

AVOCADOS AND DON'Ts



Quality Reference Guide







Mission Produce has grown to become a world leader in producing, distributing, and marketing fresh Hass avocados. As a vertically integrated company, we own and operate state-of-the-art packing facilities in key growing locations around the world. Our advanced global network enables us to provide customers in over 25 countries with a year-round supply, custom programs, and value-added services.

We are experts in the art of ripening. Our avocado-specific ripening infrastructure enables us to set our customers up for success. We take the guesswork out of ripening, which in turn helps to maximize inventory and reduce food waste.

This reference guide contains information to help you identify and understand common avocado quality conditions to help you better judge and maintain the quality of Hass avocados from the moment they arrive to the time they are eaten.

DISCLAIMER: This quality guide is for informational and educational purposes only. Any recommendations included herein shall not be construed as a guarantee of future results. We make no representations or warranties, and expressly disclaim any representations or warranties, as to the validity, accuracy, or completeness of the information contained herein.

TABLE OF CONTENTS

QUALITY MATTERS	5	5	QUALITY CALENDARS	26	26
		6			27
		7			28
					CALIFORNIA
AVOCADO RIPENING	8	8			29
		9			30
		10			MEXICO
		11			31
					32
HANDLING & STORAGE	12	12			CHILE
		13			33
					34
AVOCADO BASICS	14	14			PERU
		15			35
					36
QUALITY CONDITIONS	16	16	CHECKERBOARDING		DOMINICAN REPUBLIC, COLOMBIA
		17	COPPER SULFATE RESIDUE		37
		18	HOLLOW PIT		
		19	LENTICEL SPOTTING		38
		20	RIDGING		END NOTES
		21	LIMB RUB SCARS		39
		22	THRIPS SCARRING		
		23	SUNBURN		
		24	VOLCANIC ASH		
		25	QUICK VIEW		



QUALITY MATTERS

Supplying our customers with the world's finest avocados year-round takes expertise and commitment.

We carefully cultivate our Hass avocados in the premium growing regions of California, Mexico, Chile, Peru, Colombia, the Dominican Republic, and more. The orchards nourished in these regions have overlapping production seasons, which translates to year-round availability for our customers.

The growing conditions of each country of origin are unique; from the nutrients found in the native soil to the amount of rain or moisture in the air, these environments naturally yield subtle differences in avocado appearance.

It is important to note that variations in outward appearance such as skin color, texture, and markings do not always indicate internal damage.

Here we provide a reference to avocado quality attributes to make it easier to understand quality differences and defects, which can help maintain the value and the consistency of your supply.

FOOD SAFETY BEGINS WITH MISSION PRODUCE

Food safety is a top priority in every aspect of growing, packing, and shipping avocados to market. We have a centralized department comprised of scientists, engineers, project managers, sanitation professionals, and food safety experts that manage our global food safety programs.



Micro and chemical scientists on staff specializing in fresh produce food safety



Audits performed by the British Retail Consortium (BRC), the International Featured Standard (IFS), and the PrimusGFS



Bacterial reduction solution used to reduce the microbial load on avocados before packing



Fully FSMA compliant with in-house lead instructors



Global sanitation program includes conducting daily testing and maintaining extensive pathogen reduction steps



Health and safety programs designed to safeguard our workers worldwide



Robust sustainability programs implemented to reduce our global carbon footprint



DID YOU KNOW?

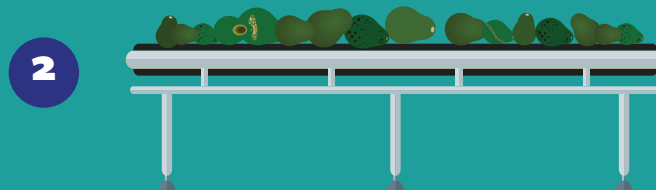
Our ripening experts are available to visit your facility and advise on best practices so your consumers can experience the highest quality fruit. Email **quality@missionproduce.com** to tap into our expertise!

STEPS QUALITY ASSURANCE TAKES



1

Hydrocool fruit upon arrival to preserve shelf life.



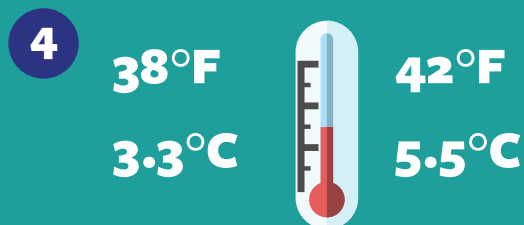
2

Inspect fruit during packing. QA pulls samples to check for color, internal and external defects, size, and stage.



3

Conduct dry matter tests to determine fruit maturity.



4

Store fruit at 38-42°F/3.3-5.5°C.



5

Inspect pallets for quality assurance prior to shipping to the customer.

5 STAGES OF RIPENESS

The first step to serving avocados at their peak of freshness and flavor is to understand the stages of ripeness for Hass avocados. Color is NOT always an indicator of ripeness. The best way to judge ripeness typically is to feel for uniform softness.



STAGE 1

Hard

Fresh off the tree, the avocado is very hard with no give.

APPROXIMATELY

5+ DAYS

**UNTIL RIPE
IF STORED
AT ROOM
TEMPERATURE**



STAGE 2

Pre-Conditioned

Ripening has begun, but the avocado is still very firm.

APPROXIMATELY

4-5 DAYS

**UNTIL RIPE
IF STORED
AT ROOM
TEMPERATURE**



STAGE 3

Breaking

As it ripens, the avocado is firm but yields slightly to pressure.

APPROXIMATELY

2 DAYS

**UNTIL RIPE
IF STORED
AT ROOM
TEMPERATURE**



STAGE 4

Firm-Ripe

The avocado is ripe and yields slightly to gentle pressure.

RIPE

**BEST FOR SLICES
AND CUBES**



STAGE 5

Ripe

The avocado is ripe and yields easily to gentle pressure.

RIPE

**BEST FOR
MASHING AND
GUACAMOLE**

FEELS SO RIPE

There are two ways to judge avocado ripeness. Most experts recommend that you feel for uniform softness to determine the ripe level.¹ A penetrometer can also be used to measure avocado stages; however, using a penetrometer can be inconsistent. **There are pros and cons for each method:**

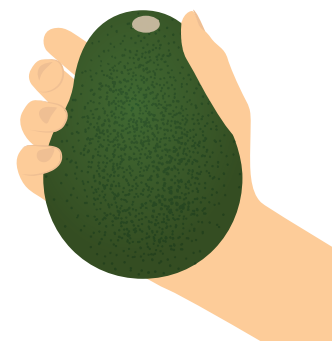
ASSESSING RIPE STAGE BY HAND

PROS

- ✓ Non-destructive testing method
- ✓ Can assess a large sample size on every pallet/pack
- ✓ No special equipment required
- ✓ Quick
- ✓ Whole fruit characteristics considered

CONS

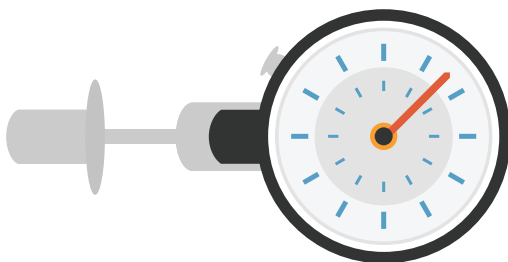
- ✗ Subjective; dependent on person
- ✗ Requires training



ASSESSING RIPE STAGE BY PENETROMETER

PROS

- ✓ Only a small amount of training needed



CONS

- ✗ Destructive testing method
- ✗ Small sample sizes only; may not be representative of entire pallet/pack
- ✗ Not always consistent with true stage
- ✗ Readings can be inconsistent unless using a fixed stand
- ✗ Requires specific and expensive equipment
- ✗ Results can vary based on fruit temperature
- ✗ Inaccurate results if procedure is not followed
- ✗ Factors like seasonality and temperature are not considered

GREEN VARIATIONS

Throughout the harvest season, avocados can exhibit color variations in skin.*
 Early in the season, they are generally light green, during the mid-season they're generally an in-between green, and later in the season they're generally dark green.
 No matter the time of season, avocados have the signature flavor and creamy consistency consumers adore.



EARLY SEASON GREEN

Light green color
 Bright green while ripening
 Lower dry matter
 Slightly longer shelf life



MID SEASON TURNING COLOR



LATE SEASON DARK GREEN

Dark green color
 Stays dark green while ripening
 Higher dry matter
 Slightly shorter shelf life

UNDERSTANDING AVOCADO DRY MATTER AND SHELF LIFE

Dry Matter is defined as *the part of a foodstuff or other substance that would remain if all of its water content were removed.*²

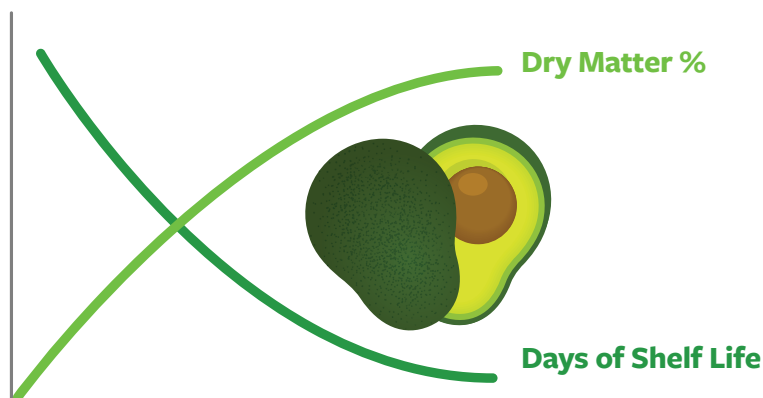
Dry matter percent is calculated by:

$$\frac{\text{Dry Weight} \times (100)}{\text{Wet Weight}} = \text{Dry Matter Percent}$$

- As fruit matures, its dry matter percentage increases.³
- Late season fruit has higher dry matter values than early season fruit.³
- Fruit with higher dry matter ripens faster.³
- As the season progresses, dry matter generally increases and days of shelf life generally decrease.³
- The higher the percentage of dry matter, the higher the oil content of the fruit.³ An avocado's signature creamy buttery flavor and mouthfeel are related to its oil content.⁴

Reference our Quality Calendar on page 27 of this guide to see typical dry matter percentages for each of Mission's Countries of Origin (COO) throughout the calendar year.

**Dry Matter percent
generally increases as
the season progresses,
and days of shelf life
generally decrease.³**

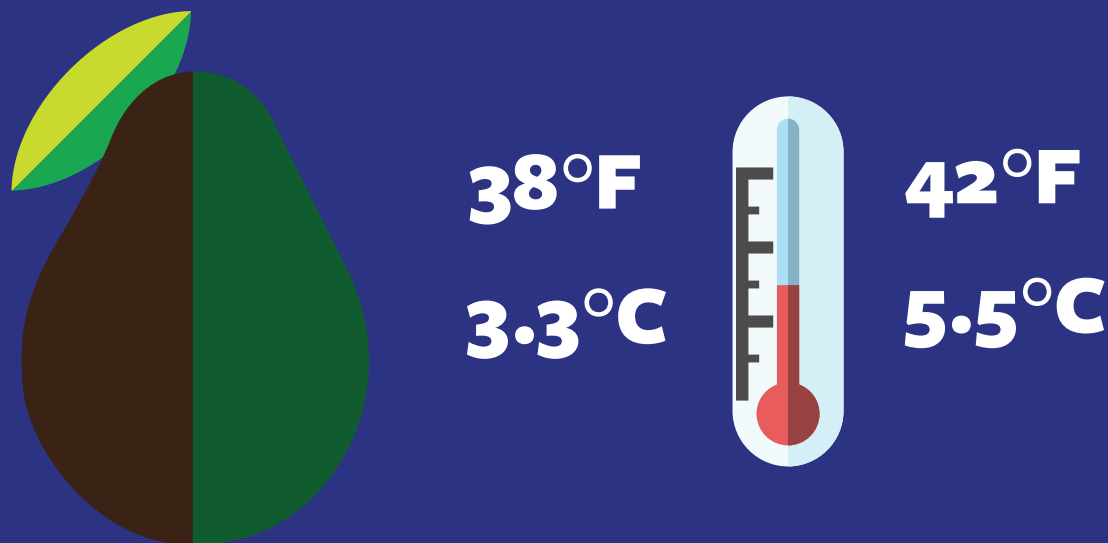


HANDLING AND STORAGE

Recommended storage temperatures for avocados can vary due to seasonality and country of origin. In general, cooler temperatures between 38°F - 42°F/ 3.3°C - 5.5°C are acceptable for all countries of origin throughout the year.

Low maturity fruit maintains its quality and shelf life at slightly warmer temperatures such as 42°F/5.5°C. As the maturity and dry matter of the fruit increases, the storage cooler temperature should be reduced in order to increase shelf life. Higher maturity fruit generally begins the ripening process more quickly due to its higher oil content.

Once ripe, cooler temperatures around 38°F/3.3°C generally extend the shelf life of the ripe fruit and help to slow down the ripening process. Note that ripe fruit is less susceptible to cold damage, so storing at these temperatures can also help to maintain quality.



RECOMMENDED STORAGE AND HANDLING TEMPERATURES*

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	42°F 5.5°C			40-42°F 4.4-5.5°C			38-40°F 3.3-4.4°C					
Mexico	40-42°F 4.4-5.5°C	38-40°F 3.3-4.4°C			38°F 3.3°C		42°F 5.5°C					40-42°F 4.4-5.5°C
Chile	38-40°F 3.3-4.4°C								42°F 5.5°C			38-40°F 3.3-4.4°C
Peru			43°F 6°C				42°F 5.5°C	40-42°F 4.4-5.5°C	40°F 4.4°C			
Colombia	38-40°F 3.3-4.4°C			38°F 3.3°C			42°F 5.5°C			40-42°F 4.4-5.5°C		40°F 4.4°C
Dominican Republic	38°F 3.3°C							40°F-42°F 4.4-5.5°C		40°F 4.4°C	38°F 3.3°C	

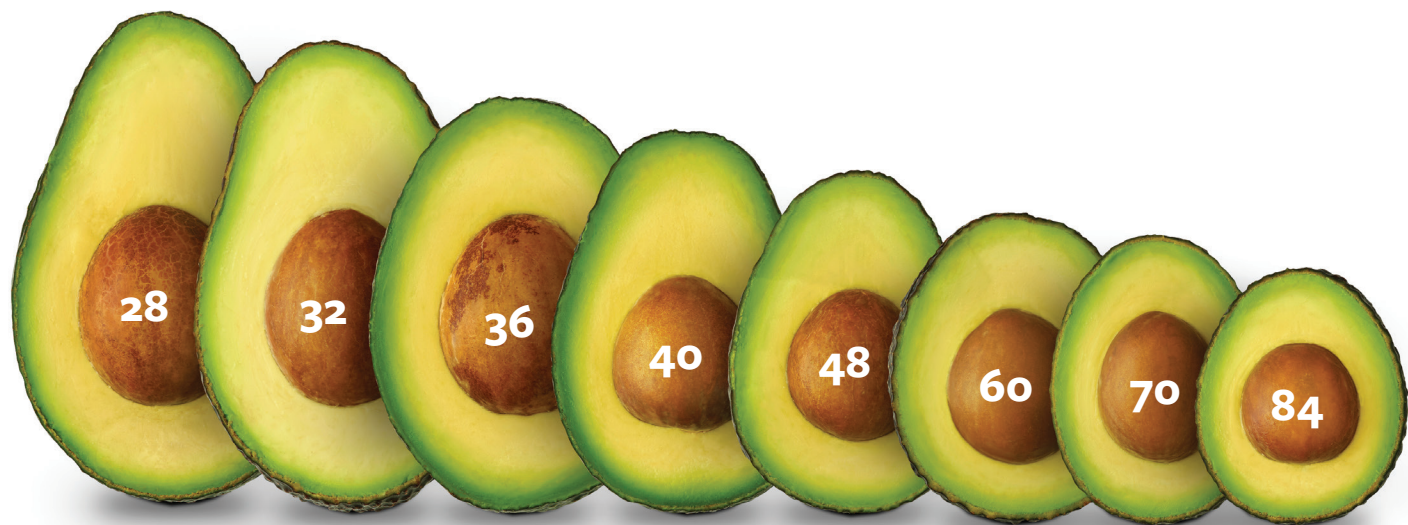


DID YOU KNOW?

Mission Produce supplies avocados from different growing regions with overlapping seasons of availability in order to provide a consistent year-round supply. The Country of Origin (COO) is clearly marked on each box, so you can adjust your optimal storage temperatures (as advised in the above chart) accordingly.

ONE SIZE DOES NOT FIT ALL

Size is determined by the number of avocados that fit in a standard carton, called a “lug,” which weighs approximately 25 pounds when full. For example, a size 40 avocado refers to the fact that 40 avocados fit into a standard size lug. Therefore, the larger the size number, the smaller the avocado. Conversely, the smaller the number, the larger the avocado.



DID YOU KNOW?

Every 25lb lug yields roughly the same volume of pulp.
So, you can make the same amount of guacamole
with a box of 70s as a box of 48s!

COUNTRIES OF ORIGIN

Each country of origin has its own unique climate and soil, and as a result, our delicious avocados exhibit subtle physical differences (but the same great taste!) based on where they were grown.



CALIFORNIA

Bumpy, bright green skin when unripe. Skin darkens during ripening.



DOMINICAN REPUBLIC

Slightly round shape with bumpy skin. Depending on maturity, skin may not darken during ripening.



CHILE

Elongated shape, bumpy skin. Depending on maturity, skin may not darken during ripening.



COLOMBIA

Oval shape, granulated rough skin. Smaller in size with dark green skin that turns purple-black when ripe.



PERU

Thick, bumpy skin that may turn amber/red when ripe. Skin may not darken when ripe. May feel firm when ripe due to thicker skin.



MEXICO

Main Season: Slightly bumpy green or black skin with some ridging. Skin darkens during ripening.

Off Bloom: Smooth bright green skin. Skin may not darken and may checkerboard during ripening.

CHECKERBOARDING

WHAT IS IT?

Checkerboarding is a term coined to describe uneven ripening within a case or pallet of fruit. Fruit at different ripe stages may appear within the same box. In such a case, a box with fruit that was ripened to a stage 3, may have some pieces in the box could be at a stage 2 or, at an extreme, a stage 5.



WHAT CAUSES IT?

Avocados can grow at different maturity and dry matter levels within the same orchard and even on the same tree. These maturity and dry matter values greatly impact the ripening process, resulting in varying stages of ripeness.

Dry matter is a measurement of the oil content within the fruit. Early season fruit generally has lower dry matter values and as the fruit matures on the tree, the oil increases throughout the season. The greater the range of dry matter values, the greater the probability of checkerboarding.

Early season fruit with lower dry matter values generally has a greater chance of uneven ripening.

WHAT CAN BE DONE?

It is difficult to prevent checkerboarding from occurring during ripening, but carefully monitoring ripening time and temperatures can help minimize checkerboarding within a case of fruit.³



Does not cause internal damage



Fruit expected to ripen and taste normal



Fruit will ripen at different times

COPPER SULFATE RESIDUE

WHAT IS IT?

Copper sulfate is used on both organic and conventional fruit-bearing trees as a fungicide to kill bacteria, algae, and fungi. The application of copper sulfate can leave a light residue on the surface of the avocado and has a bluish white appearance. Copper sulfate is safe and harmless to the consumer.



WHY USE IT?

The copper binds to proteins in the fungi and damages the cells, causing them to die. It is a very effective method and has been used for many years in avocado farming. Anthracnose, a common fungus in avocado production, causes black circular spots about one-half inch in diameter to appear on the surface of the fruit. During moist or rainy periods, the fungus can proliferate and spread into the flesh of the fruit, causing decay. Copper sulfate is very effective at controlling this disease.⁵

WHAT CAN BE DONE?

Mission Produce thoroughly washes all fruit with fresh water and an agitating brush to help remove any dirt or residue on the fruit's surface. Due to the nature of copper sulfate, complete removal can be difficult. It is common to see a small amount of fruit that contains a residual bluish white deposit on its surface after packing. Know that it is safe and harmless, and has no effect on the interior pulp quality, texture, or flavor.



Does not cause internal damage



Fruit expected to ripen and taste normal

HOLLOW PIT

WHAT IS IT?

Occasionally when you cut open an avocado you might see something missing: the seed! Don't be alarmed, the avocado will still taste just as creamy and buttery as one with the seed. The seed has turned a dark brown and dehydrated completely, leaving behind a hollow hole where the seed was.



WHAT CAUSES IT?

An avocado tree can support only a certain amount of volume each season. When more flowers are pollinated beyond the amount that the tree can support, the tree must terminate some of the fruit. Once this happens, the seed in the fruit dies and the piece stops growing. The seed is the life source of the fruit, which is why hollow seeds are primarily seen in small avocados, not in the larger sizes that have received full nutrition throughout their life span.

WHAT CAN BE DONE?

Climate may have an impact, causing the tree to stress more than normal and reject a higher percentage of viable fruit. There is no harm to the remaining viable fruit, which can be expected to continue to ripen and taste like a normal avocado.



Does not cause internal damage



Fruit expected to ripen and taste normal



Typically affects only small sizes

LENTICEL SPOTTING

WHAT IS IT?

Lenticel are small 1-5mm diameter brown spots that develop on the surface of the avocado skin.⁶ Lenticel develop after harvesting, especially during the rainy season. They can increase in size on the fruit in the days after harvest and start to form larger black areas referred to as spotting. Lenticel spotting does not affect the internal quality of the fruit. An avocado with lenticel ripens normally and as the skin color darkens, the lenticel generally becomes less apparent.



WHAT CAUSES IT?

Lenticel is caused when the fruit has taken up water prior to harvest. The cells become turgid and filled with water. The swollen cells become more sensitive and brown quickly on the surface. Jostling and rubbing during transportation and packing can agitate the turgid cells, causing them to burst and lenticel to develop more rapidly.⁶

WHAT CAN BE DONE?

Steps are taken to prevent the development of lenticel include delaying harvest after rain, cooling the fruit post-harvest, and using gentle handling methods. Allowing the fruit to rest after harvest before packing also helps reduce lenticel development by allowing the turgid cells to dehydrate.



Does not cause internal damage



Fruit expected to ripen and taste normal

RIDGING

WHAT IS IT?

Ridging is a protuberance or small raised line on the surface of an avocado skin. Ridging does not cause any damage to the internal quality of the fruit.



WHAT CAUSES IT?

The main cause of ridging is not completely understood, but most experts agree that it is caused by thrip or mite activity during the flowering stage.⁷ The skin is damaged at an early stage and as the fruit grows, the small ridge is stretched across a greater percentage of the fruit's surface. The growth of the young fruit is also slightly stunted, therefore ridging is more commonly seen in small sized fruit.

WHAT CAN BE DONE?

While ridging cannot be completely avoided, it can be reduced by proper integrated pest management practices in the field. The ridges themselves can become more susceptible to light scarring due to the fact that they are raised higher on the skin's surface. As long as the fruit is handled properly after harvest, further damage is generally not expected to occur.



Does not cause internal damage



Fruit expected to ripen and taste normal



More commonly appears in small-sized fruit

LIMB RUB SCARS

WHAT IS IT?

Scars are brown or black spots on the skin of an avocado. They are an external defect that generally has no impact on the quality of the internal fruit. The severity of the scarring will determine the grade of the fruit for packing.



WHAT CAUSES IT?

Scarring is caused by the rubbing of the fruit on surrounding twigs and branches, which can be exacerbated by windy conditions. Wind damage often occurs when the fruit is very small, and as it grows larger, the scar stretches over a larger portion of the surface. This type of damage can be harder to see once the fruit ripens. More serious damage to the avocado may cause a tear in the skin, which heals by forming a rigid scar that rips and heals repeatedly as the fruit grows, resulting in a bigger scar.⁸ This results in a russet-type blemish on the skin that has angular netting and is sometimes referred to as “alligator” skin.⁹

WHAT CAN BE DONE?

Limb rub scars are common for all kinds of tree fruit. Although avocados with excessive scarring are sold as grade 2, the pulp of the avocado maintains the same quality as one with no scarring.



Does not cause internal damage



Fruit expected to ripen and taste normal

THRIPS SCARRING

WHAT IS IT?

Brown scars with a scabby or leathery appearance can be caused by avocado thrips, small flying insects that feed directly on immature fruit. Internal fruit quality is not affected, but obvious feeding scars can cause downgrading or culling of affected fruit.



WHAT CAUSES IT?

As the fruit grows, early feeding by thrips becomes more apparent as the scars expand across the skin. Thrips scarring is sometimes called “alligator skin.” Scarred fruit can continue to grow in size, but generally remains smaller than normal. The flesh is generally healthy and green. Scarring from limb rub can also cause fruit scarring that may be confused with injury from avocado thrips.

Thrips move to young fruit when leaves harden. Almost all damage occurs when the avocado is 0.2 to 0.6 inches (5–15 mm) long.¹⁰ Although Hass avocados are susceptible to feeding until they reach about 2 inches, thrips feeding rarely causes scars on fruit larger than about 0.75 inches.¹⁰ Scarring on young fruit may not become obvious until the fruit enlarges. It is important to recognize that this is an external defect that generally does not cause any internal fruit damage.

WHAT CAN BE DONE?

Proper field management can help reduce the presence of pests throughout the season. Mission growers implement integrated pest management systems to consistently monitor pest activity.



Does not cause internal damage



Fruit expected to ripen and taste normal

SUNBURN

WHAT IS IT?

Sunburn can range from a pale yellow discoloration to a black, brown, red, or withered spot. Internal quality of the fruit is typically not affected, but large spots of discoloration can cause heating and drying of the tissue, which results in the downgrading or culling of affected fruit.



WHAT CAUSES IT?

Sunburn can occur both prior to and after harvest. It is caused by exposure to direct sunlight, which is generally more common in fruit on the south or southwest sides of a tree. New trees with fewer leaves on the tree to shade the fruit are at higher risk for sunburn than leafy mature trees.

WHAT CAN BE DONE?

Careful pruning methods and tree care can help reduce overexposure of growing fruit to the sun. Post-harvest sunburn can be avoided by storing bins of harvested avocados in cool, shaded areas.



Does not cause internal damage



Fruit expected to ripen and taste normal

VOLCANIC ASH

WHAT IS IT?

Avocados grown in the southern areas of the state of Jalisco are near one of the most active volcanoes in Mexico, the Volcano of Colima. As a result, some residual ash may be seen on the surface of avocados from the region.



WHAT CAUSES IT?

Small daily eruptions from the Volcano of Colima produce ash that is carried by the wind to the towns below. The ash generally does not pose any threat to food safety and is completely safe. In fact, ash helps avocado orchards thrive. It is comprised of pulverized rock, minerals (iron and magnesium), and volcanic glass, all of which wash into the soil, enriching it with nutrients.¹¹ This nutrient-dense soil is great for producing high-quality, rich agriculture.

WHAT CAN BE DONE?

While regular dustings of ash generally do not cause any harm to avocado orchards, they can make the fruit appear dirty. After harvest, avocados are washed with clean water and a series of high-power brushes that are designed to remove dirt and dust. Most of the ash is removed in this process, but occasionally some ash residue remains. It is harmless and safe for consumption.



Does not cause internal damage



Fruit expected to ripen and taste normal

QUALITY CONDITIONS QUICK VIEW



CHECKERBOARDING

Page 16



COPPER SULFATE RESIDUE

Page 17



HOLLOW PIT

Page 18



LENTICEL SPOTTING

Page 19



RIDGING

Page 20



LIMB RUB SCARS

Page 21



THRIPS SCARRING

Page 22



SUNBURN

Page 23



VOLCANIC ASH

Page 24

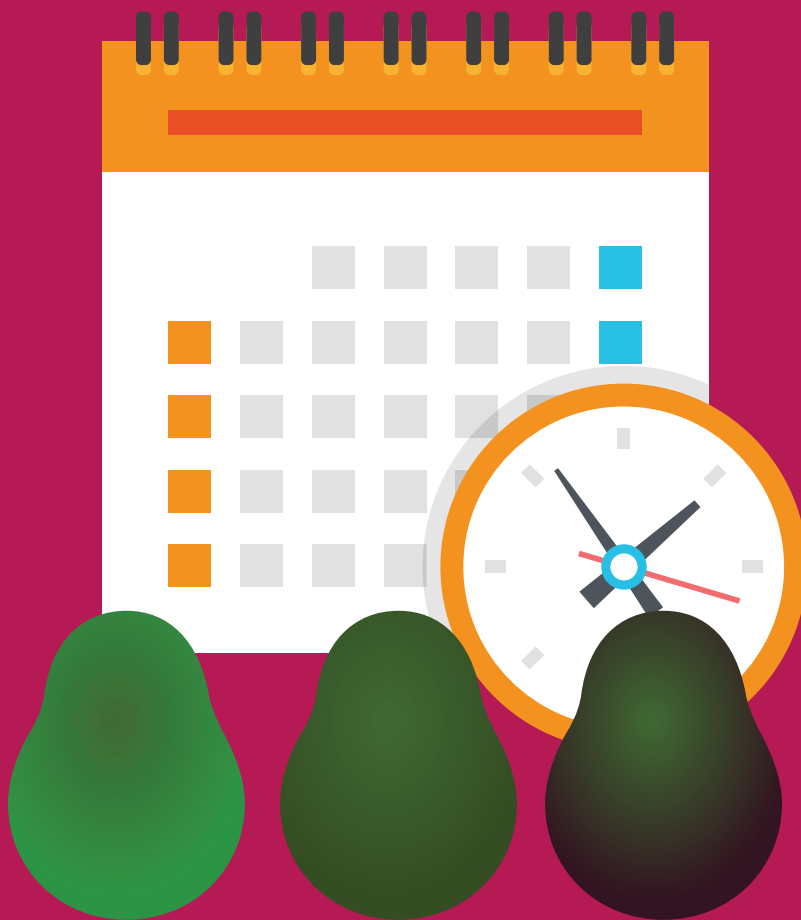


DID YOU KNOW?

Mission quality begins in the field. From flower to harvest, our team takes a hands-on approach to cultivating the world's finest avocados.

QUALITY CALENDAR

On the pages that follow are calendars sorted by Country of Origin (COO) that outline potential quality conditions throughout the year. As a reference, these calendars also identify anticipated seasonal skin color and offer potentially optimal storage temperatures for each month.* In addition to this robust source of information, Mission Produce's experts are available to help answer any questions you may have at quality@missionproduce.com.



QUALITY CALENDAR: CALIFORNIA

	JAN	FEB	MAR	APR	MAY
Dry Matter	21-24	22-25	23-26	24-27	25-28
Ripening Color	Green			Turning Color	
Handling/Storage Temp	42°F 5.5°C	42°F 5.5°C	42°F 5.5°C	40-42°F 4.4-5.5°C	40-42°F 4.4-5.5°C
POTENTIAL QUALITY CONDITIONS					
Lenticel	Low	Likely	Likely	Likely	Low
Ridging	Low	Low	Low	Low	Low
Scarring	Likely	Likely	Likely	Likely	Likely
Limb Rub	Low	Low	Low	Low	Low
Sunburn	Likely	Likely	Likely	Likely	Likely

JUN	JUL	AUG	SEP	OCT	NOV	DEC
26-29	28-31	30-33	32-35			
	Dark					
40-42°F 4.4-5.5°C	38-40°F 3.3-4.4°C	38-40°F 3.3-4.4°C	38-40°F 3.3-4.4°C			
Low	Low	Low	Low			
Low	Low	Low	Low			
Likely	Likely	Likely	Likely			
Low	Low	Low	Low			
Likely	Likely	Likely	Likely			

QUALITY CALENDAR: MEXICO

	JAN	FEB	MAR	APR	MAY
Dry Matter	27-30	28-31	28-31	30-33	30-34
Ripening Color	Turning Color			Dark	
Handling/Storage Temp	40-42°F 4.4-5.5°C	38-40°F 3.3-4.4°C	38-40°F 3.3-4.4°C	38-40°F 3.3-4.4°C	38°F 3.3°C
POTENTIAL QUALITY CONDITIONS					
Lenticel	Low	Low	Low	Low	Low
Ridging	Likely	Likely	Likely	Low	Low
Scarring	Likely	Likely	Likely	Low	Low
Limb Rub	Low	Low	Likely	Low	Low
Sunburn	Low	Low	Likely	Low	Low

JUN	JUL	AUG	SEP	OCT	NOV	DEC
30-35	22-25	22-25	24-27	25-28	27-30	27-30
	Green				Turning Color	
38°F 3.3°C	42°F 5.5°C	42°F 5.5°C	42°F 5.5°C	42°F 5.5°C	42°F 5.5°C	40-42°F 4.4-5.5°C
Likely	Likely	Likely	High	High	High	Likely
Low	Low	Low	Low	Low	Low	Low
Low	Low	Low	Low	Low	Low	Low
Low	Low	Low	Low	Low	Low	Low
Low	Low	Low	Low	Low	Low	Low

QUALITY CALENDAR: CHILE

	JAN	FEB	MAR	APR	MAY
Dry Matter	28-31	29-32			
Ripening Color	Turning Color				
Handling/Storage Temp	38-40°F 3.3-4.4°C	38-40°F 3.3-4.4°C			
POTENTIAL QUALITY CONDITIONS					
Lenticel	Low	Low			
Ridging	Low	Low			
Scarring	Low	Low			
Limb Rub	Low	Low			
Sunburn	Low	Low			

JUN	JUL	AUG	SEP	OCT	NOV	DEC
			22-25	24-27	25-28	26-29
			Green			
			42°F 5.5°C	42°F 5.5°C	42°F 5.5°C	38-40°F 3.3-4.4°C
			Likely	Likely	Likely	Low
			Low	Low	Low	Low
			Low	Low	Low	Low
			Low	Low	Low	Low
			Low	Low	Low	Low

QUALITY CALENDAR: PERU

	JAN	FEB	MAR	APR	MAY
Dry Matter			22-24	23-24	23-25
Ripening Color			Green/Amber/Red		
Handling/Storage Temp			43°F 6°C	43°F 6°C	43°F 6°C
POTENTIAL QUALITY CONDITIONS					
Lenticel			Likely	Likely	Likely
Ridging			Low	Low	Low
Scarring			Low	Low	Low
Limb Rub			Low	Low	Low
Sunburn			Low	Low	Low

JUN	JUL	AUG	SEP	OCT	NOV	DEC
24-27	24-27	24-27	25-29	27-30		
Turning Color - Amber/Red			Dark			
43°F 6°C	42°F 5.5°C	42°F 5.5°C	40-42°F 4.4-5.5°C	40°F 4.4°C		
Likely	Likely	Likely	Low	Low		
Low	Low	Low	Low	Low		
Low	Low	Low	Low	Low		
Low	Low	Low	Low	Low		
Low	Low	Low	Low	Low		

QUALITY CALENDAR: DOMINICAN REPUBLIC & COLOMBIA

Mission Produce is a leader in supplying global markets with new, high-quality sources. We have begun establishing baseline standards for the Dominican Republic and Colombia that enable us to predict visual quality issues that may arise. As we continue to harvest, we are committed to sharing the intricate knowledge we gain from these growing regions, just as we have for the regions we have been sourcing from for years.

DOMINICAN REPUBLIC	JAN	FEB	MAR	APR	MAY
Dry Matter	33-35				
Ripening Color	Dark				
Handling/Storage Temp	38°F 3.3°C				

COLOMBIA	JAN	FEB	MAR	APR	MAY
Dry Matter	27-30	28-31	28-31	30-33	30-34
Ripening Color	Turning Color			Dark	
Handling/Storage Temp	38-40°F 3.3-4.4°C	38-40°F 3.3-4.4°C	38-40°F 3.3-4.4°C	38°F 3.3°C	38°F 3.3°C

JUN	JUL	AUG	SEP	OCT	NOV	DEC
		25-28	26-29	28-31	30-33	33-35
		Green	Turning Color		Dark	
		40-42°F 4.4-5.5°C	40-42°F 4.4-5.5°C	40°F 4.4°C	38°F 3.3°C	38°F 3.3°C

JUN	JUL	AUG	SEP	OCT	NOV	DEC
30-35	22-25	22-25	24-27	25-28	27-30	27-30
	Green				Turning Color	
38°F 3.3°C	42°F 5.5°C	42°F 5.5°C	42°F 5.5°C	42°F 5.5°C	40-42°F 4.4-5.5°C	40°F 4.4°C

END NOTES

1. How to Pick an Avocado. Hass Avocado Board. <https://loveonetoday.com/how-to/pick-buy-fresh-avocados/#:~:text=If%20the%20avocado%20yields%20to,is%20perfect%20for%20that%20day.>
2. “Dry matter.” Oxford English Dictionary. Oxford Languages.
3. According to Mission Produce intelligence and experience in the science of ripening avocados. October 2022.
4. How Avocados Are Tested for Optimal Flavor and Consistency Before Export. Avocado Institute of Mexico. <https://avocadoinstitute.org/avo-journey/commitment-to-quality-and-food-safety/how-avocados-are-tested-for-optimal-flavor-and-consistency-before-export-#:~:text=The%20higher%20the%20dry%20matter,must%20be%20greater%20than%2023%25.>
5. Oziengbe, E.O., and Osazee, J.O. Antifungal Activity of Copper Sulphate Against *Colletotrichum Gloeosporioides*. Journal of Asian Scientific Research 2(12):835-839.
6. Everett, K.R., Hallett, I.C., et al., Avocado lenticel damage: The cause and the effect on fruit quality, Postharvest Biology and Technology. 48(3):383-390. 2008. ISSN 0925-5214. <https://doi.org/10.1016/j.postharvbio.2007.09.008>.
7. Bethke, J.A., Dreistadt, S. H., et al. Thrips. Pests in Gardens and Landscapes. University of California Agriculture & Natural Resources. <http://ipm.ucanr.edu/PMG/PESTNOTES/pn7429.html>.
8. Torres, C. and Gomez, R. WA 38 First Commercial Season (2019-2020) Storage and Packing Observations. Washington State University. Comprehensive Tree Fruit Site. May 2020. <http://treefruit.wsu.edu/article/wa-38-storage-and-packing-observations-cs1/>.
9. Effects of Wind on California Avocado Trees. California Avocado Commission. April 17, 2022. <https://www.californiaavocadogrowers.com/cultural-management-library/effects-wind-california-avocado-trees>.
10. UC IPM Pest Management Guidelines: Avocado UC ANR Publication 3436. University of California Agriculture & Natural Resources. September 2016. <https://www2.ipm.ucanr.edu/agriculture/avocado/avocado-thrips/>.
11. Why Avocado Orchards Thrive in Michoacán. Avocado Institute of Mexico. <https://avocadoinstitute.org/avo-journey/magic-of-michoacan/why-avocado-orchards-thrive-in-michoacan>.

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