

POST
HARVEST
_CARE

extending
shelf-life

by **BION**



Mango

BION

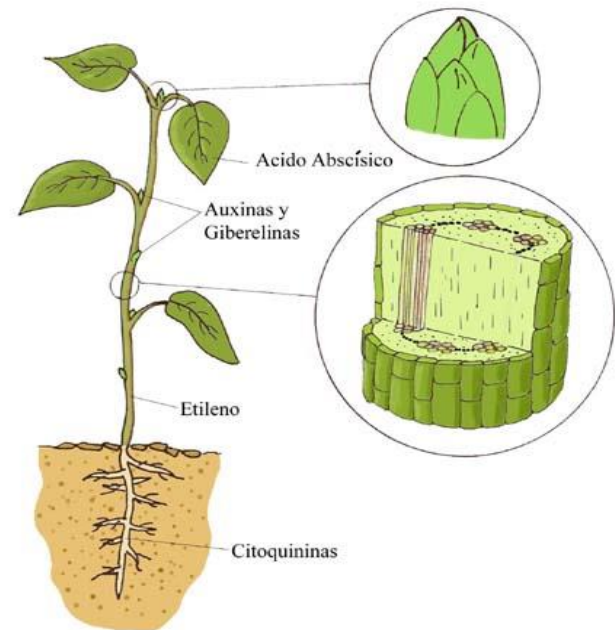
We improve air

What is the Ethylene?

Plant hormone that regulates the processes associated with **ripening and senescence**.

Its accumulate in storage chambers and transport containers.

Physiologically active very **low concentrations** (0,015 ppm)



Mango & Ethylene

Ethylene contamination along the distribution chain **speeds up the ripening, spoilage and fungal decay** of fruit/vegetables (= economical and quality losses)

Some **fruit pathogenic fungi** produce ethylene to **hasten fruit ripening**. Furthermore, ethylene (and also other gases emitted by fruit) trigger the **growth of some fungal spores**.

Ethylene **production and sensitivity** by fruits/vegetables depend on **different factors**:

- Species and cultivar
- Temperature
- CO₂/O₂ levels
- Physiological age
- Stresses



Effects of Ethylene

- **Accelerated** ripening and **over-ripening**.
- **Softening** (loss of hardness).
- **Colour** changes
- **Rotting** and **microbial infection** (*Colletotrichum musae*, *Botrytis cinerea*, *Lasiodiplodia theobromae*).
- More severe chilling **injury symptoms**.
- **Shrivelling and loss of weight** caused by increased respiration.
- **Lower batch homogeneity** after the artificial ripening.



Moulds & Ethylene

Colletotrichum gloesporioides causal agent of antracnose.

Neither spores germinate nor apresorium develops without **> 1 ppm environmental ethylene**.



Lasiodiplodia theobromae (or Diplodia natalensis) causal agent of stem end rot

It needs from the activation via ethylene of the **degradation enzymes** of the skin to invade the fruit.



Alternaria & Ethylene

Involvement of ethylene in spore germination and mycelial growth of *Alternaria Alternata*.

Abstract:

Aminoethoxyvinylglycine, an inhibitor of ethylene synthesis and 2,5-norbomadiene, a competitive inhibitor of ethylene binding, **inhibited development of the fungus *Alternaria Alternata***.

The inhibition was reduced by 1-aminocyclopropane-1-carboxylic acid.

The results suggest that **endogenous ethylene** synthesis and action are essential for **growth processes of *A. Alternata***.



Mango Trial

Bi-On slows down **ripening** and prevents **Anthracnose and stem end rot**. Waste is clearly reduced during transport.



10 days at 15°C



21 days at 15°C

Mesk mango held at 15°C inside PE bags with and without Bi-On Sachets

Mango Markets

BIOCONSERVACION main **markets:**

- Senegal
- India
- Thailand
- Israel
- Egypt
- Philippines
- Ecuador
- Mexico
- Costa Rica
- Peru
- Brazil
- Guatemala

The **transport time** is limited by the variety and ripening status:

- Fruit ready to eat is transported by air.
- Some varieties like *Manila* have a short postharvest life.

Sea Transport

1 – 3 Extend Filters

Air Transport

1 sachet/box

Bi-On: Benefits of use

- Increases **commercial life** of produce.
- Reduces **waste** (excess of ripening, rotting...).
- Keeps the **batch homogeneity** after artificial ripening.
- Removes **odours** in the cold chambers.
- Avoids **complaints/returns/re negotiations** from clients.
- Allows benefits from price **fluctuations**.
- Is **harmless** to workers, produce and environment.
- Keeps **colour**.
- Is **disposable**.
- Is **easy** to handle and **cheap**.
- Enhances product and company **image**.
- Is usable in **organic** products.

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Thanks

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