



## AVOCADO: A UNIQUE FRUIT

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Avocados are a tropical fruit, native to Central America and Mexico. It has been a staple of the Central American diet dating back to the 17<sup>th</sup> century.

RACE	BLOOM TO FRUIT	FRUIT SIZE/SHAPE	FRUIT SKIN	FRUIT PULP	FRUIT SEED	LEAVES	HARDINESS
MEXICAN	Blooms earliest 6 months	Small Pear-shaped	Very thin, usually smooth	Highest oil content, Spicy	Large, smooth surface	Medium color with anise scent	Cold hardy, resistant to heat, but doesn't do well with high soil salinity or a coastal environment.
GUATEMALAN	Blooms late 12 to 18 months	Small to large Round	Thick, rough. leathery	High oil content, Often nutty	Small, smooth surface	Redder leaves, no anise scent	Subtropical. Does not survive in a tropical environment or one with hard frosts. Most salt tolerant.
WEST INDIAN	6 months	Small to large	Shiny, medium thickness, usually smooth	Low oil content, Mild to watery	Variable with rough surface	Paler color, no anise scent	Least cold hardy. Tropical tree which does not do well in California. Despite its name, it originates from the coast of Central America.

NOTE: Hybridization between these avocado races can occur whenever they are in close proximity.

- Fuerte cultivar is a natural Mexican/Guatemalan hybrid which produces green pear shaped fruit.
- Hass cultivar is ¼ Mexican/¾ Guatemalan hybrid which produces a rounder fruit shape which is black at maturity

## THE AVOCADO FLOWER

Avocado flowers are quite unique. Each flower has both male and female parts, but they don't function at the same time. The first time an avocado flower opens, it functions only as a female - accepting pollen. The flower in the female stage is open only for 2-3 hours, and then it closes. The flower will next open the following day but this time it sheds pollen, and thus, is acting as a male. After being open for several hours it closes and does not open again.

### Type A and Type B flowers

The types differ on the time of day the flowers open. Temperature needs to be above 70 degrees for the flower opening to be precise. With decreasing temperatures, flower openings may be delayed or irregular and affect crop set. Both types bloom continuously for two months. Commercial growers like to plant type A and B trees to increase yield. For home gardeners, bees and wind are sufficient for pollination and fruit set.

	<b>OPEN AS FEMALE</b>	<b>OPEN AS MALE</b>	<b>CULTIVARS</b>
TYPE A	In the morning of the first day	In the afternoon of the second day	Hass, Gwen, Pinkerton, Reed, Anaheim, Lamb Hass
TYPE B	In the afternoon of the first day	In the morning of the second day	Fuerte, Zutano, Bacon

## ROOTSTOCK AND SCIONS

Like most fruit trees, avocados are a combination of a disease tolerant rootstock, comprising the lower few inches of the trunk at the roots, and the scion, which comprises the rest of the trunk and all the fruiting branches. Scions are chosen for their cold hardiness, fruit set yield, flavor and storage life, fruit to seed ratio, skin color, and quality.

## CLIMATE

Although avocados grow well in a variety of conditions, flowering, fruit set and fruit quality are dependent on temperature, wind, and temperature extremes. Coastal influences and microclimates must be considered. Threat of frost needs to be accessed in your yard, such as whether the tree is located in a low spot vs on a hill. Avocados do best at moderate temperatures (60-85 degrees F), but once established can tolerate 32-28 degree F for short periods.

## FRUIT MATURITY

Avocados will not ripen on the tree. In fact, avocados will only start softening once their stems are cut. Harvest when fruit is of mature size, but still firm. The fruit will take 7-10 days at room temperature to ripen. Expect to see your first fruit 3-4 years after planting the tree.

## SELECTING AND PLANTING YOUR TREE

<b>VARIETY</b>	<b>BEARING</b>	<b>FLOWER TYPE</b>	<b>COLD LIMIT</b>	<b>MATURE SEASON</b>	<b>COMMENT</b>
Bacon	Consistent	B	24 F	Nov-Mar	Upright tree
Duke	Consistent	A	20 F	Sep-Oct	Wind/heat tolerant
Fuerte	Alternate	B	27 F	Nov-Mar	Very large tree
Gwen	Fairly Consistent	A	30 F	Apr-Aug	Susceptible to Persea mite, heat, wind, cold, drought
Hass	Alternate	A	30 F	Jan-Jul	Most common, susceptible to Persea mite
Jim	Fairly Consistent	B	24 F	Nov-Feb	Cold hardy
Lamb Hass	Somewhat Alternate	A	30 F	May-Nov	Tolerant to wind, heat, and Persea mite
Mexicola	Consistent	A	20 F	Aug-Sept	Small fruit
Pinkerton	Usually Consistent	A	30 F	Dec-Apr	Large fruit, Low tolerance to Persea mite
Reed	Very Consistent	A	30 F	May-Nov	Large fruit, more tolerant of persea mites
Stewart	Variable	A	25 F	Oct-Dec	Medium fruit, easy peeling
Zutano	Consistent	B	24 F	Oct-Feb	Upright tree, mediocre flavor

Choose a cultivar well-suited for your climate. For a list of coastal and inland varieties of avocados, see *Suggested Fruit and Nut Varieties* in the references.

- Inspect your tree before you buy - bud union should be smooth and do not buy stunted trees with wilted, sparse, or off-color foliage.
- Optimal time to plant is after last spring frost and when ground is warm; March through June.
- Plant in full sun. Dig the hole to allow the top of the root ball to be one inch above soil line and twice as wide as the root ball. Roots are tender so place container in the hole, then cut off container. Do not handle by the tree trunk.
- No soil amendments are needed for the planting hole. Once planted, over the area with coarse mulch and keep mulch 6 inches from trunk.

## **CULTURAL CARE**

### **Irrigation**

- Avocados have a shallow root system, with most of the roots in the top 8 inches of soil.
- Newly planted trees: place the emitter right on the area of the root ball then move further out after 1-2 months.
- New trees need to be watered every 2-3 days depending on weather. Don't let the newly planted root ball dry out. New trees need a total of 8-10 gallons per week. As the tree grows, it will need more water at less frequent intervals, eventually decreasing to once per week by end of first year except in very sandy soils.
- Established trees will need irrigation less frequently, but for longer duration. They can be irrigated from once a week to once per month, depending on soil and weather conditions.
- Most important: DO NOT OVERWATER as that is a major contributing factor for avocado root rot. To best determine your irrigation schedule, check the soil before you water. If the soil surface is still wet with free moisture, do not water. Allow the soil to drain between irrigations.
- Mulch comprised of coarse wood chips and natural leaf litter retains soil moisture and increases beneficial soil microbes which inhibit root rot.

### **Fertilizing**

Nitrogen, potassium and zinc are the most important nutrients for an avocado tree. Since avocados are shallow rooted, it's best to divide fertilizer applications into smaller multiple applications. Applications should be applied from spring through fall when soil is warm. Use commercial or organic avocado fertilizer and follow the package directions.

### **Pruning**

Avocados need little or no pruning. Pruning can be done to control height of tree and to remove broken, damaged, or crossing branches. Removal of sucker growth below the graft union should be done. Let pruning cuts heal naturally. The best time to prune is February.

## Pests, Disease and Environmental Factors

Avocados, if kept healthy through good cultural practices, have relatively few problems with pests and disease.

- Persea mites are a common pest of avocados in SLO County. It's feeding causes brown spots on the leaves and can lead to leaf drop. A cost effective, environmentally friendly treatment for this pest is a strong stream of water directed at the undersides of the leaves. This works best on small trees 12 to 15 feet in height.
- Salt burn is a very common abiotic disorder (not caused by a living organism) which causes the tips and edges of leaves to turn brown with eventual leaf drop. Avocados are very sensitive to salts in the soil near the root zone such as chloride and sodium. Salts can build up due to improper irrigation, light shallow watering, high salinity levels in water (well water), excessive fertilization, and applications of manure or mushroom compost. These factors are compounded by drought since rain is needed to flush the salts out of the root zone. The treatment is to leach the salts from the soil by deep slow irrigation for 12-24 hours. This may be needed every 4-5 weeks during summer. Proper irrigation as described above is key.
- Salt injury and drought can predispose trees to various fungal pathogens which cause root rot, leaf blight, and stem blight. The symptoms of these diseases can be similar to salt burn. In many cases, proper irrigation practices and treatment of salt toxicity through leaching can help resolve these diseases.

## References:

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GARDENING QUESTIONS? ASK THE MASTER GARDENERS AT HELPLINE: 805-781-5939



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Availability	on VMS > News/Docs > Documents/Presentations > INFO DOCS > Avocado: A Unique Fruit	
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