

# Cauliflower

*Brassica oleracea var. botrytis*



## Best practice

Like broccoli, cauliflower is an unopened inflorescence, essentially composed of flower buds. However, in this case it is a highly deformed one.

Good quality cauliflower can be difficult to produce. The leaf wrappers should protect the head from sunburn, wind rub and other damage. Heads have to be firm and tight. Several picks are often necessary to ensure each harvest lot has even maturity and size. If left too long the heads become loose and soft.

Cauliflower should be cooled to below 5°C as soon as possible, especially if it has been harvested under warm conditions. It should also be handled gently, as the delicate curds are easily bruised and broken. Harvest aids that avoid damaging cauliflowers can improve subsequent storage life.

Forced air and hydro-vacuum systems are both effective methods to cool cauliflower. Room cooling in bins is not recommended unless heads are already less than 15°C at harvest. If using hydrocooling, it is important to allow enough time for the core to cool thoroughly. Cauliflowers must be dried thoroughly before packing.

Storage life of cauliflower is often ended by the development of dark spots on the curds. The causes of curd blackening are not well understood. It is unclear whether the cause is microbial (disease), physiological, a response to ethylene or some other ageing process. Cooling immediately after harvest, avoiding wetness on the curds and maintaining low temperatures during transport and distribution can slow the onset of curd blackening.

## Weight loss

- ▶ Cauliflowers can lose up to 5% weight and still remain marketable.
- ▶ Cauliflowers that have lost more than 5% weight will be noticeably soft and unacceptable.



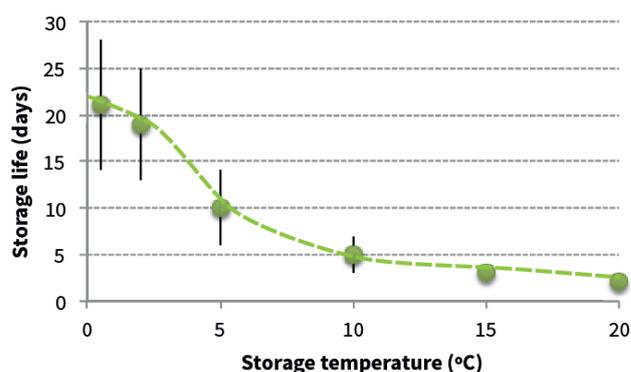
*Cauliflower is easily damaged – harvest aids such as the system shown here can avoid damage to the delicate curds.*

## Storage life

Storage life is maximised at close to 0°C combined with 95–100% RH. Under these conditions cauliflower can remain in good condition for up to 4 weeks, depending on the cultivar and seasonal conditions.

At warmer temperatures cauliflowers deteriorate rapidly, becoming soft and discoloured within only a few days at 10°C or higher.

Packaging can extend cauliflower storage life by protecting the delicate curds as well as maintaining high RH around the head. Although modified atmospheres have been shown experimentally to extend cauliflower storage life, they are not used commercially.



*Storage life of cauliflower at different temperatures, bars indicate the likely range around each mean value.*

## Key points

- ▶ Cauliflower curds are formed from the swollen, undifferentiated meristem tissue underlying unopened flower heads. They are fragile, and must be handled carefully to avoid physical damage.
- ▶ Cauliflower heads should be fully hydrated, firm and tight at harvest. Rapid cooling is essential to maximise quality.
- ▶ Storage life is maximised at close to 0°C + 90%RH.
- ▶ Curd blackening (black-spotting) often ends storage life. The cause is unclear. Curd blackening can be reduced using low temperatures, high RH and avoiding free moisture on the heads.
- ▶ Cauliflowers are very susceptible to moisture loss and respond well to packaging materials.
- ▶ Modified atmospheres can extend cauliflower storage life, but are not used commercially.

# Cauliflower

## Diseases

### Alternaria head rot – *Alternaria brassicae*

Black, sunken spots appear on individual florets.

Photo: L Tesoriero



### Bacterial head rot – *Erwinia* spp.

A common postharvest disease, especially if cauliflowers are stored for an extended period. Infection often occurs in the field, but symptoms develop after harvest. Increased by condensation in storage.

Photo: R Lancaster



### White mould – *Sclerotinia* spp.

Infection usually occurs pre-harvest, but the fungus can continue to grow and develop during storage.



## Disorders

### Chocolate spot

Brown, soft rotten floret in what otherwise appears a good quality head. Caused by breakage inside the head.

Photo: S Grigg



### Curd blackening

Brown to black spots appear on cauliflower curds during postharvest storage. The cause is still not well understood, but could be microbial, physiological, or a combination of both.



### Riciness

Curds are small and uneven. Individual parts of the florets elongate and separate. Associated with high temperatures before harvest.



## Summary

|                    |                            |                                                                                               |
|--------------------|----------------------------|-----------------------------------------------------------------------------------------------|
| Storage conditions | Optimum temperature        | 0°C                                                                                           |
|                    | Optimum RH                 | 95–100%                                                                                       |
|                    | Storage life (best)        | 3 weeks                                                                                       |
|                    | Storage life at 5°C        | 7–12 days                                                                                     |
| Cooling            | Cooling method             | Hydrocooling, forced air or hydro-vacuum cooling                                              |
|                    | Freezing point             | -0.8°C                                                                                        |
|                    | Susceptibility to freezing | Moderate                                                                                      |
|                    | Chilling sensitive?        | No                                                                                            |
| Physiology         | Respiration rate           | Moderate                                                                                      |
|                    | Ethylene production        | Low                                                                                           |
|                    | Ethylene sensitivity       | Moderate – results in discolouration of the curd and accelerated yellowing of attached leaves |
| Packing            | Cleaning                   | Harvest clean and pack                                                                        |
|                    | Rate of water loss         | Moderate, some benefit from POS packaging                                                     |
|                    | Display                    | Can be displayed on ice                                                                       |

## Texture

Firm



Slightly soft



Soft



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