

Annual Culinary Herbs

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Dole Fresh Vegetables, Salinas, CA

Scientific Names and Introduction: Culinary herbs include basil (*Ocimum basilicum* L.), chervil, salad chervil (*Anthriscus cerefolium* L. [Hoffm.]), coriander, cilantro, Chinese parsley (*Coriandrum sativum* L.), dill (*Anethum graveolens* L.) and savory/Summer savory (*Satureja montana* L.). Leaves of annual herbs are typically used, although roots of coriander are also used. Herbs are grown in both the field and greenhouse.

Quality Characteristics and Criteria: Herbs should appear fresh and green: no yellowing, decay, insect or mechanical damage. Leaves should be uniform in size. Flavor and aroma should be strong and characteristic of the herb. There are purple forms of basil that should have a rich color.

Horticultural Maturity Indices: Annual herbs should be harvested before flowering. Basil still maintains its quality with some flowers.

Grades, Sizes and Packaging: There are no market grades or sizes for fresh herbs. They may be tied or bunches with a rubber-band, packaged in plastic bags or clamshells, then packed in corrugated cartons. Perforated polyethylene liners will prevent dehydration and maintain quality.

Pre-cooling conditions: With the exception of basil, herbs should be cooled to just above 0 °C (32 °F) as soon as possible after harvest. Vacuum-cooling is recommended (Aharoni et al., 1988). Basil should be cooled to no lower than 12 °C (54 °F).

Optimum Storage Conditions: Chervil, coriander, dill and savory should be stored at 0 °C (32 °F) and 95 to 100% RH. Postharvest life ranges from 1 week for chervil (Gorini, 1981) to 2 weeks for coriander and dill, and up to 3 weeks for savory. Basil should be stored at 12 °C (54 °F) and 95 to 100% RH (Aharoni et al., 1993). At this temperature and RH, quality can be maintained for 2 weeks (Lange and Cameron, 1994).

Controlled Atmosphere (CA) Considerations: A 5 to 10% O₂ + 4 to 6% CO₂ CA is only moderately beneficial for fresh herbs (Saltveit, 1997). However, MAP lengthens the shelf-life of coriander (Loiza and Cantwell, 1997), chervil (Aharoni et al., 1993) and basil (Lange and Cameron, 1998).

Retail Outlet Display Considerations: Use of water sprinklers is acceptable. Basil should not be displayed < 12 °C (54 °F) due to chilling sensitivity. Other herbs should be displayed in refrigerated units.

Chilling Sensitivity: Chervil, coriander, dill and savory are not sensitive to chilling temperatures and should be stored as cold as possible without freezing. Basil is susceptible to chilling injury if stored below 12 °C (54 °F). The primary symptom of chilling injury in basil is browning of the leaves (Cantwell and Reid, 1993).

Ethylene Production and Sensitivity: Annual herbs produce very little ethylene, but are highly susceptible to ethylene exposure (Cantwell, 1997). Symptoms of ethylene damage include yellowing and leaf abscission (Cantwell and Reid, 1993).

Respiration Rates:

Temperature	Basil	Chervil (mg CO ₂ kg ⁻¹ h ⁻¹)	Coriander	Dill
0 °C	36	12	22	22
5 °C	-	-	30	-
7.5 °C	-	-	46	-
10 °C	71	80	-	103
20 °C	176	170	-	324

To get mL kg⁻¹ h⁻¹, divide the mg kg⁻¹ h⁻¹ 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⁻¹ h⁻¹ by 220 to get BTU per ton per day or by 61 to get kcal per metric ton per day. Data are from Cantwell and Reid (1993) and Loiza and Cantwell (1997).

Physiological Disorders: Yellowing and leaf abscission may occur due to ethylene exposure, especially if held at 10 °C (50 °F) or warmer. Basil is susceptible to chilling injury if held below 12 °C (54 °F), the main symptom being necrosis and blackening of the leaves.

Postharvest Pathology: Molds and bacterial decay may develop, especially on mechanically damaged leaves or cut ends of stems. Low temperatures should be maintained throughout the cold chain to minimize pathological disorders and prolong shelf-life. Chilling increases the susceptibility of basil to decay.

Quarantine Issues: None.

Suitability as Fresh-cut Product: Annual herbs are used in some packaged salad blends.

Special Considerations: High RH is used to prevent water loss and is especially important in maintaining the quality of fresh herbs.

References:

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