

Table 2. Critical frost damage temperatures for selected citrus fruits

Fruit	Critical temperature*	
	°F	°C
lemon buds and blossoms	27.0	-2.8
lemons, button, <1/2 inch (13 mm) diameter	29.5 to 30.5	-1.4 to -0.8
lemons, green, >1/2 inch (13 mm) diameter	27.0 to 29.5	-2.8 to -1.4
lemons, tree-ripe	26.0 to 30.5	-3.3 to -0.8
oranges, green	28.5 to 29.5	-1.9 to -1.4
oranges, grapefruits, and mandarins, half-ripe	27.0 to 29.0	-2.8 to -1.7
oranges, grapefruits, and mandarins, tree-ripe	25.0 to 29.0	-3.9 to -1.7

Note: *Critical temperature is affected by relative humidity and duration. Fruits can withstand the lower temperature ranges in drier air and shorter durations of cold.

Cold snap

Citrus crops are very sensitive to freezing temperatures and frost; exposure for more than 30 minutes can damage a harvest.

Effect on fruit

Juice vesicles inside fruit rupture as ice crystals expand, ruin body of fruit



- Fruit can be used soon after frost, but becomes mushy, dries up quickly

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Source: University of California, Four Winds Growers

Effect on trees

Ice crystals form in plant cells, taking water from tissues, disrupting fluid movement

- Damaged leaves, twigs first appear water-soaked, then wither and turn dark brown or black

Examples of fruit hardiness

Navel orange	28°F (-2°C)	Protect below these temperatures
Clementine	28°F (-2°C)	
Tangerine	32°F (0°C)	
Satsuma mandarin	24°F (-4°C)	
Lemon	32°F (0°C)	
Sweet lime	30°F (-1°C)	
Grapefruit	28°F (-2°C)	

