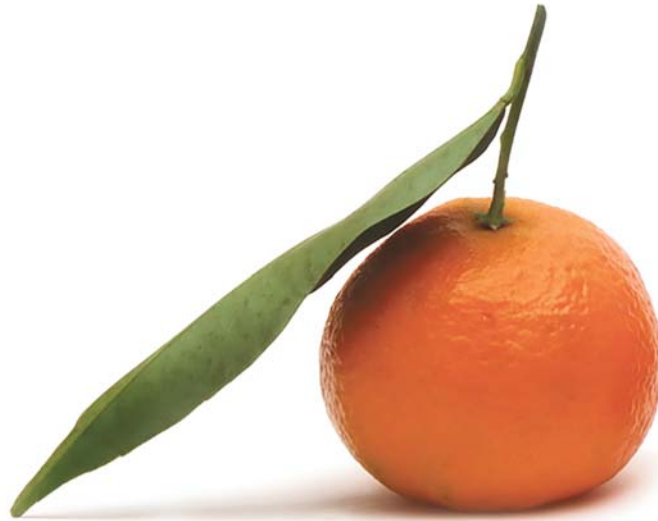


Mandarins, Tangerines & Clementines



The term “mandarin” refers to *Citrus reticulata*, sometimes called “kid-glove oranges,” and is characterized by deep orange skin with easy peeling and separation into sections. The fruit originated in China, hence its name. Tangerines, a type of mandarin, originated in the 1800s and refer to sweet mandarins shipped from the Port of Tangiers, Morocco.

The wide use of the term ‘tangerine’ for ‘mandarin’ has led to some confusion, though not nearly as much as the very popular Clementine. Clementines are a type of mandarin orange with a murky past: one scholar believed the varietal originated in North Africa, but another convinced most modern botanists the petite oranges probably came from the Canton region of China. The fruit was brought to Florida in the early 1900s and then to California a few years later.

Shaped like slightly flattened spheres with thin, leathery skin, mandarin rinds go from relatively smooth to bumpy as the fruit matures and separates from the interior flesh, giving the delectables their easy-peel reputation. Another type of mandarin, the satsuma, originated in Japan. Introduced to Florida in the 1870s, saplings were planted along the Gulf Coast in the early 1900s. Subsequent freezes limited the states that could successfully produce the fruit, with California, Florida, Texas, and Arizona taking the lead. California accounts for more than three-quarters of U.S. supply; globally, China is the leading mandarin/tangerine producer.

References: Purdue University, UC Davis Postharvest Technology website, University of Florida/IFAS Extension.

SEASONAL AVAILABILITY

LOCATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ARIZONA	●	●	●	●	●	●	●	●	●	●	●	●
CALIFORNIA	●	●	●	●	●	●	●	●	●	●	●	●
FLORIDA	●	●	●	●	●				●	●	●	●
TEXAS	●	●	●							●	●	●
CHILE					●	●	●	●				
CHINA	●	●	●	●	●	●	●	●	●	●	●	●
EUROPEAN UNION											●	●
MEXICO	●	●	●	●						●	●	●

References: Agricultural Marketing Resource Center, USDA.

TYPES, VARIETIES & CUTS

Fruit falls into three categories or classes: mandarins, tangerines, and satsumas—though the differences have more to do with origin and type of tree than the fruit produced. The most popular varieties are Sumo, Satsuma, Clementine, Dancy, Honey, Minneola Tangelo, Pixie, and Sunburst. Other varieties include Emperor, Golden Nugget, Kara, Le-dar, Oneco, Owari, Ponkan, Robinson, Sugar Belle, Super Nova, and Wase.

Roughly 70 percent of U.S. mandarins/tangerines are destined for the fresh market. The remaining 30 percent are processed for juice, canned sections, or for sweetening and coloring additives to orange or grapefruit juice.

References: Agricultural Marketing Resource Center, Purdue University, University of Florida/IFAS Extension.

PESTS & DISEASE

Common diseases that affect mandarin varieties are *chaff scale*, *citrus greening*, *citrus canker*, *green and blue mold*, *stem-end rot*, *brown rot*, *anthracnose*, *alternaria brown spot*, *citrus scab*, *greasy spot*, *sooty mold*, and *phytophthora*.

Pests of concern include the *Asian citrus psyllid*, *diaprepes root weevil*, *light brown apple moth*, *aphids*, *brown garden snails*, *leafminers*, *citrus rust mites*, *European earwigs*, *rose beetles*, *glassy-winged sharpshooters*, and *fire ants*.

References: Agricultural Marketing Resource Center, UC Davis Postharvest Technology website, University of California Integrated Pest Management.

CULTIVATION, STORAGE & PACKAGING

Preharvest:

Mandarin trees tend to be smaller and more cold and drought tolerant than sweet orange trees, but can be about the same size depending upon variety. Older trees grow as tall as 25 feet with thin, thorny branches. Flowers are single or bunched in small numbers. Less than 1 percent of pollinated buds will produce fruit. The tree bloom to harvest time is about 6 to 10 months.

Soil should be prepared before planting to ensure good drainage. Rootstock is created via grafting to create trees as resistant to disease as possible. Most citrus thrives at tropical and subtropical environments. Ideal temperatures should remain between 60 to 89°F. Frost protection is vital as citrus freezes quickly at temperatures below 28°F. Damage can be avoided by close monitoring of weather conditions followed by wind and water frost prevention when necessary. Wind prevention involves using fans on tall poles blowing warmer air to mix with colder air near the ground. Watering can help slow the loss of heat that builds up in soil during daylight hours.

Heavier, higher quality harvests cause stress to trees and lessen the next year's harvest. Growers combat the problem by thinning fruit, or using chemical growth regulators early in the season. Gibberellic acid helps to prevent blemishes when applied at color-break and lengthens the growing season.

Groves average about 180 trees per acre with 12- by 20-foot spacing. Some cultivars such as Sunburst are self-incompatible and require pollinizer trees to be planted nearby.

Postharvest:

Although citrus is hardier than many other fruits, it is still easily bruised and is thus picked by hand. Fruit is packed into bins in the field and transported to packinghouses for cleaning, grading, sizing, and final packing. Large cells in the skin make the fruit more susceptible to oil spotting (oleocellosis). Fruit that does not meet quality standards is sent to processing.

In general, mandarins can be kept for 2 to 6 weeks if stored between 41 and 46°F with 90 to 95% relative humidity. Chilling injury results from exposure temperatures below 41°F. Storage length depends on cultivar, ripeness at harvesting, and decay control. Removing ethylene from vehicles and facilities used to transport and store the fruit reduces decay. Limited ethylene exposure is used for degreening, not ripening.

References: Purdue University, UC Davis Postharvest Technology website, University of California Riverside, University of Florida/IFAS Extension.

GOOD ARRIVAL GUIDELINES

Generally speaking, the percentage of defects shown on a timely government inspection certificate should not exceed the percentage of allowable defects, provided: (1) transportation conditions were normal; (2) the U.S. Department of Agriculture (USDA) or Canadian Food Inspection Agency (CFIA) inspection was timely; and (3) the entire lot was inspected.

TANGERINES

U.S. Grade Standards	Days Since Shipment	% of Defects Allowed	Optimum Transit Temp.
12-3	5	15-[8 VSD]-5	40
	4	15-[8 VSD]-5	
	3	14-[8 VSD]-4	
	2	13-[7 VSD]-4	
	1	12-[7 VSD]-3	

There are no good arrival guidelines for this commodity specific to Canada; U.S. guidelines apply to shipments unless otherwise agreed by contract.

References: DRC, PACA, USDA.

TANGERINES: WEEKLY MOVEMENTS & PRICES, USA

