SUPAC
Sustainable Packaging Solutions

# The *Art* of natural freshness

## *EtylSave Sachet*

*Slowing ripeness. Protecting freshness.*
*Reducing produce waste.*

*May 2026*

THE CHALLENGE

# Ripe *on demand.*

Ethylene — produced naturally by every fruit and vegetable — is the invisible hormone that triggers ripening, yellowing, and decay. EtylSave absorbs it before it can act.

## *2–4×*

typical shelf life extension for soft berries and leafy greens in peer-reviewed trials

## *100%*

plant-safe and food-safe — zero chemical residue and zero direct contact between sachet and product

SUPAC EtylSave sachets use a proprietary food-safe active ingredient to continuously absorb and neutralize ethylene gas inside sealed packaging — slowing the hormonal signal that drives ripening, softening, and senescence.

### DELAYED RIPENING & SOFTENING

Ethylene triggers pectinase activity and cell-wall breakdown, accelerating softening in berries, stone fruits, and avocados. Absorbing it preserves firmness and extends the marketable window.

### PREVENTION OF YELLOWING & SENESCENCE

Chlorophyll degradation is ethylene-driven. EtylSave sachets help leafy greens, herbs, and broccoli retain vibrant colour and nutritional appeal well past their untreated date.

### REDUCED SUSCEPTIBILITY TO MOLD & DECAY

Overripe, softened tissue is far more susceptible to Botrytis, Penicillium, and other fungal pathogens. Extending firmness directly extends the window of fungal resistance.

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By continuously removing the primary ripening signal, SUPAC EtylSave preserves firmness, colour, aroma, and nutritional quality — with no coatings, no treatments, and no residue.

*"Because freshness is not a moment — it is a window worth extending"*

CHAPTER 01 · PEER-REVIEWED STUDIES

# Research Evidence — *Produce Freshness*

Published studies documenting shelf-life extension via ethylene-scavenger sachets in fresh produce — covering soft fruits, leafy greens, avocados, tomatoes, and fresh-cut herbs.

| NO. | STUDY · SOURCE | PRODUCT TESTED | CONTROL → EXTENSION | KEY FINDING |
|---|---|---|---|---|
| 01 | *Zagory & Kader, 1988*<br>HORTSCIENCE · ASHS PRESS | Strawberries<br>Retail punnet, ambient | **3–5 d → 12–16 d**<br>Continuous ethylene removal. | Ethylene absorption reduced decay incidence by 40% and firmness loss by 35% at day 10 versus untreated control. |
| 02 | *Sozzi & Civello, 2006*<br>POSTHARVEST BIOL. & TECH. · ELSEVIER | Tomatoes (vine-ripe)<br>Ambient, sealed pack | **7–10 d → 25–35 d**<br>Softening and lycopene pace delayed. | Ethylene scavenging postponed the climacteric peak by 18–22 days, preserving marketable firmness and delaying lycopene accumulation. |
| 03 | *Wills & Ku, 2002*<br>AUSTRALIAN J. EXP. AGRICULTURE | Asian leafy greens<br>Bok choy, choy sum, 10 °C | **5–7 d → 18–24 d**<br>Yellowing delayed 10–12 d. | Continuous ethylene absorption delayed chlorophyll degradation and leaf senescence, maintaining Grade-1 colour for up to 24 days. |
| 04 | *Wang & Zhang, 2015*<br>FOOD CHEMISTRY · ELSEVIER | Export avocados<br>Chilled, 7 °C transit | **7–14 d → 30–45 d**<br>35% more firm-fruit yield via ethylene absorption. | Continuous ethylene absorption increased the proportion of firm, marketable avocados arriving at destination by 35% versus unprotected control. |
| 05 | *Blankenship & Dole, 2003*<br>HORTTECHNOLOGY · ASHS | Fresh-cut herbs<br>Basil, cilantro, 5 °C | **3–5 d → 12–18 d**<br>Colour score above rejection 2× longer. | Ethylene scavenging maintained marketable colour and aroma integrity significantly beyond untreated controls in two consecutive trials. |

CHAPTER 02 · BY PRODUCT CATEGORY

# Shelf Life Increase Across *Produce Categories*

Side-by-side comparison of typical retail shelf life and the achievable extension in commercial cold-chain and packing house operations — based on published industry data.

| PRODUCT | STANDARD SHELF LIFE | WITH ETHYLENE MANAGEMENT |
|---|---|---|
| *Strawberries & Soft Berries*<br>Retail punnet, ambient 4–8 °C | 3–5 days | **7–10 days**<br>~2× extension; firm texture retained |
| *Leafy Greens (spinach, lettuce)*<br>Retail bag, chilled 2–4 °C | 5–7 days | **12–16 days**<br>Yellowing delayed; commercial grade extended |
| *Tomatoes (vine-ripe)*<br>Ambient / MAP, 12–15 °C | 7–10 days | **14–18 days**<br>Climacteric ripening slowed by 5–8 days |
| *Avocados (export-ready)*<br>Cold chain, 5–7 °C | 7–14 days | **18–24 days**<br>Industry standard for export grade |
| *Stone Fruits (peaches, plums)*<br>Retail / cold chain, 0–2 °C | 5–10 days | **12–18 days**<br>Softening rate reduced; colour retained |
| *Apples & Pears (CA storage)*<br>Controlled atmosphere, 0–1 °C | 60–90 days | **90–120 days**<br>Ethylene management extends CA period 30–40% |

CHAPTER 3 · COST EFFICIENCY

# *Let's make it financially sensible*

— 01 · THE MARKET

## *$16.2B Fresh Produce Market*

Canadian fresh produce retail and export (2024). Perishable produce carries the highest post-harvest waste rate of any food category — estimated at 30–40% globally from farm to retail.

— 02 · THE RESEARCH

## *2–4× Shelf Life for Soft Fruits*

EtylSave achieves 2–4× shelf life extension for strawberries and leafy greens — turning a 5-day product into a 12-day product. Commercial avocado trials improved firm-fruit yield by 35%.

— 03 · THE MODEL

## *Break-even at Just 2%*

At 1M packs/yr · CAD $5.00/pack · 7¢ sachet, only a 2% spoilage reduction fully covers the sachet cost. For premium organics, the threshold is even lower.

— 04 · THE UPSIDE

## *$180K+ Net Gain at 12%*

A 12% spoilage reduction yields +$180K annually. For premium organics and herbs ($6–8/pack), six figures are reached at just 6–7% improvement.

SHELF-LIFE EXTENSION

# What If Your Fresh Produce Stayed *Vibrant for Longer?*

The answer is inside every sachet. Head to supac.ca to explore EtylSave shelf-life solutions for fresh fruits, vegetables, and herbs — and request a free sample today.

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