

# Honey Dew Melon

Gene Lester and Krista Shellie

Kika de la Garza Subtropical Agricultural Research Center  
USDA-ARS, Weslaco, TX

**Scientific Name and Introduction:** *Cucumis melo* L., (Inodorus Group) or Winter melons (even though they are predominantly grown in the Spring in Texas and Summer elsewhere) include Honey Dew, casaba, crenshaw and canary melons (Bailey, 1976). This melon group is an annual, tender, running herb of the Cucurbitaceae (Gourd) family that is grown for its sweet, flavorful, light-green, white-fleshed or pink-fleshed fruits. Honey Dew melons are the predominantly grown and shipped melon of this group and are primarily produced in Arizona, California, and Texas.

**Quality Characteristics and Criteria:** Minimum quality standards for Honey Dew melons are: good internal quality of 8% SSC (10% in California); firm; well formed; mature; and free of aphid stain, rust spot, bruises, broken skin, solar injury (sun scald and sunburn), hail damage, moisture loss, insect damage, or growth cracks (USDA, 1981). Non-hybrid Honey Dew melons are ready for harvest (cutting) when the rind is slightly waxy and the color is mostly whitish with a light-green tinge. These fruit should be well filled out and covered by a fine fuzz of hairs. Superior Honey Dew melon quality at harvest is associated with a whitish peel, high SSC and round fruit shape (Lester and Shellie, 1992). Hybrid Honey Dew melons will abscise (slip) when mature and are mostly creamy-white, slightly waxy and may have very sparse netting. Full-slip hybrid Honey Dew melons, versus Honey Dew melons cut at harvest, are perceived by consumers to have superior flavor, texture and sweetness.

## **Horticultural Maturity Indices:**

Honey Dew melons, hybrids and non-hybrids, are ready to eat when the peel turns pale green to cream colored and the surface feels waxy. The blossom-end gives when pressed with the thumb and they have a pleasant aroma. Less ripe and cold melons have little aroma. The majority of Honey Dew melons have green-flesh, but specialty fruit can have gold, orange, or pink-flesh.

Casaba melons are ready to eat when the very furrowed or wrinkled peel is yellow and the blossom-end is springy. The flesh should be soft, almost white with a slight salmon cast around the seed cavity and subtly sweet, no aroma is produced except for a hint of cucumber.

Crenshaw melons are a cross between Casaba and Persian (see section on “Netted Melons”). Crenshaw melons are ready to eat when half the dark-green peel turns yellow, the blossom-end is springy, and a pleasant spicy aroma is emitted at room temperature. The very sweet and juicy flesh should be salmon-color and soft. Entirely yellow and soft fruit are overripe and unpleasant to eat.

Canary melons are ready to eat when the peel, generally smooth but sometimes furrowed, is bright canary-yellow (the brighter the peel, the riper the melon) and the oval shaped fruit is springy at the blossom-end. The flesh should be crisp, flavorful, and white with a hint of pink around the seed cavity. A fragrant aroma is emitted at room temperature.

**Grades, Size and Packaging:** Grades include U.S. No. 1, U.S. Commercial, and U.S. No. 2 based primarily on percentage of Honey Dew fruit that meet decay, damage, and disease tolerance guidelines (USDA, 1981). Honey Dew fruit have no federal marketing standard for SSC except for May 1 through June 20, when all Honey Dew melons regardless of grade must be at 8% minimum (USDA, 1981). Size classification is the number of fruit (based on a uniform fruit diameter and fruit weight) per box to achieve a standard weight of 13.6 kg (30 lb). The distinct size classes are 4s, 5s, 6s, 8s, and 9s.

**Pre-cooling Conditions:** Honey Dew melons harvested cut from the vine need not be pre-cooled. Full-slip melons should be pre-cooled to 10 to 15 °C (50 to 60 °F) soon after harvest to reduce the rate of ripening, and sugar loss. Hydro-cooling, and forced-air cooling, are acceptable methods of pre-cooling. Hydro-cooling is the most efficient and can reduce a 35 °C (95 °F) melon to at least 15 °C at the center of the flesh within 20 min. The larger fruit sizes take longer.

**Optimum Storage Conditions:** Prolonged holding (3 weeks) of fruit harvested cut from the vine, and casaba, crenshaw and canary melons should be stored at 10 °C (50 °F) with 90 to 95% RH. Honey Dew melons cut from the vine that have been induced to ripen with ethylene, and full-slip Honey Dew melons, should be stored at 7 °C with 95% RH; they can be held for 7 to 10 days.

**Controlled Atmosphere (CA) Considerations:** CA storage of Honey Dew melons harvested cut from the vine has limited commercial use. CA conditions for full-slip melons is not known.

**Retail Outlet Display Consideration:** Honey dew melons are less perishable than netted melons (see section on “Netted Melon”), whereas, those fully abscised (slip) are highly perishable and should, therefore, be displayed promptly upon arrival.

**Chilling Sensitivity:** Chilling injury can occur at temperatures below 7 °C, but the riper the melon the more tolerant to chilling injury. Injury is expressed as pitting and darkened, elongated patchy surface lesions.

**Ethylene Production and Sensitivity:** Honey Dew melons harvested cut from the vine, as well as casabas, crenshaw and canary melons, produce very low amounts of ethylene. However, they benefit at the time of shipping, soon after harvest, by exposure to 100  $\mu\text{L L}^{-1}$  ethylene at 12.5 to 25 °C (55 to 77 °F) for up to 24 h (Kader, 1992). Full-slip Honey Dew melons should not be gassed with ethylene.

**Respiration Rates:**

Temperature	mg CO <sub>2</sub> kg <sup>-1</sup> h <sup>-1</sup>
5 °C	8
10 °C	14
15 °C	24
20 °C	30
25 °C	33

To get mL kg<sup>-1</sup> h<sup>-1</sup>, divide the mg kg<sup>-1</sup> h<sup>-1</sup> rate by 2.0 at 0 °C (32 °F), 1.9 at 10 °C (50 °F), and 1.8 at 20 °C (68 °F). To calculate heat production, multiply mg kg<sup>-1</sup> h<sup>-1</sup> by 220 to get BTU per ton per day or by 61 to get kcal per metric ton per day.

**Disorders:** Compression, bruising, scuffing, and cutting, may occur during harvest and at packing sheds, and may lead to desiccation, water-soaking, internal breakdown, and/or discoloration of the peel. Honey Dew melons never should be dropped more than 60 cm (2 ft), and all harvesting and packing line equipment should be well padded to reduce bruising, scuffing and cuts (Ryall and Lipton, 1979). At harvest replacing the traditional deep, 180 cm (6 ft) bed hauling trucks with stackable, ventilated-plastic field boxes 1.2 m x 1.2 m x 0.6 m (48 in x 48 in x 26 in deep) loaded onto a flat-bed truck will greatly reduce crushing and bruising of fruits (Kader, 1992).

**Postharvest Pathology:** Honey Dew melons produced in the western U.S. occasionally develop bacterial brown spot infested by *Pantoea ananatis* (formerly called *Erwinia ananas*). *Alternaria alternata* and *Cladosporium cucumerinum* rots can be found on Honey Dew as a result of chilling injury, cuts, punctures, or holding fruit too long in storage (Bruton, 1995; Zitter et al., 1996).

**Quarantine Issues:** Honey Dew melons entering the U.S. must be disinfested of external feeders (noctuid moths, thrips, and *Copitarisa* species) by fumigation with methyl bromide (APHIS, 1998). Methyl bromide was identified under authority of the World Meteorological Organization with the National Oceanic and Atmospheric Administration, National Aeronautics and Space Administration, as causing significant damage to the earth's protective ozone layer and is scheduled for global phase out under the Montreal Protocol, an international treaty developed to protect the earth from the detrimental effects of ozone depletion. Title VII of the U.S. Clean Air Act (Amendments of 1990) requires that production and importation of "Class I" substances (ozone depletion potential of 0.2 or greater) be phased out in the U.S. by the year 2005. Use of methyl bromide for preshipment and quarantine purposes has been declared exempt from these restrictions, but the limited supply and increased future cost of methyl bromide may make it undesirable for commercial use in the near future.

**Suitability as Fresh-cut Product:** Honey Dew fruit harvested cut from the vine or hybrid Honey Dew fruit harvested at 1/2 slip with 11 to 12% SSC have crisp pulp and are appropriate for fresh-cut processing. Cultivar selection is essential as there is considerable variation among cultivars for sugar, firmness, and flesh thickness, i.e., piece yield. Fruit should be well washed and sanitized by rinsing in 200 ppm (200  $\mu\text{L L}^{-1}$ ) of a 5.25% Na-hypochlorite solution at 5 °C (41 °F), pH 6.5 to 7.0, for 5 min, and cut into cubed pieces with very sharp blades. Cubed pieces should be rinsed with 150  $\mu\text{L L}^{-1}$  of 5.25% NaOCl at 5 °C (41 °F) for 30 sec. Shelf-life of Honey Dew fruit cubes, with good eating quality, can be expected for 6 to 10 days when stored at 5 °C (41 °F). Modified atmospheres of 5% O<sub>2</sub> + 5% CO<sub>2</sub> are beneficial in retarding microbial growth, reducing firmness loss, and other quality changes. Shelf-life of Honey Dew fruit cubes is not reduced by taking pieces from defective areas such as the ground spot or sunburned regions, but eating quality is reduced (sugar, green color and firmness are lower) (Wu and Watada, 1999). See section in this Handbook on "Fresh-cut Fruit" for additional information on fresh-cut processing of fruits.

**Special Considerations:** Product quality and shelf-life of full-slip, hybrid Honey Dew can be extended by applying an amino acid-chelated Ca (80 mM) rinse or soak prior to sizing/storage (Lester and Grusak, 1999).

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