Melons and Cantaloupes

Revised 2018

Thermal Properties

	Honeydew	
	English	**Metric**
Moisture, %	89.66	--
Protein, %	0.46	--
Fat, %	0.10	--
Carbohydrate, %	9.18	--
Fiber, %	0.60	--
Ash, %	0.60	--
Specific Heat Above Freezing	0.94 Btu/lb*°F	3.92 kJ/(kg*K)
Specific Heat Below Freezing	0.44 Btu/lb*°F	1.86 kJ/(kg*K)
Latent Heat of Fusion	129 Btu/lb	299 kJ/kg

	Watermelon	
	English	**Metric**
Moisture, %	91.51	--
Protein, %	0.62	--
Fat, %	0.43	--
Carbohydrate, %	7.18	--
Fiber, %	0.50	--
Ash, %	0.26	--
Specific Heat Above Freezing	0.95 Btu/lb*°F	3.96 kJ/(kg*K)
Specific Heat Below Freezing	0.42 Btu/lb*°F	1.78 kJ/(kg*K)
Latent Heat of Fusion	132 Btu/lb	306 kJ/(kg*K)

	Casaba	
	English	**Metric**
Moisture, %	92.00	--
Protein, %	0.90	--
Fat, %	0.10	--

Carbohydrate, %	6.20	--
Fiber, %	0.80	--
Ash, %	0.80	--
Specific Heat Above Freezing	0.95 Btu/lb*°F	3.99 kJ/(kg*K)
Specific Heat Below Freezing	0.45 Btu/lb*°F	1.87 kJ/(kg*K)
Latent Heat of Fusion	132 Btu/lb	307 kJ/kg

Storage Conditions

	Temperature		Relative Humidity	Storage Period	Freezing Point	
	°F	°C	%	Weeks	°F	°C
Cantaloupes	35-40	2-4	90-95	2-3	30	-1
Casaba Melons	45-50	7-10	90-95	4-6	30	-1
Crenshaw Melons	45-50	7-10	90-95	2	30	-1
Orange-Flesh Melons	45-50	7-10	90-95	1-2	30	-1
Honeydew Melons	45-50	7-10	90-95	2-3	30	-1
Persian Melons	45-50	7-10	90-95	2	31	-0.5
Watermelons	50-60	10-26	90-95	2-3	30	-0.5
It should be noted that riper melons can be stored at the lower temperature.						

Most melons are cold-sensitive, especially near 32°F (0°C). Chilled melons show surface discoloration, ripen unevenly, develop pits, and are off-flavored. For cold-sensitive melons listed, the higher the sugar content or maturity, the less chill sensitive.

Melons with suggested storage temperatures of 45-50°F (7-10°C) should never be allowed to cool below 40°F (4.4°C), because exposures of a few days can result in chilling injury. Treating Honeydew melons with ethylene at warm temperatures before storage initiates ripening and reduces their chilling sensitivity, and thus they can be stored safely for few days at 37-41°F (2.5-5°C). Alternatively, harvesting Honeydew melons at a higher stage of maturity (11.0% soluble solids instead of the required minimum 10%) allows the melons to tolerate low storage temperatures without causing chilling injury.

Hot water dips (135-140˚F = 57-60°C for 3 minutes) can be effective for decay control on cantaloupe melons. Improved sanitation is needed if plastic film bags or liners are used to wrap the fruit during storage at 40°F (4.4°C). Modified atmospheres containing 10-15% CO_2 are beneficial to cantaloupes and other melons.

Watermelons should not be exposed to ethylene or to products that produce substantial amounts of ethylene such as bananas, apples, pears, or cantaloupes, as it hastens softening and development of off-flavor. Watermelons should be moved to consumers within 2-3 weeks after harvest because of the loss of sweetness and crisp flesh texture. All melons should be inspected before acceptance for storage.

Diseases of Melons

Alternaria Rot	Often follows sunscald and chilling injury. Irregular, circular, small russet or chestnut-brown spots, either in rind only or extending into the flesh as a grayish-black, moist, spongy mass that can be lifted from the healthy flesh. Later covered with velvety, black mold. **Control:** For cantaloupes, refrigerate between 35 and 40°F (2 and 4.4°C). For other melons, do not expose to temperatures below 45°F (7°C), or disease will become more serious when melons are removed from storage, except Honeydew melons that have been treated with ethylene.
Anthracnose	First green and water-soaked spots, later turning reddish-brown and definitely sunken. Flesh of melons near diseased portions has a bitter taste. Finally pink spore masses show up. On young watermelon fruit, small, depressed black spots, circular raised welts in rind, later with brown, sunken centers and may produce pink spore masses. **Control:** Selection of resistant varieties and field sanitation. Prompt cooling and refrigeration since disease does not develop under 50°F (10°C).
Penicillium Blue Mold Rot	Not of great importance except on ripe melons or those stored for some time or mechanically damaged. Occurs as secondary invader often on Honeydew, after low temperature injury. Characteristic light-blue or light-green spore masses. **Control:** Adequate refrigeration and avoidance of long storage.
Cladosporium Rot	Most often on Honeydew and Orange-flesh melons, less so on cantaloupes. Small, black, shallow spots later covered with a velvety-green mold. Usually at the stem scar of cantaloupes. Resembles *Alternaria* rot, but is distinguished by presence of dark green mold, later turning black, by shallow nature of decay and by absence of brown colors in light-skinned types. **Control:** Similar to *Alternaria* rot.
Fusarium Rot	Brown areas on light-colored melons, white or pink mold with spongy, soft diseased tissues. **Control:** Avoid mechanical injuries and promptly refrigerate to proper storage temperature.
Phytophthora Rot	Primarily on Honeydew melons but also on cantaloupes. Brown, slightly sunken areas later water-soaked and covered with a dirty-white felt-like mold. Diseased flesh, although practically normal in color, has slightly sour taste. Skin loosens and forms blisters. **Control:** Remove all melons showing disease and refrigerate promptly.
Rhizopus Soft Rot	Softening and water-soaking of diseased tissues, with slightly sour odor and taste. If diseased tissues are pulled apart, coarse fungus filaments can be seen.

	Control: Avoid bruising and injuring melons; refrigerate promptly.

Diseases of Watermelons

Anthracnose	See above.
Myco Sphaerella Black Rot	Sometimes causes blossom and stem end rot. Water-soaked, turning black, firm and with large numbers of little black bodies on the rind. **Control:** Careful handling at all stages and holding watermelons at 50°F (10°C) tends to prevent or retard black rot.
Pythium Rot and Phytophthora Rot	Similar in symptoms. Initially water-soaked, finally appearing chocolate-brown with flabby diseased tissues. Pythium-rotted tissues have marshy odor, phythophthora-rotted tissues have slightly sour odor and taste and show concentric rings on rind. May spread rapidly from fruit to fruit in a load or bin. **Control:** Holding watermelons at 50°F (10°C) retards the spread of the fungus.
Stem End Rot	Attacks through wounds or follows other decay invaders. Softening and water-soaking of stem end tissues, becoming brown and shriveled. **Control:** Field and packing plant sanitization. Maintain proper storage conditions since it is primarily a rot which becomes well established before storage.

Physiological Disorders

Chilling Injury	Reddish-tan patches on surface or a general "smoking" appearance of fruit rind; may be slightly sunken in severe cases; increased decay after transfer from storage temperature to higher temperatures. **Control:** Avoid prolonged exposure to lower than recommended temperatures.
Ground Spot	Avoid storing cantaloupes and other melons with large ground spots. This area will darken during storage and also lose moisture rapidly.
Solar Yellowing (Honeydews)	Pale to bright yellow patches on the surface sometimes associated with exposure of the fruit to the sun. Has no adverse effect on edible quality. **Control:** Good cover of vines reduces exposure to sun.
Solar Damage (Cantaloupes)	Depending on sun exposure, areas can be sunken or remain dark green. **Control:** Good leaf cover during ripening.
Sugar Cracks (Honeydews)	Raised corky welts on strands are a rudimentary net, similar to that on cantaloupes. They have no adverse effect on eating quality. They are indicative of riper fruits.

	Control: None needed but fruit may be too ripe for commercial shipments; these areas develop decay during storage.
Vein Tract Browning (Cantaloupes)	The smooth bands that separate the well-netted portions of some cantaloupes turn tan to dark brown. Condition is a symptom of aging and water loss, and detracts from appearance. **Control:** Prompt refrigeration to recommended temperatures; avoid temperatures near 32°F (0°C).

Freezing

All melons are frozen as fruit cocktail items either as individuals or mixtures. Soft-ripe freeze best, but they do lose some of their crispness because of freezing. Most packs have 30-50% sugar syrup added for sweetening. A limited quantity is frozen as "melon balls," having a diameter of 0.75 to 1.0 inches (2 to 2.5 cm).

WFLO is indebted to Dr. Marita Cantwell, Department of Vegetable Crops, University of California at Davis, and Dr. Elhadi Yahia, Universidad Autonoma de Queretaro, for reviewing and revising this release.