POST
HARVEST
_CARE

extending
shelf-life

by BIOON

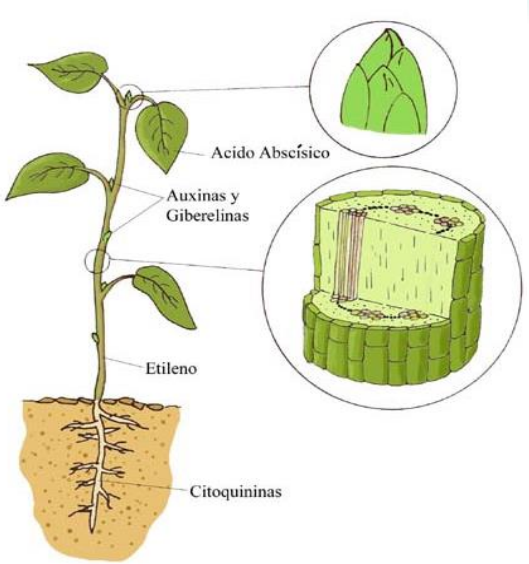
KIWI

What is ethylene?

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

Accumulates in storage chambers and transport containers.

Physiologically active at **very low concentrations** (0.015 ppm).



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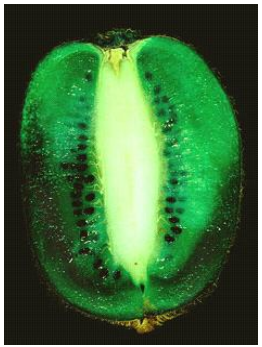
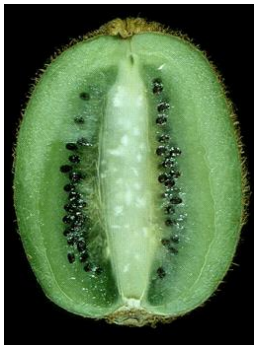
Ethylene effects

- **Accelerates maturation** and over-maturation. Softening **(loss of firmness).**
- **White** central inclusions.
- Increased incidence of **rots and microbial infections** (Alternaria Alternata, Botrytis cinerea).
- **Hard core** (green fruit core due to over-ripening over-ripening of the remaining fruit).
- **Aggravated translucency** of the pericarp.
- **Wilting** and **weight loss** caused by increased respiration.





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Kiwi and ethylene

Producción Etileno

Green Kiwi

≤0.1 µl/kg·hr a 0°C
0.1 a 0.5 µl/kg·hr a 20°C

Rape Kiwi

50-100 µl/kg·hr a 20°C
(< 4 lbf firmeza)

Responses to Ethylene:

Kiwifruit are an extremely **sensitive climacteric** fruit to ethylene.
A small amount of **5 - 10 ppb** ethylene will induce fruit softening.

Avoid exposure of immature kiwifruit to ethylene during harvest, transport and storage.

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Ethylene and terminal rot

Botrytis Cinerea (gray mold) *is a common fungal infection of kiwifruit.*

Botrytis Cinerea has been shown to produce ethylene.

As a result, fruit infected with Botrytis Cinerea will produce higher ethylene higher proportions of ethylene.

The presence of **Botrytis cinerea (gray mold)** infecting the fruit will contribute to increase the ethylene concentration in cold storage to levels > 20 pp, **inducing ripening** of the rest of the fruit.

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Brotytis 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 α-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 μl/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.

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BION- Trial Kiwi

	Hardness (lbs)	Soft Fruit (%)	SS (°B)	dry matter (%)	citric acid (%)
BION	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

Kiwifruit were stored for 7 weeks at 1°C in boxes with and without BION sachets, and then kept at room temperature for 3 days.

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Kiwi markets

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

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

A large number of **reputable producers and exporters around the world** use Bi-On and have positive feedback (ZESPRI, APOFRUIT, DOLE...).

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Customer recommendation

Dear Graeme and Saul,

After installing Bioconservacion 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

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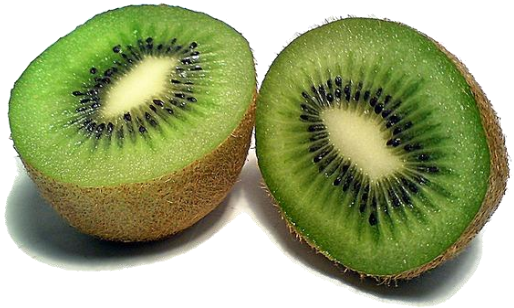
Advantages of use

- Increases **product shelf life.**
- **Reduces waste** (over-ripening, rotting...).
- Maintains **batch homogeneity** after artificial ripening.
- Eliminates **odors** in cold storage.
- Avoids customer **complaints/returns/renegotiations.**
- Allows benefits from price **fluctuations**.
- **Harmless** to workers, product and environment.
- Maintains **color.**
- It is **disposable.**
- It is **easy** to handle and inexpensive.
- Improves product and company **image.**
- Can be used on **organic** products.



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GRACIAS