mexico as early as 500 B.C.

From Aguacate to Avocado

Spanish conquistadors loved the fruit but couldn't pronounce it and changed the Aztec word (probably *ahuacatl*) to the more manageable *aguacate*, which eventually became *avocado* in English. The first written record in English using 'avocado' was by Sir Henry Sloane, who coined the term in an 1696 index of Jamaican plants.

Other name variations include: alligator pear, Subaltern's butter, midshipman's butter, marrow, shell pear, Spanish pear, avo (*colloquialism in South Africa and UK*), and 'butter fruit' (*parts of India*).

The plant was introduced to Spain in 1601, Indonesia around 1750, Brazil in 1809, the United States in 1825, South Africa and Australia in the late 19th Century, and (*the area now*) Israel in 1908.

In the United States, the avocado was introduced to Florida and Hawaii in 1833; California in 1856.

* Other laurel family edibles include classic laurel (*sweet bay*) of the Mediterranean and sassafras (Eastern U. S.) In addition to *Persea*, the only laurel genus cultivated appreciably is *Cinnamomum*, from which commercial cinnamon and camphor are derived.

Three Primary Types of Avocados

The avocado (*Persea americana Mill.*) tends to fall into one of three groups. Most of the varieties grown in California fall in the 'Guatemalan' (*green, bumpy skin*) or 'Mexican' group (*black, smooth skin*), or a hybrid of the two (*including Hass.*) Florida grows mostly 'West Indian' types, which sometimes have reddish/yellowish streaks.

Type	Leaves	Bloom/Harvest
Ripening Season	Fruit Skin/Peel	Hardiness (<i>cold tolerance</i>)
West Indian * ripens in summer of same year	no anise scent thin black skin, usually smooth	blooms spring poor
Guatemalan * ripens spring/summer of next year	no anise scent thick green skin, often rough	blooms spring medium
Mexican ** ripens following summer/fall	usually anise scented ** thin black skin, usually smooth	blooms winter good

* **Toxicity to Animals:** Avocado leaves, bark, skins, or pits are documented to be harmful to animals. Cats, dogs, cattle, goats, rabbits, rats, guinea pigs, birds, fish, and horses can be severely harmed (*or even killed*) when they consume them. **Do not plant avocado trees near animal enclosures.**

** To determine the leaf scent, pick a leaf and rub in between your hands. If you get a strong anise-scent (*think 'licorice'*) it falls into the 'Mexican' group. In addition to the milder-flavored fruit, the leaves of **Mexican avocados (ONLY)** are used as a spice in some cultures, with a flavor somewhat reminiscent of anise. They are sold both dried and fresh, toasted before use, and either crumbled or used whole, commonly in bean dishes.

It's not all about Hass... or maybe it is!

Originally grown from one of three seeds bought by postal worker Rudolph Hass in 1926 from A. R. Rideout of Whittier, California. (Pronunciation of Hass [like 'class' or 'pass'] and definitely not Hoss.)

In 1926, at his grove at 430 West Road, La Habra Heights, California, Hass planted the seeds he had bought from Rideout, which yielded one strong seedling. After trying and failing at least twice to graft the seedling with 'Fuerte' avocado (*then the leading commercial cultivar*), Hass thought of cutting it down but a professional grafter named Caulkins told him the young tree was sound and strong -- so he let it be.

When the tree began bearing odd, bumpy fruit, Hass found his children liked the taste. As the tree's yields grew, Hass easily sold what his family didn't eat to co-workers at the post office.

The Hass avocado had one of its first commercial successes at the 'Model Grocery Store' on Colorado Street in Pasadena, CA, where chefs, working for the town's wealthy residents, bought the big, nutty-tasting fruit for \$1 each, a high price at the time (\$14 in 2019.)

Hass patented the tree in 1935 (*the first US tree patent*) and made a contract with Whittier nurseryman Harold Brokaw to grow and sell grafted seedlings propagated from its cuttings, with Brokaw getting 75% of the proceeds. However, Hass made a profit of less than \$5,000 through the patent because cuttings from single trees sold by Brokaw were often grafted to entire orchards.

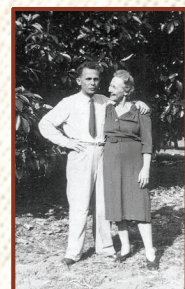
Rudolph Hass remained a postman. He died of a heart attack at Fallbrook Hospital (CA) in 1952, the same year his patent expired.

The original Hass tree died when it was 76 years old. It was cut down Sept. 11, 2002 after a ten-year fight with *phytophthora* root rot disease, which often kills avocado trees.

By the early 21st Century the US avocado industry took in over \$1 billion a year from the heavy-bearing, high quality Hass cultivar, which accounts for around 80% of all avocados grown worldwide.

Mr. & Mrs. Rudolph Hass in front of an avocado tree

Compiled from: https://en.wikipedia.org/wiki/Hass_avocado
https://en.wikipedia.org/wiki/Rudolph_Hass
http://www.ucavo.ucr.edu/AvocadoVarieties/Hass_History.html
<https://www.californiaavocado.com/blog/avocado-hass-vs-haas-which-is-it>
http://www.avocadosource.com/CAS_Yearbooks/CAS_57_1973/CAS_1973-74_PG_016-017.pdf

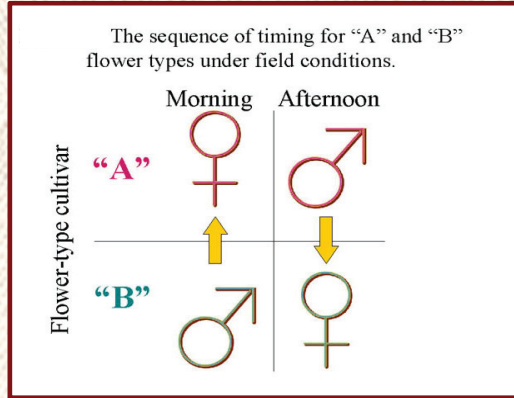
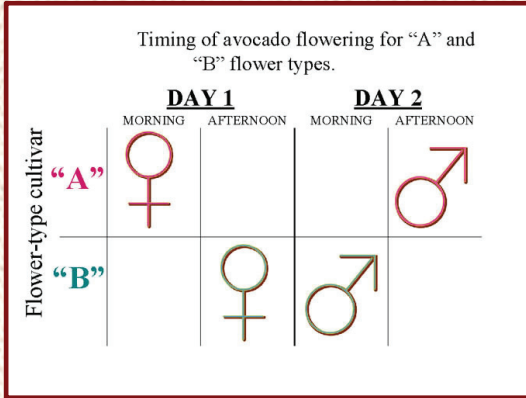


Avocado Pollinators

(or 'Down the Rabbit-hole' of Type "A" and "B" Pollination)

The technical version: There are two flowering types with avocados, referred to as "A" and "B" flower types.

- "A" varieties open as female on the morning of the first day. The flower closes in late morning or early afternoon. The flower remains closed until the afternoon of the second day, when it opens as male.
- "B" varieties open as female on the afternoon of the first day, close in late afternoon, and re-open in the male phase the following morning.



The simple version: For best crop yields, make sure you have at least two trees (an "A" and "B" type) for cross-pollination **OR** make sure there is another "type" in your neighborhood.

(Ed. Note: Honey bees will travel up to 3 miles in search of pollen.)

Stages of Ripeness – by the numbers

<https://avocadosfrommexico.com/foodservice/back-of-house-resources/>



#1 HARD: Very hard fruit, usually lighter green in color; ready to eat in 3 to 4 days if held at room temperature.

#2 PRE-CONDITIONED: Ready to eat in about 3 days if held at room temperature.

#3 BREAKING: Slight 'give' to the fruit; ready to eat in 1 to 2 days if held at room temperature.

#4 FIRM RIPE: Yields to gentle pressure; ready to **eat now** or can be stored in refrigerator for up to one week.

#5 RIPE: Easily yields to gentle pressure and good for all uses (*Ed. Note: eat now or pulp and freeze.*)

Plus a handy 'Avocado Yield Calculator': determine the pounds of avocados you need based on the size.

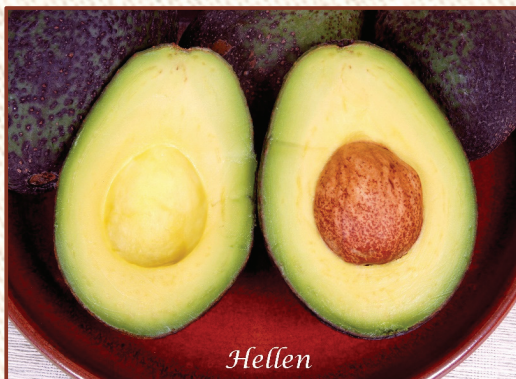


Sizes based on number of avocados (like 84 count for far left) needed to fill a 25-pound carton, ± .5 pounds.

Varieties (1)



Varieties (2)



Varieties (3)



Nimltoh



Sir Prize



Holiday

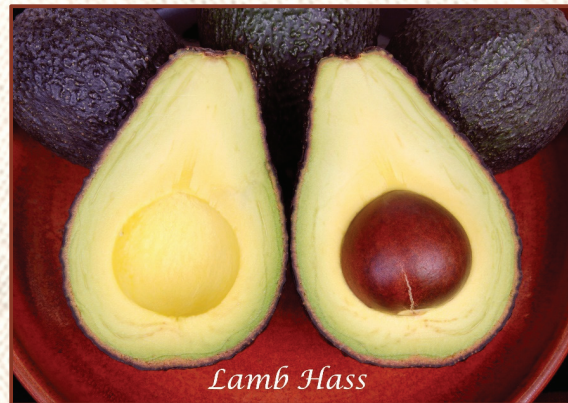


Harvest

Varieties (4)



Gem



Lamb Hass

Here's a good spot for a word on one of the most often asked questions...

“Can I grow Avocados in a Container?”
or better stated,
“Should I grow Avocados in a container?”

No!

*However, smaller tree varieties: Holiday (A, Green),
Sharwil (B, Green), Little Cado (A, Green)*



Variety Chart and Ripening Schedule

Approximate date avocados are ready to pick in Orange County, California - this is a very general 'rule of thumb' and not 'set in stone'. Environmental concerns such as annual climate and rainfall, soil, fertilization/watering/pruning practices, etc., all play a strong role in fruit maturity and quality. Backyard growers should look to neighbor's experience (and your local farm advisor) for advice on seasonal factors.

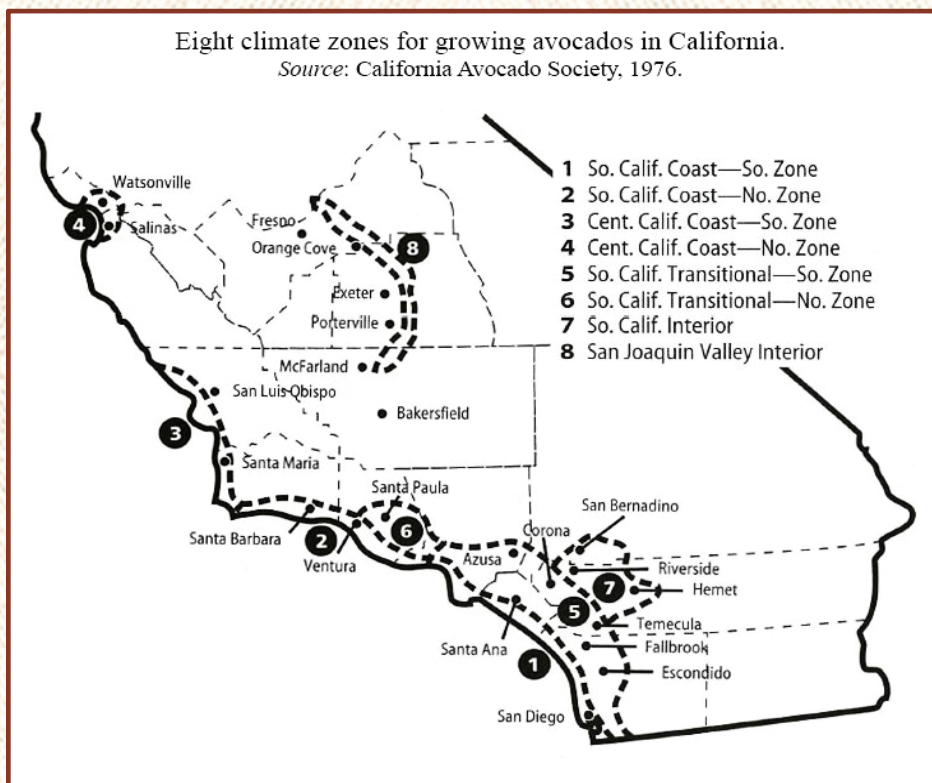
Variety	Flower Type *	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bacon	B												
Fuerte	B												
Gwen	A												
Gem	A												
Harvest	A												
Hass	A												
Hellen	B												
Holiday	A												
Janboyce	A												
Lamb Hass	A												
Mexicola	B												
Nabal	B												
Nimloh	B												
Pinkerton	A												
Reed	A												
Sharwil	B												
Sir Prize	B												
Stewart	A												
Wertz (Littlecado or Mincado)	A												
Zutano	B												

* A and B are types of flowers - determined by when in the day the flower is male or female. Mixing types is thought to increase pollination results and therefore increase the yield.

Climate Zones for So. California

Eight climate zones for growing avocados in California.

Source: California Avocado Society, 1976.



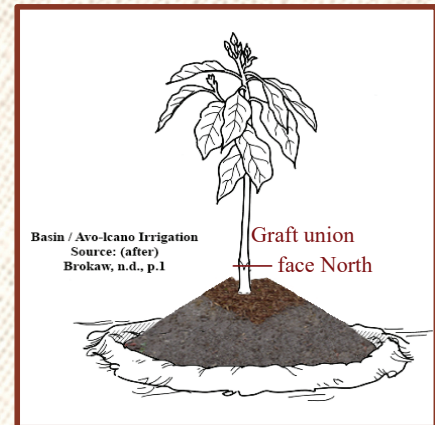
Before Planting

(or Have an info 'baseline' to minimize second-guessing now or in the future.)

- Check to see what type of soil do you have – clay, sandy, loam, sandy-loam, decomposed granite (DG)?
- How is the drainage? * Avocados **do not** like wet feet. If you have clay soil, make a 'avo-l-cano' (*see below*) with the avocado tree 8"-10" above the soil level, plant in a slope to help drainage, or include a 'French drain' (4-inch water pipe with pre-drilled holes) offset from the tree so the water drains away.
- Whenever possible, it's a good idea to have the pH of your soil checked BEFORE planting any fruit tree. For avocados, pH should be slightly acidic in the range of 6 to 6.5.
- What direction is the heat from the sun coming from during the day? A southwest facing cinderblock wall with an avocado tree in front may not be the best location for planting... the tree will just 'cook'!
- For multiple-planted avocado trees, space 10 to 15 feet apart to allow for growth and maintenance.

* Percolation Soil Test:

- 1) With a shovel, auger, or posthole digger, dig hole 12" to 18" deep, with a diameter of 6" to 8" inches. The diameter of the hole should be uniform top to bottom with a flat bottom.
- 2) Fill hole with water to the top and let stand for at least an hour to pre-wet the soil.
- 3) Refill hole to within a couple inches of the top - do not overflow the hole.
- 4) Use a ruler or measuring tape to mark periodic drops in water level – if the water stands beyond 24 hours it is too long!



Pruning

Most avocado trees require little or no pruning. Whenever possible, allow trees to develop naturally and you'll avoid disturbing the delicate balance between foliage and fruiting wood, essential for high yields.

Since avocado trees grow irregularly, and different varieties have individual growing habits, it is difficult to give general pruning directions that apply to all trees. You may have to experiment to develop the pruning methods best suited to your individual trees. The variety of trees, their vigor, your height requirement, and soil/climate conditions should influence your pruning practices. In some instances, minimal pruning is needed.

Pruning avocado trees: helps to control the height of taller varieties, correct poor growth habits, prevent wind damage, and regulate severe alternate bearing (*heavy crops every other year.*)

But it may also: stunt full tree growth, reduce yield (*more of a concern for the commercial grower*), stimulate foliage growth at expense of fruiting, and make trees susceptible to frost injury.

Prune avocado trees cautiously: foliage manufactures food for the tree and keeps fruiting vigorous. If this food supply is reduced by severe pruning, fruit yield may suffer.

- Remove as little green wood and as few green leaves as possible.
- Prune only after the tree has developed sufficient upper foliage (*or canopy*) to prevent sunburn.*
- Avoid pruning in late summer and early fall. Pruning at these times stimulates tender vegetative growth and may make trees susceptible to frost injury.
- Removing deadwood is not essential but makes fruit picking and pest control easier. In coastal regions, removing deadwood may help prevent *Dothiorella rot*, which causes avocado fruit to decay when ripening.
- 'Skirt' or lower branches of avocado tree canopies are sometimes pruned up to discourage rodents.

* **Minimize sunburn:** mix latex paint (*not enamel*) 1:2 or 1:1 with water as a sunscreen for trunk or grossly exposed areas while the canopy develops.

Mulch

Control of Avocado Root Rot Disease: mulches applied to the soil surface can create conditions harmful to pathogenic soil organisms, such as nematodes and the fungus *Phytophthora cinnamomi*. Use the tree's own 'leaf litter' rather than bagging it up and putting it in the trash - think of it as *inoculating the tree*.

Weed control made easier: reduce weeds by preventing germination of weed seeds. Avocado trees are more productive if they do not have to compete with weeds for water and nutrients. When weeds do grow, 'hand-pull' them because cultivation equipment can damage the tree's surface roots.

Conservation of Water: by reducing evaporation from the soil, reducing runoff and erosion, increasing the permeability of the soil surface, and increasing the 'water-holding' capacity of the soil. Mulched soils with a high organic matter content will have more water available to trees.

Improvement in the Soil's Physical Properties: improve the soil's organic matter content – this helps the tree utilize the top 12 inches or so of soil -- where avocado roots are most active.

Improvement in Soil Temperature: reduce fluctuations in soil temperature by reducing the soil's absorption of heat. This is beneficial to root growth, especially in young trees and in areas where summer temperatures are very high. Lower soil temperatures are also less favorable to *Phytophthora root rot*.

When frosts are predicted, remove or reduce mulch layer, if possible, because bare soil can absorb more radiant energy than most mulches.

Note: Mulches need to be checked occasionally (*say at least once a year*) and replenished as needed. The natural process of breaking down the soil reduces its thickness and effectiveness.

Additionally, **do not use 'freshly chipped' wood or fresh manure** – use well-composted materials only. As fresh wood chips decompose, they may leach Nitrogen from the soil... the opposite of what you want.

Fertilization and the Values of N-P-K*

- Avocado trees have comparatively few mineral deficiencies in California. Only nitrogen and zinc need to be applied extensively; iron chlorosis (*yellowing of the leaves*) occurs occasionally.
- Needless phosphorus applications may induce or aggravate a zinc deficiency.
- Use an 'Avocado Food' (*often sold as 'Avocado and Citrus Fertilizer'*) or 10-10-10 or 'Triple 15' and apply at manufacturers listed rate/volume and schedule. With older trees, try a low Nitrogen fertilizer like 3-12-12 plus Zinc and other trace elements.
- One organic method: use **well-composted** chicken manure (*often 3-2-2*) applying a 50-pound bag twice a year per established tree.
- Apply during flower and fruit set, carefully, varies by variety.
- Consider applying often but in a more dilute (*weaker*) solution as avocado trees are very sensitive.
- Water soil before applying fertilizer, apply, then water in – do not scratch/rake surface of soil at any time with avocados (*remember the surface roots.*)

* **Note:** NPK is the abbreviation for **Nitrogen, Phosphorus, and Potassium** - the three most important plant macronutrients crucial for plant growth, without any one plants could not survive.

Among many other benefits:

- Nitrogen (**N**) is essential for plant growth and green leaves.
- Phosphorus (**P**) stimulates root development, increases stalk and stem strength, and improves flower formation (*and therefore fruit!*), and seed production.
- Potassium (**K**) aids in photosynthesis and reduces water loss and wilting.

Insects and Pests

- Persea Mite and Thrips
- Lace Bug (mostly San Diego County)
- Rats and Mice
- Mexican Fruit Fly (Avo. and fruit-bearing trees)
- Snails and Slugs

Diseases

- ‘Phytophthora’ and ‘Armillaria’ Root Rot (Fungus)
- Sun Blotch (virus; yellow streaking of young stems)
- Sunburn
- Fruit and Stem-End Rots
- Dothiorella canker fungus (infects trunk and causes dead patches; white powder oozing from the bark)

Any significant representation of **Insects/Pests** and **Diseases** is beyond the scope of a brief presentation and often confusing to beginning home gardeners (*and advanced practitioners!*)

Simply look to **find** the culprit is the first step (*invest in a loupe or magnifying glass*) and then **identify** it, goes a long way to correcting the problem.

There is a very comprehensive collection under the Integration Pest Management (IPM) website (*the avocado section is: <https://www2.ipm.ucanr.edu/agriculture/avocado/>*) covering both of these topics extensively. In most cases, there are high-quality photographs, a variety of management procedures, and downloadable PDF files.

The UCANR ‘home page’ (<http://ipm.ucanr.edu/>) has additional information on traditional landscaping, garden maintenance, flowering trees, and water conservation. It’s packed with great information and handy tips.

Cold Tolerance

For those interested in trying to grow avocados in cooler areas (*like Sacramento*), choose Mexican varieties that have a chance to survive colder winters. These have better cold tolerance; however, success is questionable as the fruit needs heat to mature. Place the tree where it gets reflected heat in the winter from a south-facing wall helps.

- Avocados do not like lengthy extremes of heat **or** cold.
- They will ‘drop fruit’ after days of temperatures above 100° F.
- The fruit will rot on the tree or drop prematurely with freezing temperatures. Some varieties can tolerate 32° to 28° F with minimal damage, with the Mexican varieties (*smooth, dark skinned*) and hybrids more tolerant.
- Is Frost or Freeze expected? Hang ‘old-school’ incandescent Christmas tree lights (**not LEDs**) in trees and turn on evenings until mornings, from Nov. until mid-March (*generally the last ‘frost day’ is around March 15th.*)
- When frosts are predicted, remove or reduce mulch layer, if possible, because bare soil can absorb more radiant energy than through most mulches.

Mexicola (A, Black)
(Jim) Bacon (B, Green)
Zutano (B, Green)

Sir Prize (B, Black)
Jim (seedling of Jim Bacon)
Hass (maybe, A, Black)

Fuerte (B, Green)
Pinkerton (A, Green)

Gary Bender (*UCCE Farm Advisor Emeritus*): “**Bacon** is mostly a Mexican (*variety*) with even more cold tolerant than **Fuerte**. As a rule of thumb, **Hass** fruit can stand temperatures as low as 29°F for four hours before showing freeze damage in the fruit, **Fuerte** fruit can similarly withstand temperatures to 26-27°F before showing damage, and **Bacon** can withstand temperatures as low as 25°F before showing fruit damage.”

Unusual Avocados



Daily 11

One of the largest avocados grown in CA. Fruit is pear to odd baggy shape, green and fair-to-good quality flavor. A seedling of Queen developed in Ventura County. (Shown with whole *Mexicola* varietal on left for size comparison.)

Queen (think almost football-sized when mature) →

Introduced 1914 by E.E. Knight of Yorba Linda, CA, from Guat. Parent tree had an 80 foot spread. Fruit season, July-Aug.; color, dull purple; weight, 20-30 ozs.; flavor fine; Seed, small. Illus. in CA. Avo. Soc. Yearbook 1927 & Cal. Ag. Exp. Sta. Circ. 43. Shipping quality good **BUT** fruit too large except for special markets. (CAS Yearbook 1950) Race, Guat.; Flowering group, B.

‘Cukes’

‘Seedless’ fruits frequently occur on ‘Queen’, ‘Fuerte’ and ‘Ettinger’ and resemble a small cucumber. Prized by chefs - used as a garnish.

Queen avocado (juvenile) with ‘Cukes’



Don Gilgoly

Patented 1997 by Don Gilgoly

<https://patents.google.com/patent/USPP11057P/en>



Large(est?) and Heaviest Avocados

(Images NOT to scale)



‘Avozilla’ from Australia – it’s a Monster!

The Avozilla has arrived in Australia, weighing an average of 1.2 kg. (2.6 pounds, about four times regular avocados) and expect to sell for \$12 each.

Originating from South Africa, the ‘Avozilla’ reached Britain in 2013. The Groves family has grown tropical and exotic fruits in central Queensland since 1957, and are the first to bring the variety to Australia. Groves said the fruit tastes similar to regular-sized equivalents but were slightly softer to spread.

https://www.theguardian.com/lifeandstyle/2018/jul/11/as-big-as-your-head-giant-avocado-arrives-in-australia?CMP=aff_1432&awc=5795_1531433536_540bb1b962ca24aa4889ba95ded9b



Guinness World Record for the World’s Heaviest Avocado

Weighing 5.6 pounds (2.54 kg) – around 15 times the weight of an average avocado – the fruit was grown by the Pokini family on Maui.


The family’s avocado tree measures 20 feet (6.1 metres) tall, was planted when Mark and Juliane Pokini’s son, Lo’ihi, was born more than 10 years ago. The seed came from a tree grown by Mr. Pokini’s brother-in-law on Oahu.

<https://www.independent.co.uk/life-style/food-and-drink/avocado-heavy-guinness-world-record-win-hawaii-a9152986.html>

Sizes and Yields

<http://indexfresh.com/growers/avocado-sizing/>

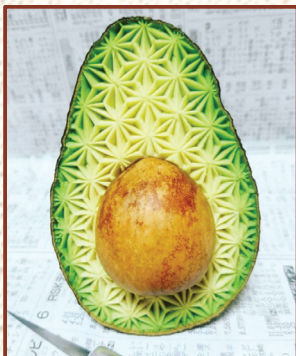
Size	Total Weight	Yield	% Flesh
28	13.75 - 15.70 oz.	8.50 oz.	70%
32	11.75 - 14.00 oz.	7.50 oz.	70%
36	10.50 - 12.50 oz.	6.50 oz.	70%
40	9.50 - 11.50 oz.	6.00 oz.	70%
48	7.50 - 9.50 oz.	4.85 oz.	70%
60	6.25 - 7.50 oz.	4.00 oz.	66%
70	4.75 - 6.25 oz.	3.50 oz.	66%
84	3.75 - 4.75 oz.	3.00 oz.	66%



Sizes based on number of avocados (like 84 count for far left) needed to fill a 25-pound carton, \pm .5 pounds.

Avocado Art

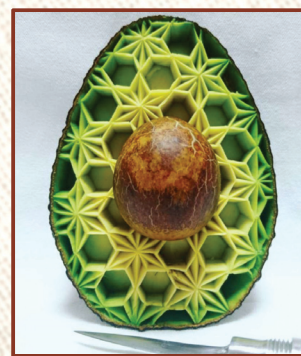
<https://www.sfchronicle.com/food/article/Avozilla-avocado-Australia-toast-ginormous-13070984.php#photo-14237377>



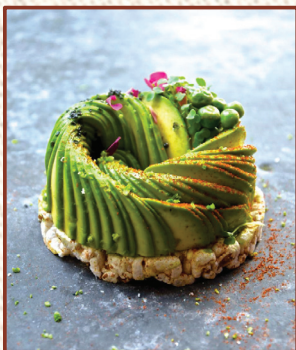
Gaku Carving, Thailand
Photo: Gaku Carving/@gakugakugakugakul



Gaku Carving, Thailand
Photo: Gaku Carving/@gakugakugakugakul



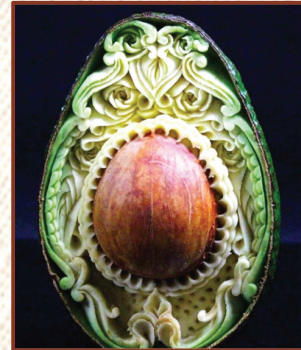
Gaku Carving, Thailand
Photo: Gaku Carving/@gakugakugakugakul



Colette Dike, The Netherlands
Photo: Colette Dike/@fooddeco

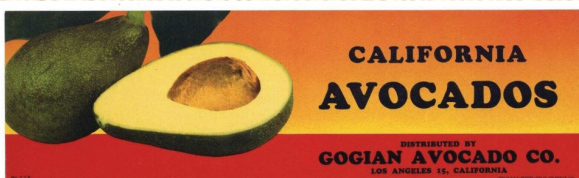
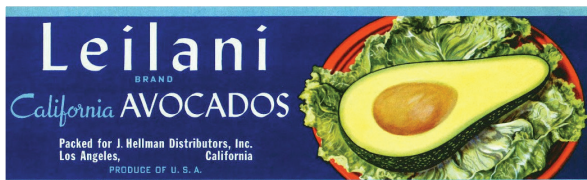


Jan Campbell, Ireland (avocado pit art)
Photo: Jan Campbell/@avocadostonefaces

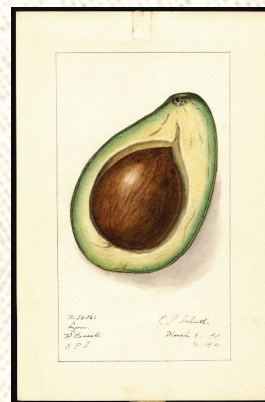
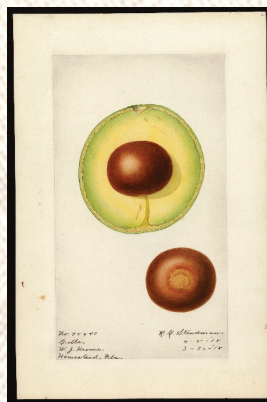
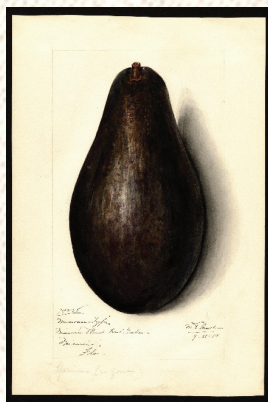
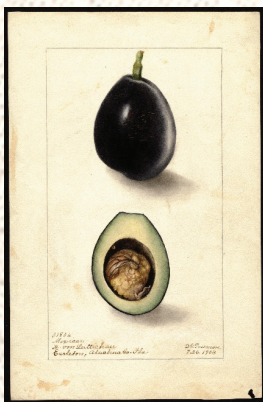


Daniele Barresi, Australia
Photo: Daniele Barresi/@danielebarresi_artist

Avocado Crate Labels - 1940s and 1950s



U.S. Department of Agriculture (USDA) Pomological Watercolor Collection (Vintage)



“The USDA Pomological Watercolor Collection documents fruit and nut varieties developed by growers or introduced by USDA plant explorers around the turn of the 20th century. Technically accurate paintings were used to create lithographs illustrating USDA bulletins, yearbooks, and other series distributed to growers and gardeners across America.” ~ <https://usdawatercolors.nal.usda.gov/pom/home.xhtml>

~ 108 Avocado Images ~

Attribution Statement: "U.S. Department of Agriculture Pomological Watercolor Collection. Rare and Special Collections, National Agricultural Library, Beltsville, MD 20705"

Additional Info and Sources: *Avocado Varieties, Plant Health, Pest Control, & Propagation*

- SCREC Educational events: <http://screc.ucanr.edu/>
- SCREC Public Events & Fruit Tasting - contact: Tammy tjmajcherek@ucanr.edu
- Cal Dept. Food and Ag (CDFA), Plant Health & Pest: <https://www.cdffa.ca.gov/plant/index.html>
- IPM (Integrated Pest Management – Pest/Disease Control & Advice): <http://ipm.ucdavis.edu/>
- CRFG (California Rare Fruit Growers): <http://www.crfg.org/>
- CRFG Fruit Facts: <https://www.crfg.org/pubs/ff/avocado.html> and <http://www.crfg.org/pubs/ff/facts.html>
- UCCE Master Gardener: <http://mg.ucanr.edu/>
- *California Master Gardener Handbook* by Dennis R. Pittenger, ANR Pub. #3382, (Chapter 19: Avocados)
- Avocados, IPM Pub.#3503-2008, UCANR: http://ipm.ucanr.edu/IPMPROJECT/ADS/manual_avocados.html
- University of California (UC) publications: <https://anrcatalog.ucanr.edu/>
- Why Have a Backyard Orchard (UCANR): <http://homeorchard.ucanr.edu/>
- David Karp, NY Times, 2003: <https://www.nytimes.com/2003/06/25/dining/the-skin-isn-t-great-but-the-heart-is-pure-gold.html>
- *Sunset Western Garden Book*, 9th Edition, ISBN-13: 978-0376039217
- USDA Fruit Vintage Watercolors: <https://usdawatercolors.nal.usda.gov/pom/home.xhtml>
- Clonal Rootstock: http://www.avocadosource.com/Journals/AvoResearch/avoresearch_02_02_2002_witney_rootstocks.pdf
- *Avocado Varieties - A Primer* (companion PDF file), compiled by G. Rager from <http://www.ucavo.ucr.edu/>

Thank you...

Avocado Varieties of Southern California

