

Cauliflower: Recommendations for Maintaining Postharvest Quality



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MATURITY & QUALITY

Maturity Indices

Cauliflowers are selected for size and compactness of the head or curd. Mature curds are at least 15 cm (6 inches) in diameter. Loose or protruding floral parts, creating a 'ricy' appearance, are a sign of overmaturity. Cauliflower is packaged after being closely trimmed into single layer cartons of 12 to 24 heads, with 12's most common.

Cauliflower is primarily marketed with closely trimmed leaves and overwrapped with perforated film. Overwraps should provide four to six 1/4-inch holes per head to allow adequate ventilation.

Quality Indices

A firm and compact head of white to cream white curds surrounded by a crown of well-trimmed, turgid green leaves. Additional quality indices are size, freedom from severe yellowing due to sunlight exposure, freedom from handling defects and decay, and an absence of 'riciness'.

U.S. grade No. 1

TEMPERATURE & CONTROLLED ATMOSPHERE (CA)

Optimum Temperature

0°C (32°F); 95-98% R.H.

Storage of cauliflower is generally not recommended for more than 3 weeks for good visual and sensory quality. Wilting, browning, yellowing of leaves, and decay are likely to increase following storage beyond 3-4 weeks or at higher than recommended storage temperatures.

Rates of Respiration

Temperature °C	Temperature °F	ml CO ₂ /kg·hr
0	32	8 - 9
5	41	10 - 11
10	50	16 - 18
15	59	21 - 25
20	68	37 - 42
25	77	43 - 48

To calculate heat production, multiply ml CO₂/kg·hr by 440 to get BTU/ton/day or by 122 to get kcal/metric ton /day.

Rates of Ethylene Production

< 0.1 µl /kg· hr at 20°C (68°F)

Responses to Ethylene

Cauliflower is highly sensitive to exogenous ethylene. Discoloration of the curd and accelerated yellowing and detachment of wrapper leaf stalks will result from low levels of ethylene during distribution and short-term storage. Do not mix loads such as apples, melons and tomatoes with cauliflower.

Responses to Controlled Atmosphere (CA)

Controlled or modified atmospheres offer moderate to little benefit to cauliflower. Injury from low O₂ (< 2%) or elevated CO₂ (> 5%) may not be visual and will only be evident after cooking. When the curds become grayish, extremely soft, and emit strong off-odor. Higher levels (>10%) of CO₂ will induce this injury within 48 hours. Combined low O₂ and slightly elevated CO₂ levels (3-5%) delay leaf yellowing and the onset of curd browning by a few days.

DISORDERS

Physiological Disorders

Freezing Injury- Freezing injury will be initiated at - 0.8°C (30.6°F). Symptoms of freezing injury include a watersoaked and greyish curd and watersoaked or wilted crown leaves. The curd will become brown and gelatinous in appearance following invasion by soft-rot bacteria.

Physical Injury

Harvesting should be done with great care to prevent damage to the highly sensitive turgid curds. Cauliflower should never be handled by the curd portion of the head. Cauliflower should never be allowed to roll or scuff across a harvest -conveyor belt, table, or other work surface. Bruising is very common and leads to rapid browning and decay when attention to careful harvest and handling practices are not followed.

Pathological Disorders

Diseases are an important source of postharvest loss, particularly in combination with rough handling and poor temperature control. A large list of bacterial and fungal pathogens cause postharvest losses in transit, storage, and to the consumer. Bacterial Soft-Rot (primarily *Erwinia* and *Pseudomonas*), Black Spot (*Alternaria alternata*), Grey Mold (*Botrytis cinerea*), and Cladosporium Rot are common disorders.

Special Considerations

For fresh-cut applications, the sensitivity of cauliflower to improper modified atmosphere (See Responses to CA) demands very careful selection of packaging films and proper temperature management.

Source: Perishables Handling #93, February 1998

<http://postharvest.ucdavis.edu/pfvegetable/Cauliflower/>