
California Avocado Commission

A Primer for Fresh California Avocados

Introduction

ABOUT THE CALIFORNIA AVOCADO COMMISSION

Created in 1978, the California Avocado Commission strives to enhance the premium positioning of California Avocados through advertising, promotion and public relations, and engages in related industry activities. California Avocados are cultivated with uncompromising dedication to quality and freshness, by nearly 3,000 growers in the Golden State. The California Avocado Commission serves as the official information source for California Avocados and the California avocado industry. Visit CaliforniaAvocado.com, join us at Facebook.com/CaliforniaAvocados and @CA_Avocados on Twitter, Pinterest and Instagram or shop for California avocado merchandise at Shop.CaliforniaAvocado.com.

Because of our unwavering belief in the premium quality of California Avocados, we're dedicated to sharing product information, promoting our fruit and supporting those who use, produce, sell and serve Fresh California Avocados.

Learning Objectives

- Develop an appreciation for Fresh California Avocados as a versatile culinary ingredient
- Create awareness for Fresh California Avocados as a component in a healthy diet
- Prepare culinary students for proper handling and storage of Fresh California Avocados
- Demonstrate how to select/identify ripe Fresh California Avocados
- Introduce labor-saving preparation and holding techniques for Fresh California Avocados
- Introduce using Fresh California Avocados in hot preparations
- Demonstrate Fresh California Avocado versatility in contemporary and global applications
- Introduce Fresh California Avocados as a fat substitute in baking

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Avocado History

Avocado (*Persea Americana* Mill.) is considered a fruit and has in recent years gained worldwide recognition for its versatility and dietary value. Although relatively new in commerce and the culinary arts, this unique fruit has been appreciated and utilized for at least 9,000 years around its center of origin in the Americas.¹ Over the last 40 years, international trade in avocados has increased four-fold and supplies are available year-round.

The avocado originates from the middle-Americas and is found native from the coast to high altitude forests, some growing at altitudes exceeding 9,000 ft., and covering a wide range of climates and soil types. This has given rise to great genetic diversity and adaptability and provides great promise for the selection of future varieties.

Fast forward to 1871, when Judge R.B. Ord of Santa Barbara successfully introduced avocados to the U.S. with trees from Mexico. By the early 1900s, growers were seeing the avocado's commercial potential and ever since growers, enthusiasts and researchers have been hunting for improved varieties.

The first commercial avocado orchards were planted in California in the early 1900s. Most of the pioneering research on avocado orchard management technology was also initiated in California. Did you know that Hass Avocados originated in California?

The Hass variety, popular worldwide, originated in the small Southern California suburb of La Habra Heights. The Mother Hass Tree (1926-2002) was tended for, and named after postman Rudolph Hass, who patented the variety in August of 1935. Today, over 95% of avocados sold in the United States are the Hass variety, and all Hass Avocados grown around the world can trace their roots to this very special California tree.

A search through the industry's foremost annals, in particular the California Avocado Society Yearbook, reveals that many new selections of avocado were made in the industry's infancy and over subsequent years but few had commercial significance. By the 1950s around 25 different varieties of avocados were being commercially packed and shipped in California, with 'Fuerte' accounting for more than two-thirds of the production. Even though 'Hass' was discovered in the early 1930s and patented by Rudolph Hass in 1935, it was not until large-scale industry expansion occurred in the late 1970s that 'Hass' replaced 'Fuerte' as the leading California variety.

Today, California is the leading producer of domestic avocados and home to about 90 percent of the nation's crop. Most California Avocados are grown commercially on more than 50,000 acres in the coastal regions of central to southern California from Morro Bay to San Diego by nearly 3,000 growers.

California Avocados are grown year-round. A single, mature California Avocado tree can produce up to 200 to 300 pieces of fresh fruit each year, although most average around 60 pounds or 150 pieces of fruit. The avocado tree, however, alternates bearing. This means that

¹ R.J. Knight, Jr., "Chapter 1: Introduction (Evolutionary Aspects-'Evo-devo' and 'Evo-eco')", *The Avocado: Botany, Production and Uses*, eds. A.W. Whiley, B. Schaffer and B.N. Wolstenholme, 2nd Edition

the tree may produce a large crop one year, and then produce a small crop the following year. There are lots of variables that influence this.

Avocados are consumed from the Americas to Asia, in sandwiches and salads in the United States, to sushi in Japan, and to dessert drinks in the Philippines.

What Type of Fruit is an Avocado?

An avocado is a single-seeded berry, according to botanical classification of fruits.

The pear-shaped avocado is botanically a berry, with a leathery skin, edible smooth texture pulp and a large, inedible central seed. An average avocado tree produces about 150 avocados annually each averaging around 7.5 ounces.

Grafting

On average, it takes an avocado plant produced from a seed, eight to 20 years to produce avocados. For that reason, commercial avocado varieties (scion varieties) are grafted onto rootstocks (rootstock varieties). The combination will then bear fruit much sooner, often within two years after orchard planting. Grafting also combines the best characteristics of the scion and rootstock varieties. The right combination can improve the tree's resistance/tolerance to diseases and pests, and result in early precocious fruiting.

Pollination

Avocado productivity is influenced by many factors. Perhaps the critical first step is the process of pollination that leads to fertilization and fruit set. Pollination occurs when pollen is deposited on a receptive stigma.

The avocado's flowering behavior is unusual in many ways. The mature tree can produce in excess of a million flowers during the flowering period (which yield 100-300 avocados, meaning only one flower in 10,000 becomes an avocado). The flowers occur in panicles of several dozen to hundreds of flowers. There are two different types of avocado flower heads: determinate and indeterminate. In a determinate flower head, the tip of the shoot that bears the flowers will end in a flower. Indeterminate flower heads terminate with a vegetative bud.



The avocado flower has both functional male and female organs. The male floral organ, which produces pollen, is comprised of the anthers and stamens. The female floral organ is comprised of the stigma (which receives the pollen), style and the ovary.

The avocado exhibits a type of flowering behavior known as "synchronous dichogamy." An individual flower will be open for 2 days; however, the timing of the male and female phases is distinct. When the flower first opens it is in the female phase and the stigma is receptive to pollen. At the end of the female phase, which lasts 2 to 4 hours, the flower closes. On the second day the same flower re-opens in the male phase and sheds its pollen.

The avocado is also unusual in that the timing of the male and female phases differs among varieties. There are two flowering types, 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 will remain 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.

Since there are hundreds of flowers on an avocado tree at any one time the actual situation in the field encourages movement of pollen between the complementary flower types. The avocado's flowering behavior is believed to promote cross-pollination since the male and female phases of an individual flower occur at different times. It is believed that the inter-planting of complementary flower types can boost fruit set and therefore yield by making pollen available.

Other Interesting Facts

- Avocado orchards help renew our air supply and keep it fresh by absorbing carbon dioxide and producing oxygen
- Two mature avocado trees can provide enough oxygen for a family of four
- Orchard trees lower air temperature by evaporating water in their leaves
- Avocado tree roots stabilize the soil and prevent erosion
- Avocado orchards can reduce storm run-off and the possibility of flooding. By slowing run-off and filtering rainwater, orchards can improve water quality

Harvesting the Fruit

Unlike most fruits, the avocado is one of the very few that does not ripen on the tree. Growers can "store" their mature fruit on the tree for several months, allowing for greater control of the harvest volume. Growers determine harvest-ready fruit by measuring the dry matter of the flesh (remarkably, the sugar level in avocados decreases as they mature). In order to ripen properly off the tree, Fresh California Avocados need to reach the minimum oil content for the proper balance in flavor and consistency.

Avocados are harvested by hand with the help of special shears, sometimes using ladders or mechanical platforms, and picking poles to reach the fruit in tall trees. Pickers place the harvested fruit in large nylon bags which may hold from 30 to 50 pounds of fruit.

The harvested avocados are carefully placed in large picking bins that hold 300 - 900 pounds of fruit each. The fruit is transferred by forklift, tractor or trailer from the grove to a loading area and then hauled to the packing facility. Here the avocados are immediately cooled to remove field heat and preserve quality. The pre-cooled fruit are then ready for packing.

Each bin of avocados is carefully placed on a conveyor belt, which gently tips over the bin, allowing the fruit to roll onto a grading belt, where graders hand check and machines sort the avocados by size. Once sorted, the avocados are rolled into packing tables where they are

gently placed into single layer, double layer or loose-fill cartons. The cartons are sealed, organized by size and stacked onto pallets.

California Avocado Varieties

Fresh California Avocados

What makes Fresh California Avocados so creamy and delicious? Ideal growing conditions. Southern California Avocado groves are blessed with good soil, proper drainage, abundant sunshine and cool ocean breezes - everything an avocado needs to grow up creamy rich and velvety.

Fresh California Avocados let you know when they're ripe

The best way to tell if a California Avocado is ripe and ready for immediate use is to gently squeeze the fruit in the palm of your hand. Ripe, ready-to-eat fruit will be firm but will yield to gentle pressure. Look for fruit that is average to large, oval-shaped and heavy. Then slice into one of nature's perfect foods and enjoy the silky-smooth texture and rich nutty flavor in all your favorite recipes.

Organic California Avocados

Many of the varieties listed below are available as certified organic fruit.

Fresh California Avocado Varieties

Although there are close to 500 varieties of avocados, eight varieties are grown commercially in California, and the Hass variety accounts for approximately 95 percent of the total U.S. crop.

BACON

- A mid-winter green variety
- A green-skinned variety of good quality, the Bacon is a medium-sized fruit available late-fall into spring

Description:

- Oval-shaped fruit
- Medium to large seed
- Easy peeling
- Light taste

Size:

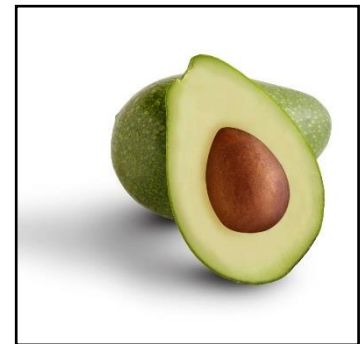
- Medium, ranging from 6 to 12 ounces

Appearance:

- Smooth thin green skin
- Yellow-green flesh

Ripe Characteristics:

- Skin remains green, darkens slightly
- Fruit yields to gentle pressure when ripe

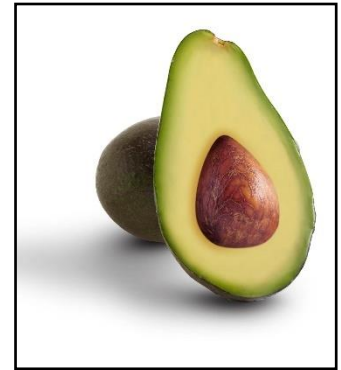


FUERTE

- An established favorite
- Harvested late fall through spring, the Fuerte is the original high-quality California Avocado

Description:

- Pear-shaped
- Medium seed
- Peels easily
- Great taste



Size:

- Medium to large fruit, ranging from 5 to 14 ounces

Appearance:

- Smooth thin green skin
- Creamy, pale green flesh

Ripe Characteristics:

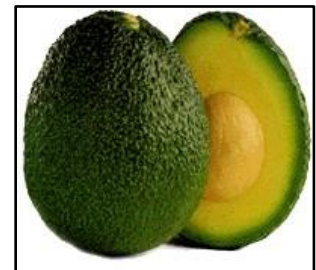
- Skin remains green
- Fruit yields to gentle pressure when ripe

GWEN

- The Hass-like green variety
- Gwen is similar in appearance, taste and texture to Hass, but slightly larger
- Available late spring early summer

Description:

- Plump oval fruit
- Small to medium seed
- Easy peeling
- Great taste



Size:

- Medium to large, ranging from 6 to 15 ounces

Appearance:

- Pebbly, thick but pliable green skin
- Creamy, gold-green flesh

Ripe Characteristics:

- Green skin turns dull
- Fruit yields to gentle pressure when ripe

HASS

- The year-round avocado
- Distinctive for its skin that turns from green to purplish-black when ripe. The Hass is the leading variety of California Avocado and has an excellent shelf life

Description:

- Oval-shaped fruit
- Small to medium seed
- Easy peeling
- Great taste

Size:

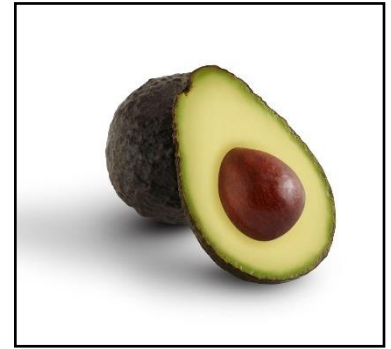
- Full range from average to large, 5 to 12 ounces

Appearance:

- Pebbly, thick but pliable skin
- Pale green flesh with creamy texture

Ripe Characteristics:

- Skin darkens as it ripens
- Fruit yields to gentle pressure when ripe



LAMB HASS

- The California summer sun variety
- Exceptional flavor and a large robust size are the hallmark of this new avocado variety

Description:

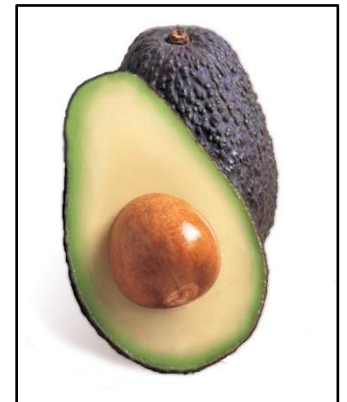
- Smooth, creamy, nutty taste
- Large in size
- Symmetrical, oval in shape; displays exceptionally well

Size:

- Ranges in size from 11.75 oz. to 18.75 oz.
- 32 = 11.75 oz. to 14.00 oz.
- 28 = 13.75 oz. to 15.75 oz.
- 24 = 15.75 oz. to 18.75 oz.

Appearance:

- Looks and ripens like a Hass avocado
- Pebbly skin with pale green flesh
- Medium-size seed



Ripe Characteristics:

- Skin darkens as it ripens
- Yields to gentle pressure when ripe

PINKERTON

- A premium winter variety
- Pinkerton avocados have small seeds, yield more fruit per tree and are available in a full range of sizes early winter through spring

Description:

- Long, pear-shaped fruit
- Small seed
- Excellent peeling characteristics
- Great taste

Size:

- Large fruit, ranging from 8 to 18 ounces

Appearance:

- Medium thick green skin with slight pebbling
- Creamy, pale green flesh

Ripe Characteristics:

- Green skin deepens in color as it ripens
- Fruit yields to gentle pressure when ripe

**REED**

- The summertime variety
- A large, round fruit available in the summer months and early fall

Description:

- Round fruit
- Medium seed
- Easy peeling
- Good taste

Size:

- Medium to large, ranging from 8 to 18 ounces

Appearance:

- Thick green skin with slight pebbling
- Creamy flesh

Ripe Characteristics:

- Skin remains green
- Fruit yields to gentle pressure when ripe



ZUTANO

- A season opener
- Easily recognized by its shiny, yellow-green skin, the Zutano is one of the first varieties harvested when the season begins in September and is available through early winter

Description:

- Pear-shaped fruit
- Moderately easy to peel
- Light taste

Size:

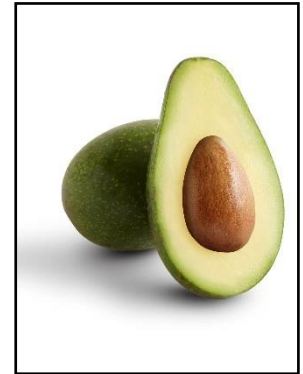
- Average to large fruit, ranging from 6 to 14 ounces

Appearance:

- Shiny, thin yellow-green skin
- Pale green flesh with light texture

Ripe Characteristics:

- Skin retains color when ripe
- Fruit yields to gentle pressure when ripe



Fresh California Avocado Season by Variety

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Hass												
Lamb Hass												
GEM												
Reed												
Bacon												
Pinkerton												
Fuerte												
Zutano												
Gwen												

AVOCADO NUTRITION FACTS

California Avocados are a heart-healthy superfood.

Avocados are a good source of five essential nutrients - fiber, folate, vitamin K, pantothenic acid (B5), and copper.

California Avocados provide “good” (5 g monounsaturated and 1 g polyunsaturated) fats to one’s diet. Good fats help the body absorb fat-soluble nutrients without raising LDL (“bad”) cholesterol levels² when eaten as part of a healthy diet.

California Avocados are virtually the only fruit with heart-healthy monounsaturated fat and polyunsaturated fat (the good fats).

One-third of a medium avocado (50 g) has 80 calories and contributes nearly 20 vitamins and minerals, making it a nutrient-rich choice.

California Avocados are naturally sodium-, cholesterol- and trans fat-free.

AVOCADO NUTRITION BENEFITS**Fiber & Heart Health**

- When it comes to fact, the body needs some fat to help with nutrient absorption. California Avocados provide the good fats your body needs and can play a dual role in the diet to help people meet fruit and good fat recommendations.

Antioxidant & Immune System

- One-third of a medium avocado contains 6% of the Daily Value for vitamin E, an antioxidant that protects body tissue from damage and helps keep the immune system strong against viruses and bacteria.

Potassium & Blood Pressure

- According to the American Heart Association dietary potassium can help control blood pressure by blunting the adverse effects of sodium on blood pressure. A serving of avocado (50 g) contains 254 mg of potassium or 6% of the recommended daily value.
- Avocados are listed as a food source of potassium in the 2015 Dietary Guidelines for Americans. Low potassium intakes can increase the risk of illness and may be involved in hypertension and stroke, kidney stones, bone health, blood glucose control, and type 2 diabetes.

The Dietary Guidelines for Americans and the American Heart Association recommend eating less nutrient-poor foods, and limiting the amount of saturated fat, trans fat, added sugars and sodium consumed. Avocados are a naturally sugar-free and sodium-free fruit and are a source of “good” fats (over 75 percent of the fat in avocado is unsaturated).

Nutrition Facts	
3 servings per container	
Serving size	1/3 medium (50g)
Amount per serving	
Calories	80
	% Daily Value*
Total Fat 8g	10%
Saturated Fat 1g	5%
<i>Trans</i> Fat 0g	
Polyunsaturated Fat 1g	
Monounsaturated Fat 5g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 4g	1%
Dietary Fiber 3g	11%
Total Sugars 0g	
Includes 0g Added Sugars	0%
Protein 1g	
Vitamin D 0mcg	0%
Calcium 10mg	0%
Iron 0.3mg	2%
Potassium 250mg	6%
Vitamin A 0mcg	0%
Vitamin C 4mg	4%
Vitamin E 1mg	6%
Vitamin K 11mcg	10%
Thiamin 0.04mg	4%
Riboflavin 0.1mg	8%
Niacin 1mg	6%
Vitamin B ₆ 0.1mg	6%
Folate 45mcg DFE (0mcg folic acid)	10%
Pantothenic Acid 0.7mg	15%
Phosphorus 30mg	2%
Magnesium 15mg	4%
Zinc 0.3mg	2%
Copper 0.1mg	10%
Manganese 0.1mg	4%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Avocados Are a Nutrient Booster

California Avocados are one of nature's most extraordinary and special fruit, and can be a fresh, natural, wholesome part of a healthy diet. **Eating vegetables and fruits** like heart-healthy avocados, is associated with a reduced risk of many chronic diseases, including cardiovascular disease, and may be protective against certain types of cancers, according to the Dietary Guidelines for Americans.

Packed with delicious flavor, the avocado contributes nearly 20 vitamins, minerals and phytonutrients, making it a heart-healthy choice to help meet nutrient needs. Although phytonutrients are not essential, research suggests they may promote human health.

California Avocados are **nutrient-dense meaning they provide substantial amounts of vitamins, minerals and other nutrients with relatively few calories.**

And, heart-healthy California Avocados act as a “nutrient booster” by helping increase the absorption of fat-soluble nutrients like vitamins A, D, K and E.

Avocados Are a Nutrient Absorption Booster

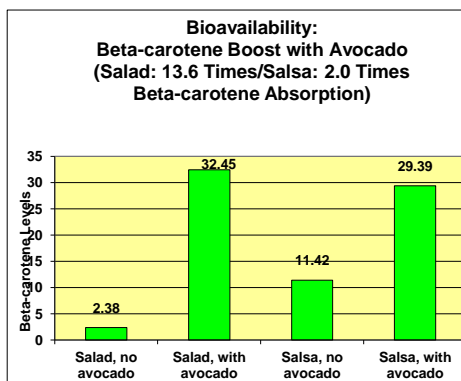
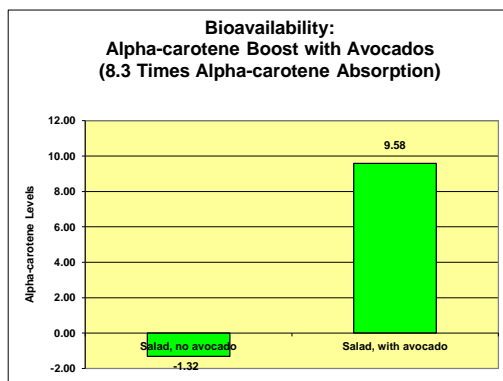
When served with other fruits and vegetables, avocados have the ability to act as a “nutrient absorption booster,” enabling the body to absorb more fat-soluble nutrients, such as alpha-carotene and beta-carotene, as well as lutein. These carotenoids are being studied for their role in heart, eye and prostate health.

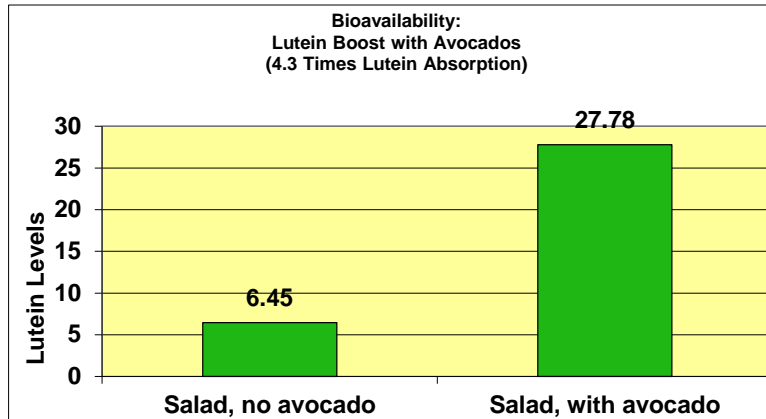
During a study at Ohio State, participants who consumed 75g, or 2.5 servings (approximately 2.5 tablespoons) of avocados along with lettuce, carrots and spinach absorbed more than 8 times the alpha-carotene, 13 times more beta-carotene and more than 4 times the lutein than subjects who only consumed lettuce, carrots and spinach. When salsa was consumed with the 150g of avocados, the subjects absorbed 4.4 times more lycopene and doubled the absorption of beta-carotene.²

Alpha-carotene – Converted to vitamin A; enhances the immune system

Beta-carotene – Converted to vitamin A; may have positive effect on immunity; may promote heart health

Lutein – May promote healthy vision





² Nurray Z. Unlu, Torsten Bohn, Steven K. Clinton and Steven J. Schwartz, "Carotenoid Absorption for Salad and Salsa by Humans Is Enhanced by the Addition of Avocado or Avocado Oil", *Journal of Nutrition*, 2005 135: 431-436.

Avocados Enhance Nutrient Quality of Diet

According to USDA's Agricultural Research Service, fruits and vegetables including California Avocados, **contain carotenoids and other plant compounds** that may play a role in preventing oxidative damage and may help enhance the immune system, reduce inflammation and detoxify contaminants.³

The **Dietary Guidelines for Americans** and the **American Heart Association** recommend eating less nutrient-poor foods, and **limiting the amount of saturated fat, trans fat, added sugars and sodium consumed**. The majority of fats in one's diet should be heart-healthy unsaturated; over 75% of the fat in avocados is unsaturated, good fat.

Avocados fit into healthy eating patterns included in the Dietary Guidelines for Americans. Following a healthy eating pattern across the lifespan, at an appropriate calorie level, can help people achieve and maintain a healthy body weight, support nutrient adequacy and reduce the risk of chronic disease.

Avocados are **virtually the only fruit with good fats** and are a delicious way to help people meet the Dietary Guidelines for Americans' recommendations to shift from eating saturated fat to good fats.

TIP: Use mashed avocados as a sandwich spread or stuffed potato topper to add flavor and texture.

³ USDA Agricultural Research Service, Plant Pigments Paint a Rainbow of Antioxidants, <https://agresearchmag.ars.usda.gov/1996/nov/plant>

Storing and Handling

There are over 500 avocado varieties in the global marketplace, but the Hass variety dominates in volume and popularity. Fresh California Avocados' peak season is typically March through September.

Storing

- For best results, order pre-conditioned avocados
- Stack cases to allow proper air circulation
- Check daily and refrigerate any ripe avocados
- Only RIPE avocados should be refrigerated
- Store at 36° to 40° F for up to one week
- FIFO (First in, first out): Place cases with FIRM avocados in back of cooler and rotate ready-to-use cases to front

Storing Cut Fruit

- Air on a cut fruit surface will turn the fruit brown
- Preserve a cut avocado's color by spraying, brushing or dipping exposed surfaces with lemon juice or milk
- Cover cut surface with plastic wrap to seal out exposure to air

For tips on how to prepare and store cut avocados for speed service, visit

<https://www.californiaavocado.com/foodservice/product-information> and click on “**California Avocado Handling for Speed Service**”

Stages of Ripeness

Careful pre-conditioning by packers and importers ensures better tasting, more flavorful avocados and allows greater flexibility when ordering avocados.

FOODSERVICE STAGES OF RIPENESS

ORDERING & HANDLING FRESH CALIFORNIA AVOCADOS

FIRM / PRE-CONDITIONED

Very hard fruit, firm to the touch. Feels like an apple. Allow 5–7 days to ripen at room temperature (60°–70°F). (15–25 lbs. of pressure or more)

BREAKING

Beginning to soften with a slight give to fruit. Feels like an orange. Ready to eat in 2–5 days if held at room temperature (60°–70°F). (10–15 lbs. of pressure)

RIPE

Easily yields to gentle pressure. Feels like a ripe peach. Good for all uses. Will remain in this condition for 2–3 days if held at room temperature (60°–70°F). Alternatively, refrigerate (36°–40°F) for up to 5 days. (5 lbs. of pressure or less)

PALM SQUEEZE

Place a California Avocado in the palm of your hand and gently close your fingers around the fruit. Avoid squeezing with fingertips. Ripe, ready-to-eat fruit will be firm yet yield to gentle pressure.

STORAGE

Only when avocados have ripened should they be stored in a refrigerator or cooler at 36°–40°F.

Check new shipments of California Avocados and place cases with FIRM avocados in back of cooler and rotate ready to use cases to front (First In, First Out).

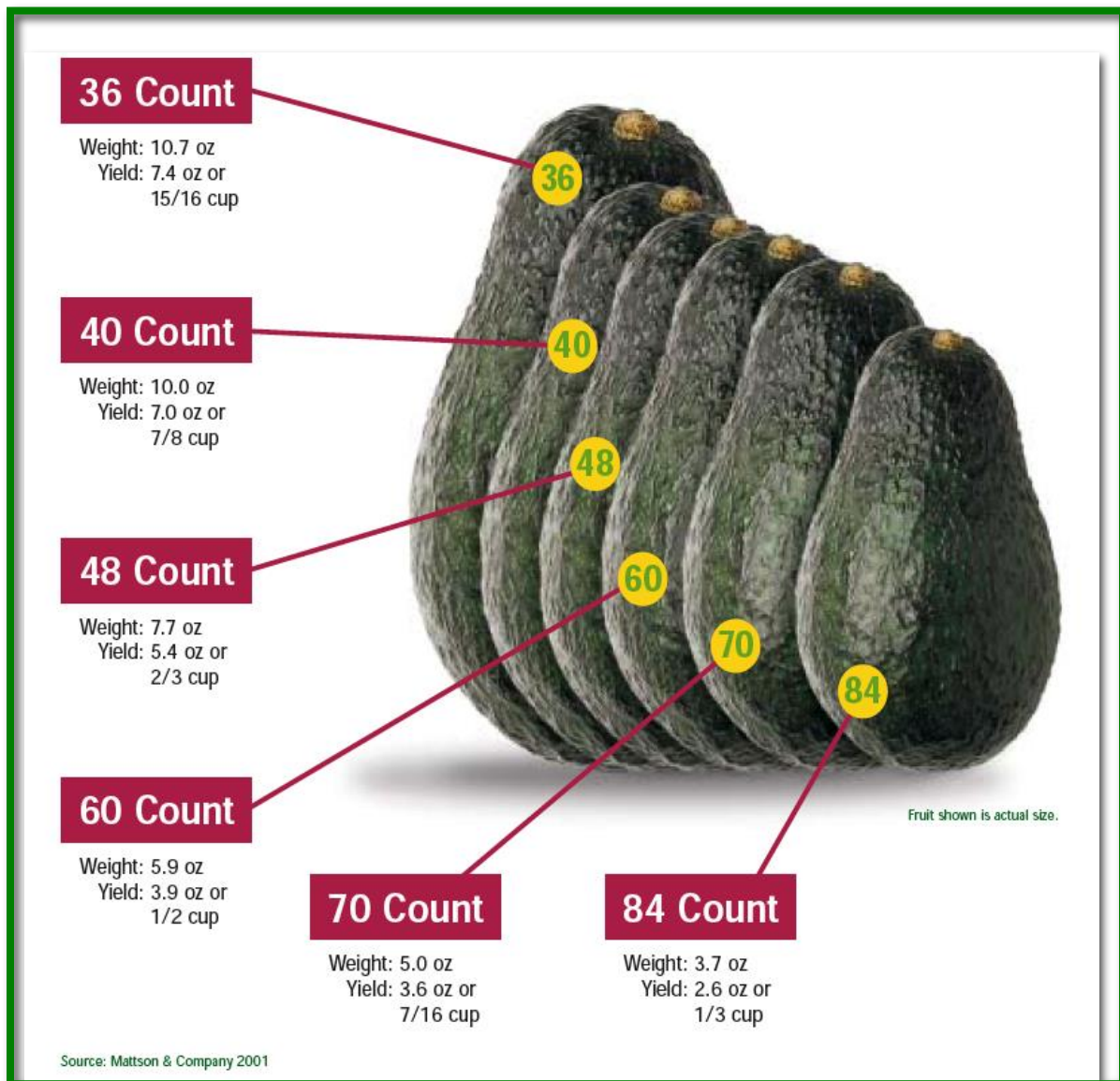


For More Information
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CaliforniaAvocado.com/Foodservice

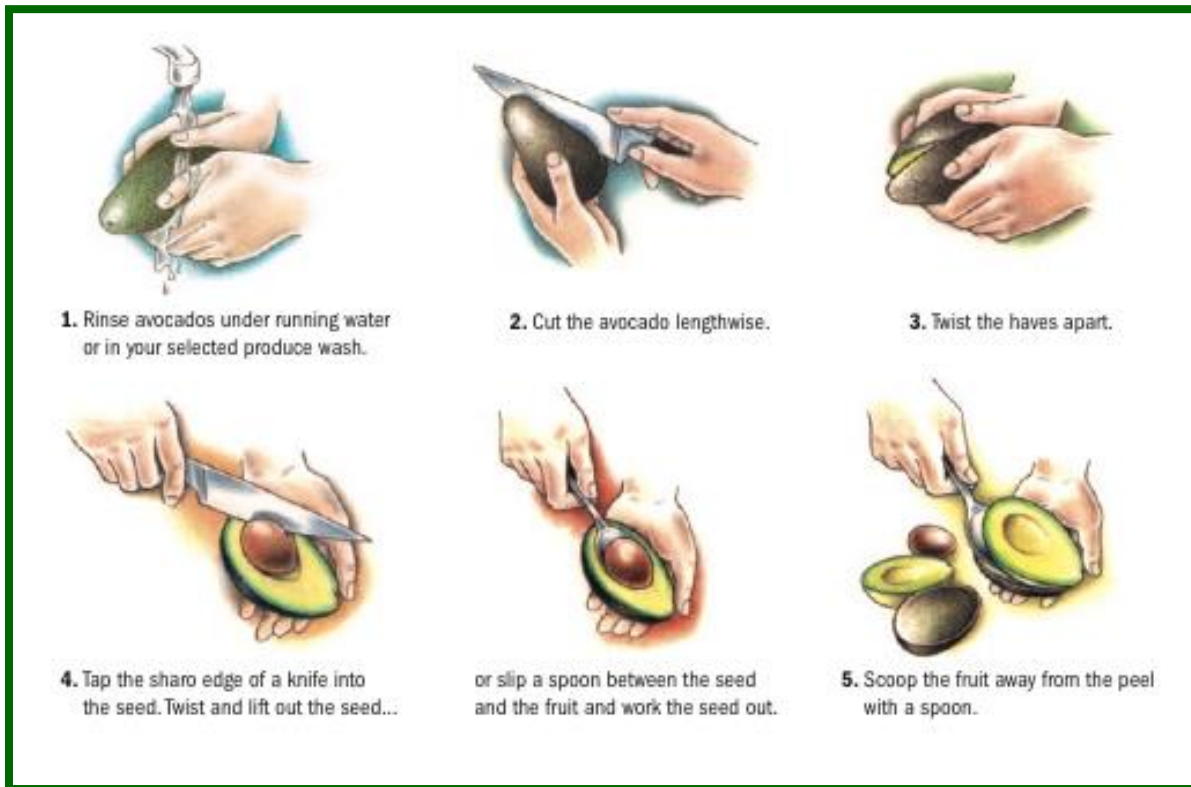
Hot Applications

- Fresh avocados can be sautéed, grilled, baked, char-grilled, battered, breaded and fried
- Avocados retain their shape and color during any cooking method
- Avoid exposure to direct heat (broiling); cook the avocados briefly or add at the end of long-cooking dishes
- For best results, choose nearly ripe avocados (Breaking Fruit)
- Avocados will soften during cooking resulting in a pleasant flavor
- If deep-frying, protect/coat the avocado with batter, dough or wonton wraps

Ordering and Selection Process



Peeling Technique



Keeping up with food trends can be frustrating and daunting – and once the list is out, is it still a trend? One thing foodservice operations can do is to focus on local, fresh, quality ingredients to help them stay ahead of the curve.

Versatile, fresh ingredients – such as Fresh California Avocados – will always fit a category on a trends list, and it opens a range of creative options for chefs: from classics with a twist to fusion and even innovative applications.

Just over half (50.8%) of US restaurants offer Avocado and/or Guacamole on the menu, up 25% since 2008; and this category is expected to grow. Of foodservice operators who use avocados, 82% choose to purchase fresh, and 80% of consumers want avocado *source of origin* stated on the menu. It is important to note that restaurants benefit from the halo effect when California is the source of origin. Most consumers perceive a restaurant offering dishes with California in the name will use *fresh ingredients* (83.4%) and *source high-quality ingredients* (80.2%), while 78.1% believe the restaurant features *consistently high-quality ingredients*.

Classics dishes are timeless and dependable. Classic dishes with a twist give customers a level of confidence knowing what to expect in terms of flavor and/or texture. The twist is the subtle surprise – be it an ingredient, flavor or cooking technique – that delivers a unique experience.

- Marco's Café in Portland OR puts their twist on the traditional grilled cheese sandwich. With rustic corn bread, brie and Asiago cheeses, layered with slices of Fresh California Avocados, and tomatoes, diners enjoy this Grilled Cheese for Grown-up sandwich
- Owner Merita Kraya of Euro Pizza Cafe in Fountain Hills, AZ puts pizzazz on her pizza with her Grecian Avocado pizza with Fresh California Avocados, kalamata olives and chicken

Fusion is still very big, and when done right, the dishes are incredible and memorable.

While fresh avocado usage in Latin America cuisine seems a natural extension, the use of Fresh California Avocado in Asian and Mediterranean cuisines is still fairly new. Chefs and restaurants will use traditional ingredients to bridge comfort level and expectations to newer menu items.

- Chef Bob Cina of Ironside in San Francisco, relies on rice flour in his tempura batter to deliver light and traditional tastes with his Tempura California Avocado with Jalapeno-Lime Aioli
- Associate Director of Culinary Arts of Stanford University, Andrew Mayne, serves up California Avocado Chicken Pita Pocket with Quinoa Salad and Yogurt Mint Dressing; slices of Fresh California Avocado provide a creamy contrast to the quinoa grain and its subtle taste complements the Yogurt Mint dressing

Not only are more foodservice operators adding avocado to the menu, but avocados are being added to more menu items. Now, we're seeing avocados not only on salads, but in burgers and sandwiches, appetizers and breakfast items.

Operators are increasingly leveraging avocado versatility, with greatest growth in bread appetizers (toast), rice entrees (bowls), blended beverages and breakfast.

Avocados are popular in California/Pacific and Traditional American dishes, and not surprisingly, in Southwestern and Tex/Mex dishes.

A recent study conducted by Menu Matters found that more than 70% percent of restaurant patrons nationwide identify avocados as a component in a dish if “California” is part of the menu item name or description. Almost two-thirds (64.3%) of consumers are willing to pay more for menu items featuring California Avocados. In fact, consumers are nearly twice as likely to purchase menu items made with California Avocado than items containing avocados from other sources of origin.

The presence of avocados increased substantially in the Breakfast/Bakery Cafes.

- Diners start the day right at CoolEatz in Palo Alto, CA chef/owner Jesse Cool’s Jesse’s Favorite Egg, California Avocado and Bacon Sandwich. Vibrant colors, bold flavors will wake-up the taste buds with thick slices of heirloom tomato slices of crisp bacon, eggs to order with chunks of Fresh California Avocados

Avocados are most popular in salads. This is followed by Hot Sandwiches and Cold Sandwiches.

- Bru’s Waffle in Santa Monica, CA menus a Crispy Chicken Salad with California Avocados
- Andrea McGinty, owner of Native Foods Café in Chicago, IL tosses Fresh California Avocados with kale, cabbage and apples for this on-trend Kale Salad with California Avocado salad

For more menu ideas and recipes, visit CaliforniaAvocado.com/Foodservice

Based on a 2018 Menu Matters and Datassential research report, “California, Avocados & Foodservice Opportunities”.

Maximizing the Avocado Yield

Lab session developed by Michael Carmel CEC, CCE, M.Ad. Ed. – Department Head of Trident Technical Institute Culinary Institute of Charleston

Objectives: Upon completing this session, students will be able to:

- Distinguish between under ripe, breaking and overripe avocados
- Successfully peel all three types of avocados
- Avoid avocado discoloration by properly applying the correct technique
- Utilize various cutting techniques maximizing the use of the avocado
- Cook avocados in different types of pizzas, stuffed dough and international applications
- Utilize various types of coatings with various ripeness stages of avocados
- Calculate fruit to waste ratio and determine the as purchased (A.P.) cost versus net cost per avocado

I. Avocado Demonstration**30 Minutes**

- A)** Defining firm, under ripe (breaker), ripe (soft fruit) and overripe avocados
- B)** Proper procedure in peeling
- C)** Proper procedure in preserving color
- D)** Proper cutting, slicing, dicing and chopping
- E)** Fruit to waste calculations

II. Working with Avocados**1 Hour**

- A)** “Firm” or Under Ripe “Breaker” – Hot applications, used in baking, roasting, grilling, deep frying and frying (chef demos baking avocado)
- B)** Ripe Avocados – Slices used in salads, appetizers – “show plate” applications (chef demos salad application)
- C)** Over Ripe Avocado – Purees, pastes, stuffing, soups and drinks (chef demos stuffing)
- D)** Breading Procedures – A’L Francaise, A’Anglaise (Standard Breading Procedure), Orly or batter, croquettes
- E)** Students taste various applications

III. Students Apply Avocado Usage

2 1/2 Hours

- A)** Students break into groups of 3-4
- B)** Each group cleans, acidizes avocados and prepares avocados for various preparations
- C)** Students do yield test on seed to flesh ratio
- D)** Each group prepares 1 flat bread pizza using under ripe avocado and 1 flat bread pizza using over ripe avocado (2 pizzas per group)
- E)** Each group uses pizza dough and under ripe avocados to make stuffed pizza
- F)** Each group prepares one compound and one simple salad using ripe avocados (individual and platter presentation)
- G)** Each group makes a deep-fried application with under ripe avocado in the following manner:
 - 1) Batter (Orly style): Chop avocado, season, place in batter, scoop and deep fry
 - 2) Croquette: Puree avocado, season, add béchamel, bread using standard breading procedures (flour, eggs, bread crumbs)
 - 3) Francaise Style: Using under ripe avocado, season avocado, dredge in flour, then egg, fry in oil
 - 4) Anglaise Style: Using under ripe avocado, season avocado, flour, dip in eggs, then bread crumbs, deep fry
 - 5) Wrapped Avocado: wrap in wonton, spring roll, puff pastry or tortilla

IV. Tasting and Evaluation

20 Minutes

- A)** Food is evaluated and critiqued
- B)** Review of proper cooking procedures based on ripeness of avocado

V. Clean Up and Closure

40 Minutes

Ingredients Needed

Fresh California Avocados (under ripe, ripe and overripe)
Lemons
Limes
Flour
Eggs
Bread crumbs
Béchamel sauce
Kosher salt
Black and white pepper
Other spices
Mixed greens
Cucumbers
Tomatoes
Peppers
Olive oil

Salad oil
Vinegars (balsamic, red, champagne)
Pizza dough
Pizza sauce
Parmesan cheese
Baking powder
Cornmeal
Beer
Hot sauce
Mozzarella cheese
Fresh herbs
Wonton wrappers
Spring roll wrappers
Flour tortillas
Puff pastry sheet

Equipment Needed

Half-sheet pans
Oven
Deep fryer
Mixing bowls
Plates
Platters
Ice cream scoops

Whips, pairing and chef knives, tongs
Gloves
Rolling pin
Pizza wheel
2-ounce ladles
Forks, knives

The Versatile Avocado

Lab session developed by Michael Carmel CEC, CCE, M.Ad. Ed. – Department Head of Trident Technical Institute Culinary Institute of Charleston

Objectives: Upon completing this session, students will be able to:

- Utilize avocados in the preparation of breakfast, lunch and dinner items
- Utilize avocados in beverages, soups, salads and sandwiches
- Utilize avocados in global cuisine recipes
- Discuss and analyze the added value avocados have in the use of various recipes and applications
- Discuss the utilization of avocados in nutritional applications in both general dining and the healthcare industry
- Create menus using avocados while meeting customer expectations and demands based on various segments of the dining market
- Cost out recipes using avocados and value-added menu pricing

I. Enhancing the Menu with Added Flavor

1 Hour

- A)** Review most popular menu items for breakfast, lunch and dinner
- B)** Review definition of various dining segments; casual, upscale casual, fine dining, chain, private dining, health care, retirement, etc.
- C)** Discuss how avocados can be main streamed into various menu items
- D)** Discuss use of avocados in global cuisine recipes to include the most popular types: Mediterranean, Asian, Latin American
- E)** Review avocado recipes and how they can be made into value added items. How can they be modified and incorporated into popular or international items?
- F)** Set up costing for menu items and menu price according to value added scenarios

II. Working with Avocados

2 1/2 Hours

- A)** Each group prepares one each breakfast, lunch and dinner item utilizing format discussed in earlier section and using avocado recipes handed out
- B)** Each group prepares one global cuisine recipe using avocado recipes
- C)** Each group develops a menu consisting of an appetizer, soup, entrée, starch, vegetable and dessert using avocados in each section of the menu
- D)** Each group picks one item from the menu and develops their own recipe

- E)** Each group utilizes pureed or mashed avocado as enhancer in beverage, dressing, rubs, sauce or stuffing

III. Tasting and Evaluation

30 Minutes

- A)** Food is evaluated and critiqued
- B)** Menus are reviewed and critiqued

IV. Clean Up and Closure

45 Minutes

Ingredients Needed

Fresh California Avocados (under ripe, ripe and over ripe)
Lemons
Limes
Flour
Eggs
Bread crumbs
Béchamel sauce
Kosher salt
Black and white pepper
Other spices

Mixed greens
Cucumbers
Tomatoes
Peppers
Olive oil
Salad oil
Vinegars (balsamic, red, champagne)
Parmesan cheese
Hot sauce
International ingredients
Fresh herbs

Equipment Needed

Half-sheet pans
Sauté pans, sauce pots
Oven, range
Deep fryer
Mixing bowls
Plates
Platters
Ice cream scoops
Whips, pairing and chef knives, tongs
Gloves
Rolling pin
Pizza wheel
2-ounce ladles

Forks, knife
Oven, range
Mixing bowls
Sieve
Muffin pans
Food processor
Whips, pairing and chef knives, tongs
Zester
Non-stick griddle
Rubber spatula
8" cake pan
Sifter
Gloves

Baking with Fresh California Avocados

Lab session developed by Julie Tuizer, MS – former Instructor Kendall College (2009-2011)

Objectives: Upon completing this course, students will know:

- How to incorporate Fresh California Avocados as a fat replacer
- The advantages of using avocados as a fat replacer
- For the most part, there isn't a major flavor difference when using avocados as a fat replacer in baked items
- The nutrient composition of a Fresh California Avocado
- The risk factors associated with high fat (especially high saturated fat) and high cholesterol diets

I. Reducing fat and sugar in baking

45 minutes

- A) Review how fat has several purposes in baking; it provides flavor, texture, a soft mouth feel and tender crumb. Avocados can help consumers meet the dietary guidelines of the American Heart Association (AHA), which are to eat a diet that is low to moderate in fat. According to the AHA, mono and polyunsaturated fats, when consumed in moderation and eaten in place of saturated or trans fats, can help reduce blood cholesterol levels and decrease risk for heart disease.

Health-conscious bakers can substitute avocado for traditional “fat” baking ingredients such as butter, shortening or vegetable oil. Bakers looking to reduce the amount of total fat and saturated fat (bad fats) in their baked muffins, quick breads, brownies, cookies and cakes can substitute avocado for the traditional fat baking ingredient, such as butter or shortening. Simply replace these ingredients with an equal amount of avocado (e.g., replace one cup of butter, with one cup of mashed avocado) in any muffin, quick bread and even some brownie and cookie recipes. By substituting avocado, the nutritional value of baked goods is increased with the fruit’s contribution of nearly 20 vitamins, minerals and phytonutrients, along with “good fats” (poly and monounsaturated fats). Additionally, calories, fat, cholesterol and sodium in a recipe may be reduced by substituting avocado for an ingredient like butter, vegetable oil or shortening, while adding fiber and potassium. Two tablespoons of avocado have 50 calories, two tablespoons of butter total 204 calories.

The Dietary Guidelines for Americans and the American Heart Association recommend eating less nutrient-poor foods, and limiting the amount of saturated fat, trans fat, added sugars and sodium consumed. Avocados are a naturally sugar-free and sodium-free fruit and are a source of “good” fats (over 75 percent of the fat in avocado is unsaturated).

Check out the data in our Baking Fat Replacement Nutritional Chart:

Baking Ingredients Nutritional Comparison						
Serving Size	Fresh Avocado	Butter, Unsalted	Shortening	Margarine	Cream Cheese	Canola Oil
	1/3 of a medium avocado (50 g)	1 Tbsp.	1 Tbsp.	1 Tbsp.	2 Tbsp.	1 Tbsp.
Calories	80	100	113	100	100	120
Total Fat (g)	8	12	13	11	10	14
Sat Fat (g)	1	7	3	2	6	1
Cholesterol (mg)	0	30	0	0	30	0
Sodium (mg)	0	0	0	105	105	0

Reference: USDA National Nutrient Database for Standard Reference, Release 28 (2015)

* nutrition data given for butter, unsalted; Shortening, household, soybean (hydrogenated) and palm; margarine, regular, 80% fat, composite, stick, with salt; cheese, cream; and canola oil, UPC: 858005002211.

Discuss how over 75% of the fat in avocados is unsaturated (monounsaturated and polyunsaturated fats), making them a great substitute for foods high in saturated fat.

- B) One-third of a medium avocado (50 g) has 80 calories and contributes nearly 20 vitamins and minerals, making it a heart-healthy nutrient-dense choice. Avocados can help consumers meet the healthy diet goals³ of the 2015 **Dietary Guidelines** for Americans and the American Heart Association. Health-conscious **bakers can substitute avocado for many traditional baking ingredients**, such as butter or shortening. Simply replace these ingredients with an equal amount of avocado (e.g., replace one cup of butter, with one cup of mashed avocado) in any muffin, quick bread and even some brownie and cookie recipes.
- C) Discuss how substituting avocado, you get the healthy benefits of the fruit and the **nutritional value of baked goods may be increased with the fruit's contribution** of nearly 20 vitamins, minerals and phytonutrients, along with heart-healthy “good fats” (poly and monounsaturated fats). Additionally, the overall calories in a recipe can be reduced by substituting avocado for a higher-calorie ingredient like butter.
- D) Review how to use a one-to-one substitution of avocado for butter, however when substituting avocado for oil it may be necessary to add another liquid to balance the recipe

- E) Discuss how vegetable- and fruit-based desserts give us a wide variety of flavors to work with giving us new flavors to traditional recipes. They contain a high amount of water which makes the final product moister, adds fiber, vitamins and minerals
- F) Discuss how sugar adds sweetness, a soft mouth feel, crumbly texture and creates caramelization in a product. Examples are white or brown sugar, honey, molasses, corn syrup or maple syrup. For those who want to reduce their sugar intake and possibly calorie intake, sugar provides 4 calories per gram, sugar substitutes can be a good choice
 - i. Splenda®, Sweet n' Low®, Sugar alcohols (i.e. sorbitol, xylitol), and Stevia are all examples of calorie free substitutes. While these provide sweetness they do not provide any browning (i.e. caramelization) in the final product and yield smaller baked goods due to the lack of air incorporated from the creaming method
 - ii. Honey, Agave Syrup, fruit puree, date sugar and sucanat are sweeteners that provide the same taste and texture of regular sugar in a final product yet are needed in smaller amounts (giving fewer calories) and offer a new taste profile
- G) Review how eggs bind a recipe together. To replace eggs in a recipe one should experiment with a variety of vegetarian substitutes. These include soy yogurt, silken tofu, flax seed meal and water combination
- H) Discuss how to substitute butter with creamed coconut (use sparingly due to its saturated fat content), tahini (sesame seed paste) or soy margarine

II. Working with Fresh Avocados

2.5 hours

- A) Each group will prepare one baked item for breakfast, side dish and dessert based on recipes handed out
- B) Each group will also prepare a similar recipe using avocados instead of oil in the baking for the dessert and the side dish (see end of Lesson Plan for Avocado Corn Muffin and Vegan Chocolate Cake with Avocado Icing recipes)
- C) Each group discusses what other types of baked items can be made with pureed avocados instead of oil
- D) Each group develops their own recipe using avocado as a fat replacement

III. Tasting & Evaluation

30 minutes

- A) Food is evaluated and critiqued
- B) Recipes are evaluated and critiqued

IV. Clean up and Closure

45 minutes

Ingredients Needed

Fresh California Avocados
Cake flour
White granulated sugar
Brown sugar
Unsweetened cocoa powder
Baking soda
Baking powder
Salt
Espresso powder
Vegetable oil
Vanilla extract
Apple cider vinegar
Unsweetened almond milk

Powdered sugar
Agave syrup
All-purpose flour
Cornmeal
Ground pepper
Scallion
Marinated sun-dried tomatoes
Oatmeal flour (see recipe below)
Oatmeal
Nonfat milk
Lime
Eggs

Equipment Needed

Oven, range
Mixing bowls
Sieve
Muffin pans
Food processor
Whips, pairing and chef knives, tongs

Zester
Non-stick griddle
Rubber spatula
8" cake pan
Sifter
Gloves

Avocado Lime Pancakes



WEIGHTS/MEASURE

1/4 cup
1/2 cup
3/8 cup
2 teaspoons
1/4 teaspoon
1/2 teaspoon
1/4 teaspoon
1/4 cup
3/4 cup plus 1 Tablespoon
1 Tablespoon
2 teaspoons
1 whole

Oatmeal Flour

1 cup

INGREDIENTS

Oatmeal Flour (recipe follows)
Oatmeal
All-purpose flour
Granulated sugar
Baking powder
Baking soda
Salt
Fresh California Avocado, pureed
Nonfat milk
Lime zest, chopped
Lime juice
Egg

Yield 3/4 cup + 1 Tablespoon

Oatmeal

Yield: 12 Servings

method

Oatmeal Flour:

1. Put oatmeal in food processor and blend until it is a powder.

Avocado Lime Pancakes

1. In a medium bowl mix together oatmeal flour, oatmeal, all-purpose flour, sugar, baking powder, baking soda and salt.
2. In a small bowl whisk together pureed avocado, nonfat milk, lime zest, lime juice and egg.
3. Add wet ingredients to dry ingredients and whisk until just combined. Let batter sit for 10 minutes to thicken.
4. Heat a nonstick griddle and coat with a nonstick spray.
5. Use a rounded 1/8 cup of batter for each 3" pancake. Cook for 3 minutes total on low heat.

Serving Suggestions

For a savory application top with a thin slice of fresh avocado, smoked salmon, a small dollop of sour cream and shaved red onion.

For a sweet application top with a thin slice of fresh avocado, sliced fresh berry, a small dollop of sour cream or whipped cream and lime zest.

Avocado Lime Pancake

Calories	110
Protein	4 g
Carbohydrates	17 g
Dietary Fiber	1 g
Total Sugars	3 g
Cholesterol	30 mg
Fat – Total	3 g
Saturated Fat	0.5 g
Trans Fat	0 g
Poly	0.5 g
Mono	1.5 g
Potassium	97 mg
Vitamin A RE	98 mcg
Vitamin C	3 mg
Sodium	260 mg
Calcium	72 mg
Iron	2 mg
Vitamin D	1 mcg
Folate	35 mcg
Omega 3 Fatty Acid	0.04 g

Avocado Cornbread Muffins



WEIGHTS/MEASURE

1 cup
1 cup
1 Tablespoon
1 1/4 teaspoons
1/4 teaspoon
2
1/4 cup
3/4 cups
1 Tablespoon
2 Tablespoons
1/4 each
As needed

INGREDIENTS

All-purpose flour
Yellow cornmeal
Baking powder
Salt
Freshly ground pepper
Egg whites
Vegetable oil
Water, room temperature
Green onion, thinly sliced
Marinated sundried tomatoes, chopped
Fresh California Avocado*, peeled, seeded and diced small
Non-stick baking spray

Yield: 10 Muffins

method

1. Pre-heat oven to 400°.
2. In a medium bowl, sift together flour, cornmeal, baking powder, salt and pepper. Mix well.
3. In a small bowl whisk together egg whites, vegetable oil and water. Gently stir in green onions, sundried tomato and avocado.
4. Make a well in the center of the dry ingredients and add the wet ingredients into the well.
5. Mix together gently until just combined.
6. Coat muffin pan with nonstick cooking spray. Pour 1/4 cup batter into each cup.
7. Bake for about 15 minutes or until lightly browned.

*Large avocados are recommended for this recipe. A large avocado averages about 8 ounces. If using smaller or larger size avocados adjust the quantity accordingly.

Variation

To prepare the muffin, replace the 1/4 cup of vegetable oil with 3/8 cup pureed avocado
Variation.

Cornbread Muffins

Calories	168.04
Protein	3.42 g
Carbohydrates	20.84 g
Dietary Fiber	2.23 g
Cholesterol	0 mg
Fat – Total	8.22 g
Saturated Fat	0.72 g
Vitamin A RE	84.54 mcg
Vitamin C	3.67 mg
Sodium	439.10 mg
% Calories from Fat	43%
% Calories from Carbohydrates	49%

Variation: Replace 1/4 cup vegetable oil with 3/8 cup pureed avocado

Calories	132.33
Protein	3.59 g
Carbohydrates	21.58 g
Dietary Fiber	2.80 g
Cholesterol	0 mg
Fat – Total	3.89 g
Saturated Fat	0.51 g
Vitamin A RE	85.74 mcg
Vitamin C	4.53 mg
Sodium	439.71 mg
% Calories from Fat	26%
% Calories from Carbohydrates	64%

Vegan Chocolate Cake with Chocolate Avocado Icing



WEIGHTS/MEASURE

INGREDIENTS

Yield: 12 Servings

Vegan Chocolate Cake (recipe follows)

1 cup

Chocolate Avocado Icing (recipe follows)

As needed

Edible flowers or sliced fresh berries and mint for optional garnish

Vegan Chocolate Cake

Yield 1 8" cake

1 1/2 cups

Cake flour

3/4 cup

White granulated sugar

1/4 cup

Brown sugar

1/4 cup

Dark unsweetened cocoa powder

1 teaspoon

Baking soda

1/2 teaspoon

Salt

1/2 teaspoon

Espresso powder

1/3 cup

Vegetable oil

1 teaspoon

Vanilla extract

1 teaspoon

Apple cider vinegar

1 cup

Unsweetened almond milk

As needed

Non-stick baking spray

Chocolate Avocado Icing

Yield 2 cups

2

Fresh California Avocados*, peeled and seeded, diced

1/2 cup

Dark unsweetened cocoa powder

1 1/2 Tablespoons

Powdered sugar

1/2 cup

Agave syrup

1/2 teaspoon

Vanilla extract

*Large avocados are recommended for this recipe. A large avocado averages about 8 ounces. If using smaller or larger size avocados adjust the quantity accordingly.

method

Vegan Chocolate Cake

1. Pre-heat oven to 350°.
2. Into a medium bowl, sift together the flour, white sugar, brown sugar, cocoa powder, baking soda, salt and espresso powder.
3. Whisk together wet ingredients and add to dry ingredients.
4. Whisk until combined.
5. Coat an 8" round cake pan with nonstick baking spray.
6. Using a rubber spatula pour the batter into the pan and bake for 35 minutes.
7. Remove from the oven and let cake cool before removing from pan.

Chocolate Avocado Icing

1. Into a medium bowl sift together cocoa powder and powdered sugar.
2. Mash or puree avocados then press through a sieve to remove green flecks. Add to the bowl.
3. Add agave syrup and vanilla extract and whisk until smooth. Refrigerate.

Assembly

1. Remove cooled cake from pan.
2. Ice with Chocolate Avocado Icing.
3. Cut into 12 wedges.
4. Optional: garnish with edible fresh flowers and or sliced fresh berries.

Variation

To prepare the cake, replace the 1/3 cup of vegetable oil with 1/3 cup pureed avocado.

Vegan Chocolate Cake

Calories	297.62
Protein	3.33 g
Carbohydrates	44.49 g
Dietary Fiber	3.95 g
Cholesterol	0 mg
Fat – Total	12.66 g
Saturated Fat	1.59 g
Vitamin A RE	15.09 mcg
Vitamin C	3.78 mg
Sodium	219.57 mg
% Calories from Fat	37%
% Calories from Carbohydrates	58%

Variation: Replacing 1/3 cup vegetable oil with 1/3 cup pureed avocado

Calories	253.29
Protein	3.46 g
Carbohydrates	45.03 g
Dietary Fiber	4.38 g
Cholesterol	0 mg
Fat – Total	7.42 g
Saturated Fat	1.29 g
Vitamin A RE	15.97 mcg
Vitamin C	4.42 mg
Sodium	220.01 mg
% Calories from Fat	25%
% Calories from Carbohydrates	69%

Making Recipes Flavorful *and* Nutritious

Lab session developed by Sara Haas, RD, LDN – Centered Chef and former Instructor
Kendall College

Objectives: Upon completing this course, students will be able to:

- Justify the importance of making recipes healthier
- Discuss the impact of overweight and obesity on health
- Understand basic nutrition concepts for assisting in recipe evaluation
- Prepare healthy recipes using the concept of flavor development
- Utilize healthy culinary techniques to improve the nutritional quality of recipes
- Make nutritious substitutions for unhealthy ingredients/techniques in recipes
- Utilize avocados in healthy recipe preparations

I. Impact of Obesity and Overweight**5 Minutes**

- A) Define obesity vs. overweight
- B) Discuss current trends in obesity
- C) Review health concerns with obesity

II. Concerns with Making Recipes Healthier**5 Minutes**

- A) Discuss hesitance to healthy recipe modification
- B) List possible roadblocks for acceptance of healthy recipes
- C) Discuss ways to overcome these roadblocks

III. Nutrition 101**15 Minutes**

- A) Define calorie, the calorie nutrients and the concepts of empty calories and calorically dense foods
- B) Review carbohydrates: how much should be consumed each day, calories per gram, simple vs. complex, and fiber
- C) Review fat: how much should be consumed each day, calories per gram, saturated fats, trans fats, and unsaturated fats
- D) Review protein: how much should be consumed each day, calories per gram, amino acids, and complete/incomplete proteins
- E) Review vitamins: water soluble, fat soluble and sources
- F) Review minerals: macrominerals and microminerals

- G) Review sodium specifically: impact on health, upper limit intake, hidden sources of salt

IV. Healthy Recipe Modification **15 Minutes**

- A) Discuss the impact of fat, sugar and salt on flavor
- B) Review techniques for developing flavor; acids, spices, seasonings, natural ingredients, cooking techniques
- C) Discuss dairy and replacements for high fat products
- D) Discuss using whole grains vs. refined grains
- E) Review culinary techniques and strategies for choosing and limiting fats
- F) Provide example of healthful recipe modification

V. Working with Nutritious Recipes **2 ½ Hours**

- A) Students break into groups of 3-4
- B) Each group develops a more nutritious version of a typically unhealthy recipe
- C) Each group prepares recipes from the Recipe Supplement

VI. Tasting and Evaluation **30 Minutes**

- A) Food is evaluated and critiqued
- B) Modified recipes are reviewed and critiqued

VII. Clean Up and Closure **30 Minutes**

Ingredients Needed

Fresh California Avocados
Jalapeno
Tequila
Lime juice
Grape tomatoes
Cumin powder
Olive oil
Corn tortillas
Water
Garlic
Spring mix lettuce
Red bell peppers

Red onion
Honey
Apple cider Vinegar
Crushed red pepper flakes
Cilantro
Kosher salt
Tilapia
Honey
Shallot
Parsley
Carrots

Equipment Needed

Small saucepan
Mixing bowls
Fish spatula
Tea towel
Platters
Pairing and chef knives
Blender
Spoons, forks, knives

Wooden spoons
Large sauté pan
Basting brush
Plates
Gloves
Tongs
Spatulas

Tequila-Glazed Fish Tacos with Fresh California Avocado Salsa

WEIGHTS/MEASURE

INGREDIENTS

Yield: 12 Servings

Tequila Glaze (recipe follows)

California Avocado Salsa (recipe follows)

12 each	Corn tortillas
1 1/2 pounds	Tilapia, cut into 2-ounce portions
1/2 Tablespoons	Vegetable oil

Tequila Glaze Yield 3 ounces

1	Jalapeño pepper, seeded, finely chopped
1/4 cup	Honey
1/4 cup	Tequila
2 Tablespoons	Cider vinegar
1/4 cup	Lime juice
1/4 teaspoon	Crushed red pepper flakes

California Avocado Salsa Yield 18 Tablespoons

1 each	Fresh California Avocado, diced 1/4"
2 Tablespoons	Red onion, fine dice
1/2 cup	Quartered grape tomatoes
1 each	Jalapeño pepper, seeded, fine dice
2 Tablespoons	Lime juice
2 Tablespoons	Cilantro, chopped
1/2 teaspoon	Cumin, powder
As needed, to taste	Kosher salt and pepper

method

Tequila Glaze

1. Combine all of the glaze ingredients in a small saucepan and bring to a boil.
2. Reduce to a simmer and reduce by half. Remove from heat and let cool.

Avocado Salsa

1. Combine all the ingredients in a large bowl and mix together gently. Refrigerate.

Tequila-Glaze Fish

1. Heat a sauté pan then add the vegetable oil.
2. Add the tilapia and sauté on both sides until fully cooked.
3. In the last few minutes of sautéing, brush the tilapia with the tequila glaze.
4. Warm the tortillas on a grill.
5. Fill each warm tortilla with one piece of glazed tilapia topped with 1 ½ Tbsp. of Avocado Salsa. Serve immediately.

*Large avocados are recommended for this recipe. A large avocado averages about 8 ounces. If using smaller or larger size avocados adjust the quantity accordingly.

Tequila-Glazed Fish Tacos with Fresh California Avocado Salsa

Calories	416.35
Protein	25.76 g
Carbohydrates	42.16 g
Dietary Fiber	5.79 g
Cholesterol	68.04 mg
Fat – Total	14.83 g
Saturated Fat	2.10 g
Vitamin A RE	63.79 mcg
Vitamin C	12.03 mg
Sodium	244.06 mg
% Calories from Fat	31%
% Calories from Carbohydrates	39%

Mesclun Salad with Fresh California Avocado Cilantro Pesto Vinaigrette

WEIGHTS/MEASURE INGREDIENTS Yield: 12 Servings

Avocado Cilantro Pesto Vinaigrette (recipe follows)

1 pound	Spring greens
1/4 pound	Carrots, julienne
1/2 pound	Grape tomatoes, quartered
1/4 pound	Red bell peppers
2 each	Fresh California Avocados*, 1/2" dice

Avocado Cilantro Pesto Vinaigrette

Yield 1 1/8 cups

1 1/2 teaspoons	Honey
4 ounces	Fresh California Avocado (flesh only), diced
4 1/2 Tablespoons	Extra virgin olive oil
4 1/2 Tablespoons	Water
1 1/2 Tablespoons	Lime juice
2 1/4 teaspoons	Shallots, minced
3 each	Cloves of garlic, roasted and minced
3/4 cup	Cilantro, fresh, chopped
3/4 each	Jalapeno, seeded and diced, (optional)
As needed, to taste	Salt and pepper

method

Avocado Cilantro Pesto Vinaigrette:

1. Place the honey, avocado, olive oil, water and lime juice into a blender and pulse.
2. Add the shallots, garlic, cilantro and jalapeno and puree until smooth. Season to taste with salt and pepper. Refrigerate.

per order

1. Combine the lettuce, carrots, tomatoes, red bell pepper and half of the diced avocados in a large mixing bowl and toss with the dressing. Plate the salad, top with the remaining diced avocado and serve.

*Large avocados are recommended for this recipe. A large avocado averages about 8 ounces. If using smaller or larger size avocados adjust the quantity accordingly.

Created by: Chef Sara Haas RD, LDN of Centered Chef Food Studios, www.centeredchef.com

Calories	141.62
Protein	2.01 g
Carbohydrates	8.71 g
Dietary Fiber	4.76 g
Cholesterol	0 mg
Fat - Total	12.19 g
Saturated Fat	1.72 g
Vitamin A RE	277.02 mcg
Vitamin C	33.23 mg
Sodium	21.44 mg
% Calories from Fat	72%
% Calories from Carbohydrates	23%

Fresh California Avocados: Proper Handling

Lab session developed by Ezra Eichelberger, C.H.E., Professor in Hospitality and Service Management, Culinary Institute of American, Hyde Park, NY

Objectives: Upon completing this course, students will know:

- How to prepare dishes in view of the guests at an action station or tableside
- How to handle food products in a comfortable, sanitary manner by using French and Russian-style service techniques and utensils tableside or at an action station.
- How to properly peel, core, slice and plate an avocado in an efficient, eye-appealing and sanitary manner.
- How to properly peel, core, slice and plate an avocado in an efficient, eye-appealing and sanitary manner.

I. Set-up and Techniques

45 minutes

- A) Discuss with students that upon graduation they may be asked to prepare a dish in front of a potential employer or be asked to perform a demonstration representing their employer. An effective demonstration could be the deciding factor of being offered a job
- B) Also discuss the public's ongoing interest in food, food preparation and popularity of action stations at banquets. Discuss how proper food handling techniques is useful in more situations than merely tableside presentations

The main issue is to get the students thinking about the difference between preparing food in the kitchen where they tend to take some short cuts as opposed to preparing food in front of guests where their performance must be impeccably sanitary, efficient, and friendly

- C) Discuss the three primary concerns of handling the food in a sanitary manner in front of diners, with the goal to make it look effortless while maintaining sanitary conditions:
 - 1) mise en place: **everything** in its place. Organization is key to a flawless performance, it is critical to make a checklist to ensure everything is on hand before starting the preparation
 - 2) utensils: everything must be spotlessly clean sharpened, and without any markings to identify its owner

- 3) technique: discuss the efficient method of opening, seeding/coring, and slicing an avocado – which students will practice at the end of this session
- D) Review the issues and importance of proper sanitation when performing at an action station or tableside. Ready-to-eat food should not be touched with bare hands; gloves are unappetizing and a false sense of sanitation. Another issue of cooking in front of guests is not being able to taste the food contrary to what is taught in the kitchen. So any recipe must be tested in advance and followed. Guests may have the option of altering the recipe, so there must be a basic concept of food combinations and balance
- E) One technique used tableside or at an action station is called “*pince*” which is French for pinch. Since preparing food in front of guests is a **performance**, it is better to execute a task that looks difficult with ease – and not to use tongs. A tablespoon or slightly larger and a dinner fork is sufficient
- 1) Have the students make an “OK” sign with their hand. Twist their wrist inward so their palm faces the ceiling
 - 2) Rest the end of the handle of the spoon on the middle, ring and pinky fingers so the end of the spoon handle is securely squeezed by the pinky
 - 3) Place the fork handle between the thumb and index finger with the tines to the ceiling. This is awkward for a few times then becomes much more comfortable. It is easier to practice this with a piece of bread rather than in thin air

Side Note: There is some controversy within the industry whether Tableside cooking is French service or Russian service. Ultimately, it doesn't matter; but historically, the Russians began carving meat tableside for official banquets. Once the concept was shared with the French, it was soon adopted, embellished with fancier costumes and flambé and claimed as French service. Hence the French terms for tableside equipment. Serving bread or other foods to the guests at the table with *pince* is actually French service, but is often referred to as serving bread “a la Russe” or “a la Francaise”

- F) Demonstrate the cut-seed/core-peel technique with an avocado
- 1) cut – hold the avocado in one hand, chef's knife in the other; puncture the skin; insert blade to the core/seed from one end to the other; rotate the avocado until knife is at the initial puncture area
 - 2) twist the avocado halves
 - 3) seed – strike the avocado seed with the chef's knife and twist; over the blunt side of the knife, pinch where the seed meets the blade
 - 4) slice or dice the avocado; scoop out the meat with the spoon
 - 5) arrange the avocado on the plate with fork and spoon

- G) As a class, identify the utensils required for a tableside presentation of Guacamole
- H) Have the class individually identify the utensils, equipment and ingredients required for an Avocado Caesar salad

II. Working with Fresh Avocados

1.5 hours

- A) Each student will practice “pince” technique until successfully able to handle food properly
- B) Working in teams of twos, each group will prepare mise en place for tableside guacamole and tableside Avocado Caesar salad
- C) Each group will practice cutting-seeding-peeling Fresh California Avocados
- D) Each group will then prepare a guacamole and an Avocado Caesar salad

III. Tasting & Evaluation

30 minutes

- A) Presentation is evaluated and critiqued

IV. Clean up and Closure

30 minutes

Ingredients Needed

Fresh California Avocados
 Tomatoes
 Red onion
 Cilantro
 Lemons or Limes
 Garlic
 Anchovies

Grated Parmigiano-Reggiano
 Egg (coddled or raw)
 Croutons
 Powdered sugar
 Salt
 Pepper

Equipment Needed

Wooden bowls
 Large spoons
 Chef knife

Dinner forks
 Spoons for ingredients
 Plates

California Avocado Commission Certification Exam

This examination covers materials in all teaching units.

<i>Name</i>	<i>Class</i>	<i>Date</i>

Please fill in the blanks.

1. The avocado originated in 750 B.C. in _____.
a) Central America c) Mexico
b) South America d) Southwest United States
2. All "Hass" avocados originated from the mother tree based in:

a) La Habra Heights, CA c) Tijuana, Mexico
b) Santa Barbara, CA d) San Jose, CA
3. An avocado is _____.
a) from the grapefruit family c) a single seed vegetable
b) from the eggplant family d) a single seed berry
4. A mature avocado tree can produce _____ avocados per year.
a) 150-300 c) 600-700
b) 400-500 d) 800-1,000
5. The content of a box of avocados can hold up to _____ avocados.
a) 24 d) 70
b) 36 e) 84
c) 60 f) all of the above
6. The leading producer of domestic avocados with about 90% of the nation's crop is

a) Florida c) Mexico
b) California d) Chile
7. The California avocado tree can produce up to _____ pounds of fresh fruit each year.
a) 500 c) 200
b) 100 d) 1,000

8. An average Fresh California Avocado weighs between _____.
- a) 14-16 ounces c) 3-4 ounces
b) 10-12 ounces d) 5-12 ounces
9. There are _____ varieties of Fresh California Avocados grown commercially.
- a) 8 c) 25
b) 500 d) 100
10. Nearly ripe avocados should be stored _____.
- a) at room temperature c) at 34 degrees
b) under refrigeration d) between 36-40 degrees
11. Ripe avocados should be stored _____.
- a) at room temperature c) at 34 degrees
b) under refrigeration d) between 36-40 degrees
12. Breaking fruit is _____.
- a) a pounding surf c) an avocado which begins to soften
b) a broken avocado d) an over ripe avocado
13. Firm fruit will ripen when stored at room temperature for _____.
- a) 2-3 days c) 5-7 days
b) 4-5 days d) 10-12 days
14. When cutting an avocado open, brush the flesh with _____.
- a) lemon juice c) vinegar
b) salt d) hot sauce
15. The best culinary application for nearly ripe avocados is _____.
- a) deep frying, baking or grilling c) to serve fresh
b) boiling d) none of the above
16. The best application for cooking ripe avocados is _____.
- a) battered, deep frying c) boiling
b) baking or grilling d) to serve fresh
17. The best culinary application for over ripe avocados is _____.
- a) batter and deep-frying c) boiling
b) baking or grilling d) pureeing

18. The best way to remove the pit from an avocado is _____.
- a) cut avocado in half and twist; put knife in pit and twist out
 - b) cut avocado in half and twist; pull pit with fingertips
 - c) cut avocado in half and twist; pry pit out with tweezers
19. When served with other fruit, avocados are considered _____.
- a) a nutrient booster
 - b) a diet food
 - c) used to improve eyesight
 - d) a dietary supplement
20. How does a restaurant benefit when "California" is identified as a source of origin on menus?
- a) consumers perceive restaurant will **use** fresh ingredients
 - b) consumers perceive restaurant **sources** high-quality ingredients
 - c) consumers perceive a positive halo effect of the restaurant
 - d) all of the above
21. Which menu category are operators using avocados the most?
- a) Cocktails
 - b) Desserts
 - c) Bread Appetizers (i.e. toast)
 - d) Salads
22. Fresh California Avocados are grown _____.
- a) March - September
 - b) Year-round
 - c) June - October
 - d) March - June
23. The avocado contains _____mg of cholesterol and _____grams of trans fat.
- a) 1 and 3
 - b) 0 and 0
 - c) 0 and 5
 - d) 2 and 0
24. What is the ratio of avocado flowers becoming an avocado?
- a) 1 in 20
 - b) 1 in 1
 - c) 1 in 10,000
 - d) 1 in 100,000

California Avocado Commission Exam Answer Sheet

1. The avocado originated in 750 B.C. in a) Central America.
a) Central America c) Mexico
b) South America d) Southwest United States
2. All "Hass" avocados originated from the Mother Hass Tree based in: La Habra Heights.
a) La Habra Heights, CA c) Tijuana, Mexico
b) Santa Barbara, CA d) San Jose, CA
3. An avocado is d) a single seed berry.
a) from the grapefruit family c) a single seed vegetable
b) from the eggplant family d) a single seed berry
4. A mature avocado tree can produce a) 150-300 avocados per year.
a) 100-300 c) 600-700
b) 400-500 d) 100-200
5. The content of a box of avocados can hold up to d) all of the above avocados.
a) 24 c) 48
b) 36 d) all of the above
6. The leading producer of domestic avocados with about 90% of the nation's crop is California.
a) Florida c) Mexico
b) California d) Chile
7. The California avocado tree can produce up to 200 pounds of fresh fruit each year.
a) 500 c) 200
b) 100 d) 1,000
8. An average Fresh California Avocado weighs between d) 5-12 ounces.
a) 14-16 ounces c) 3 - 4 ounces
b) 10-12 ounces d) 5-12 ounces
9. There are 8 varieties of Fresh California Avocados grown commercially.
a) 8 c) 25
b) 500 d) 100

10. Nearly ripe avocados should be stored d) between 36-40 degrees.
a) at room temperature c) at 34 degrees
b) under refrigeration d) between 36-40 degrees
11. Ripe avocados should be stored b) under refrigeration.
a) at room temperature c) at 34 degrees
b) under refrigeration d) between 36-40 degrees
12. Breaking fruit is c) an avocado which begins to soften.
a) a pounding surf c) an avocado which begins to soften
b) a broken avocado d) an over ripe avocado
13. Firm fruit will ripen when stored at room temperature for c) 5-7 days.
a) 2-3 days c) 5-7 days
b) 4-5 days d) 10-12 days
14. When cutting an avocado open, brush the flesh with a) lemon juice.
a) lemon juice c) vinegar
b) salt d) hot sauce
15. The best culinary application for nearly ripe avocados is a) deep frying, baking or grilling.
a) deep frying, baking or grilling c) to serve fresh
b) boiling d) none of the above
16. The best application for cooking ripe avocados is d) to serve fresh.
a) battered, deep frying c) boiling
b) baking or grilling d) to serve fresh
17. The best culinary application for overripe avocados is d) pureeing.
a) batter and deep-frying c) boiling
b) baking or grilling d) pureeing
18. The best way to remove the pit from an avocado is a) cut avocado in half and twist; put knife in pit and twist out.
a) cut avocado in half and twist; put knife in pit and twist out
b) cut avocado in half and twist; pull pit with fingertips
c) cut avocado in half and twist; pry pit out with tweezers
19. When served with other fruit, avocados are considered a) nutrient booster.
a) a nutrient booster c) used to improve eyesight
b) a diet food d) a dietary supplement

20. How does a restaurant benefit when “California” is identified as a source of origin on menus? d) all of the above
- a) consumers perceive restaurant will **use** fresh ingredients
 - b) consumers perceive restaurant **sources** high-quality ingredients
 - c) consumers perceive a positive halo effect of the restaurant
 - d) all of the above
21. Which menu category are operators using avocados the most? c) Bread Appetizers
- a) Cocktails
 - b) Desserts
 - c) Bread Appetizers (i.e. toast)
 - d) Salads
22. The Fresh California Avocado is grown year-round.
- a) March - September
 - b) year-round
 - c) June - October
 - d) March - June
23. The avocado contains b) 0 mg of cholesterol and 0 grams of trans fat.
- a) 1 and 3
 - b) 0 and 0
 - c) 0 and 5
 - d) 2 and 0
24. What is the ratio of avocado flowers becoming an avocado? C) 1 in 10,000
- a) 1 in 20
 - b) 1 in 1
 - c) 1 in 10,000
 - d) 1 in 100,000