

EcoBac: Post-harvest rot control in Cantaloupe

Product:	EcoBac	Trial setting:	Laboratory
Crop:	Cantaloupes	Location:	Miami, Florida

Objective: Post-harvest biocontrol of fungus growth in cantaloupes.

Post-harvest losses in cantaloupes are often due to fungal rots. These rots occur on the external surface of the fruit and gradually progress inwards into the flesh. Post harvest fungal pathogens of major concern are *Alternaria*, *Penicillium*, *Cladosporium*, *Rhizopus* and *Fusarium*. *Alternaria* and *Cladosporium* rots occur frequently in cool storage. *Alternaria* rot is characterized by dark brown or black lesions; *Cladosporium* rots are characterized by dark green or black lesions. *Fusarium* and *Rhizopus* rots present problems on fruit stored at room temperature. Symptoms of *Fusarium* rots are white or reddish hyphae on the netted surfaces of fruit. *Rhizopus* rots are characterized by softening and indentation of large areas of the flesh with little external mycelial growth. The incidence of fungal rot limits the shelf life of cantaloupes to 12 to 16 days.

Post-harvest fungal rots can be controlled by:

1. Only harvesting good melons
2. Avoiding wounds during harvest
3. Cooling as soon as possible. Cooled cantaloupes should be stored at 4°C and 95% relative humidity.
4. Post-harvest treatments to control rots, such as hot water dips or fungicide treatments
5. Marketing as quickly as possible

Studies conducted in Israel have indicated that post-harvest application of fungicides resulted in unacceptably high residue levels.

Methods

Twenty cantaloupes were purchased from a local store. Ten cantaloupes were dipped for 5 minutes in a solution made of EcoBac in tap water (1/100 vol/vol). Final bacterial concentration in the solution was 1×10^6 cells/ ml.

The other 10 cantaloupes were dipped in tap water for 5 minutes and used as controls. All cantaloupes were air-dried with a fan and placed over individual trays previously disinfected with bleach and rinsed with tap water.

The cantaloupes were left over a counter in a temperature-controlled room at 75 to 80° F. After two weeks the external surface of the cantaloupes was evaluated for fungal growth.

Results

Only white hyphae were observed on the surface of melons. The incidence of these hyphae was reported in the table below.

Incidence of fungi	Controls	EcoBac
Light ¹	6	2 ³
Severe ²	4	0
Total	10	2

¹ Presence of external fungal hyphae covering an area smaller than ½ inch in diameter, with no formation of indentation on the surface of the melon.

² Presence of external fungal hyphae covering an area larger than ½ inch in diameter, and/or formation of indentation on the surface of the melon.

³ The presence of fungi on the surface of the cantaloupes treated with EcoBac was restricted to the area of attachment to the stem.

The experiment will be repeated with two new variables:

- A longer exposure time to the bacterial solution
- Agitation of the solution to guaranty exposure of the surface of the melon to the solution