

POST  
HARVEST  
\_CARE

extending  
shelf-life

by **BION**



**Kiwi**

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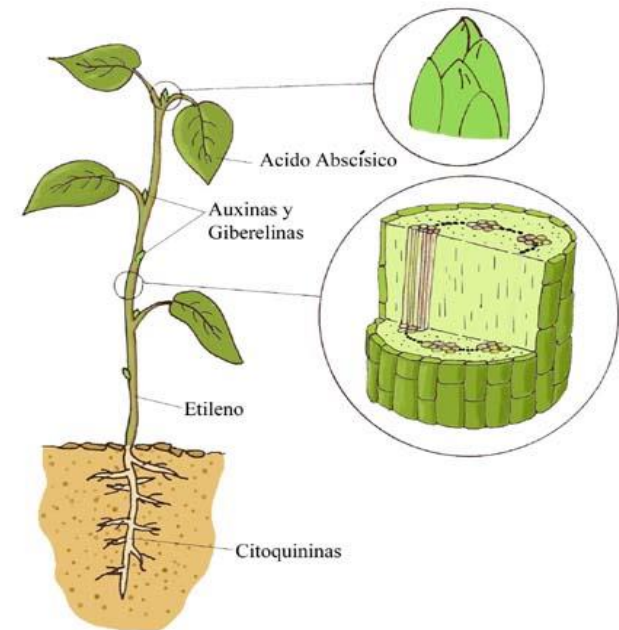
We improve air

# 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)



# Ethylene Effects

- **Accelerated** ripening and **over-ripening**.
- **Softening** (loss of flesh firmness).
- **Hard-core** (unripen fruit core due to over-ripening of the remaining fruit).
- **White-core** inclusions.
- **Exacerbated pericarp translucency**.
- **Rotting** and **microbial disease**  
(ex. *Botrytis cinerea*, *Alternaria alternata*).
- **Shriveling** and **weight loss** caused by increased respiration.



# Kiwi & Ethylene

## Ethylene Production

Unripe  
Kiwi

$\leq 0.1 \mu\text{l/kg}\cdot\text{hr}$  at  $0^{\circ}\text{C}$   
 $0.1$  to  $0.5 \mu\text{l/kg}\cdot\text{hr}$  at  $20^{\circ}\text{C}$

Ripe  
Kiwi

$50\text{-}100 \mu\text{l/kg}\cdot\text{hr}$  at  $20^{\circ}\text{C}$   
( $< 4$  lbf firmness)

## Responses to Ethylene:

- Kiwifruits are **climacteric** fruit **extremely sensitive** to ethylene. As little as **5 – 10 ppb** ethylene will induce fruit softening.
- **Avoid exposure** of unripe kiwifruits to ethylene during harvest, transport and storage.

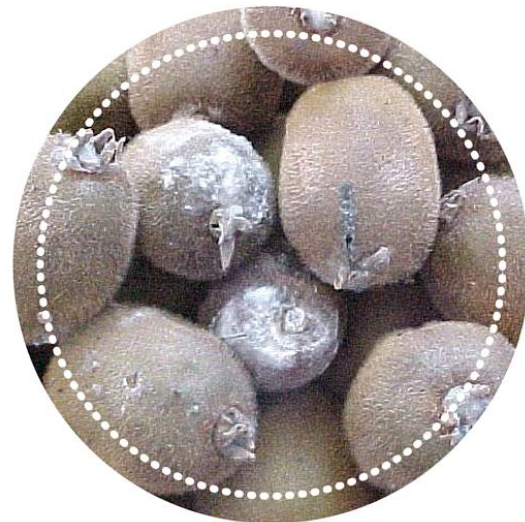


# Botrytis Cinerea

***Botrytis Cinerea* (grey mould)** is a common fungal infection in kiwifruit.

- *Botrytis Cinerea* has been shown to produce ethylene.
- Fruit infected with *Botrytis Cinerea* will produce higher ratios of ethylene.

The presence of ***Botrytis Cinerea* (grey mould)** infected fruit will contribute to increase the ethylene concentration of cold store to levels  $> 20$  pp, **inducing like that the ripening** of the rest of the stored fruit.



# Botrytis Cinerea

## Ethylene production by *Botrytis cinerea*

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### Abstract

Ethylene was produced when isolates of the postharvest pathogen *Botrytis cinerea* Pers.: Fr., derived from fruit of strawberry, blueberry and kiwifruit and leaves of grape and camellia, were grown on a modified Pratt's medium containing 35 mM methionine in shaken or static cultures at 22°C in the dark. Cultures grown on basal media containing glutamate or  $\alpha$ -ketoglutarate produced no more ethylene than controls. Optimum growth occurred at pH 3.5 and 4.5 for shake and static cultures, respectively. When *B. cinerea* was grown in a methionine-amended basal medium, maximum production of ethylene occurred after 3–4 days of incubation. However, maximum ethylene production per unit dry wt of mycelium (780  $\mu$ l/g/h) occurred within 48 h of inoculation, after which it declined. That high ethylene production occurs with such small amounts of mycelia suggests a possible role for fungal produced ethylene in *B. cinerea* pathogenesis of sensitive fruit such as kiwifruit. © 1997 Elsevier Science B.V.



# Kiwi Trial

Bi-On delays **ripening** and increases **storage time**.

	Hardness (lbs)	Soft Fruit (%)	SS (°B)	Dry Matter (%)	Citric Acid (%)
Bi-On	4,42 (a)	4,84	13,09 (a)	17,4	14,1
Control	2,46 (b)	17,46	14,17 (b)	15,1	12,9

Kiwis stores for 7 weeks at 1°C in boxes with and without Bi-On sachets and afterwards kept at environmental T for three days.



# Kiwi Markets

BIOCONSERVACION is present as **market leader** in most of the kiwifruit producing countries of the world.

- New Zealand
- Chile
- Italy
- France
- Iran
- Spain
- Argentina



A large number of **worldwide reputed producers and exporters** use Bi-On and report positive experiences (ZESPRI, APOFRUIT, DOLE...).



# Client Recommendation

Bonnerkin Pty Ltd trading as  
A.B.N. 47 010 618 676  
A.C.N. 010 618 676

Railing 124, Block D, Brisbane Market  
P.O. Box 242 Brisbane Market QLD 4106

## Franklin Bros

Accredited

Ph: 07 3379 5944  
Fax: 07 3379 4354  
[bigpond.com.au](http://bigpond.com.au)

Dear Graeme and Saul,

After installing Bioconservation technology in our Kiwi room we have 0% spoilage, which we have never had before. I expressly noticed the fruit has retained its firmness for extended times.

A further benefit has been that we have been able to mix load the kiwi room, which in the past has not been possible because of the high levels of ethylene.

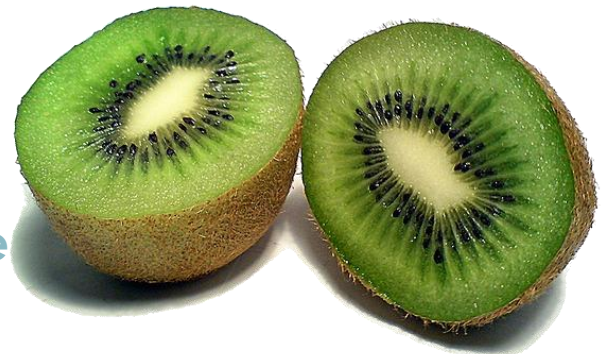
Your friendly and efficient after sales service has been excellent – keep up the good work.

Derek Barea



# 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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