



AgroFresh

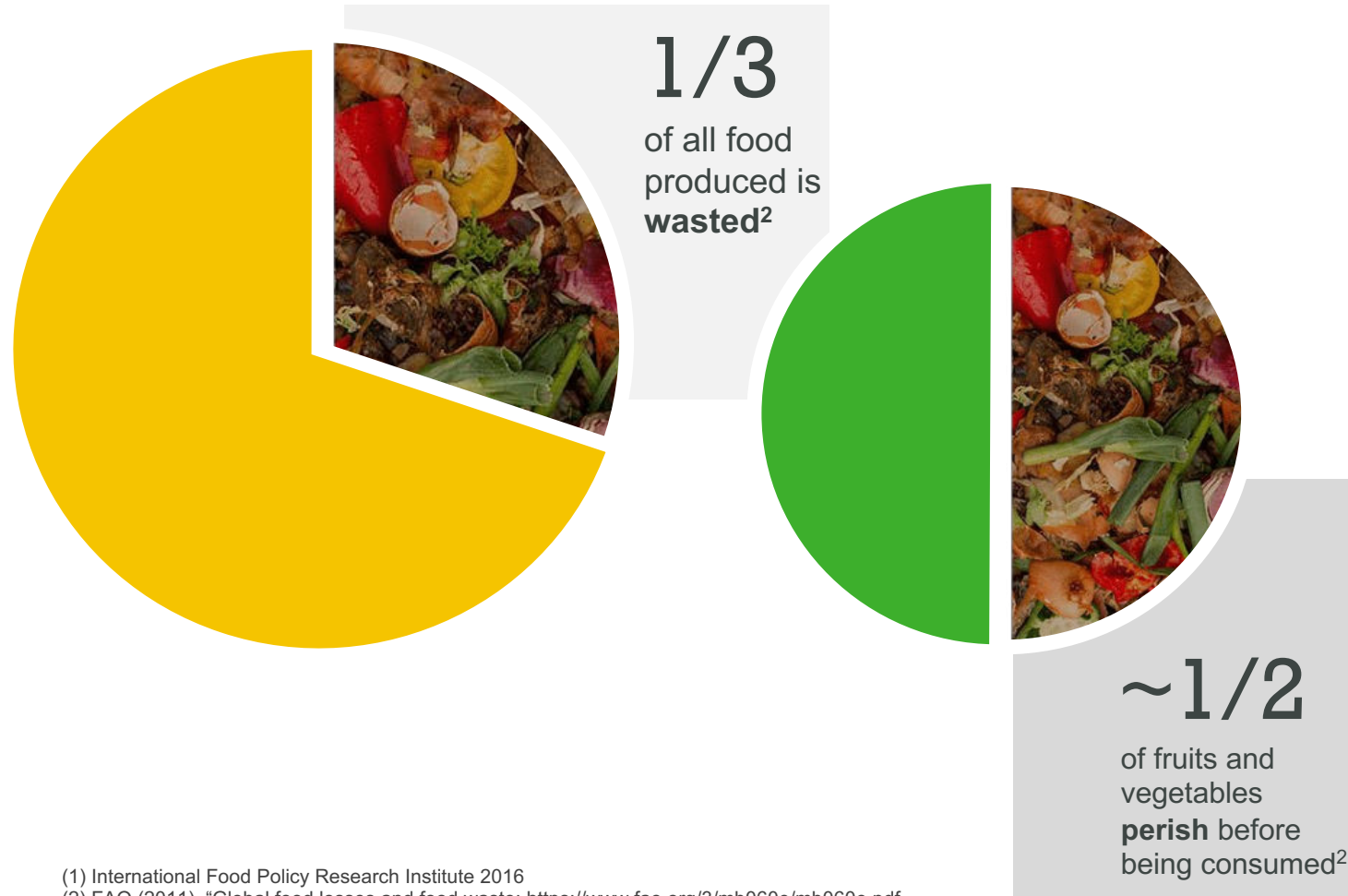
We Grow Confidence

Addressing Produce Quality Through Supply Chain Challenges

Asiafruit Business Forum | 6th September 2023 | Hong Kong

Dr. Duncan T. Aust
Chief Technology Officer

Globally \$1 Trillion in Food is Wasted Annually¹

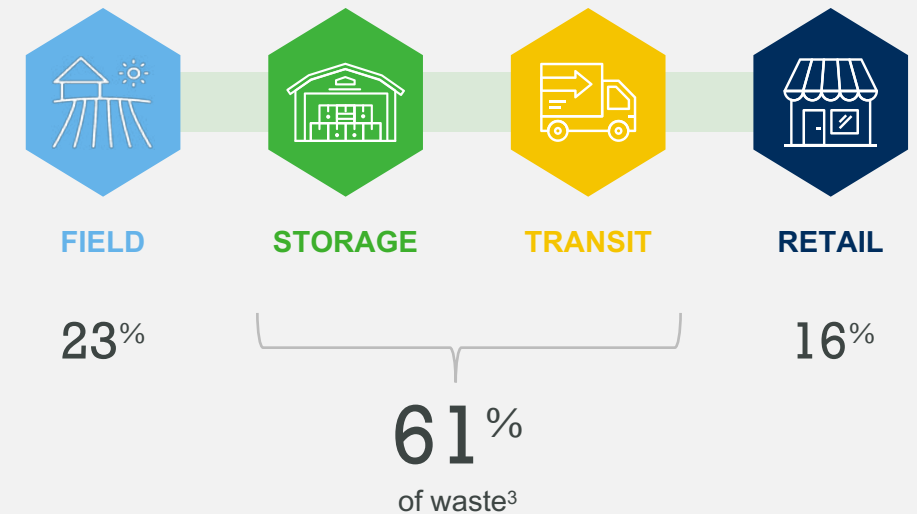


(1) International Food Policy Research Institute 2016

(2) FAO (2011). "Global food losses and food waste; <https://www.fao.org/3/mb060e/mb060e.pdf>

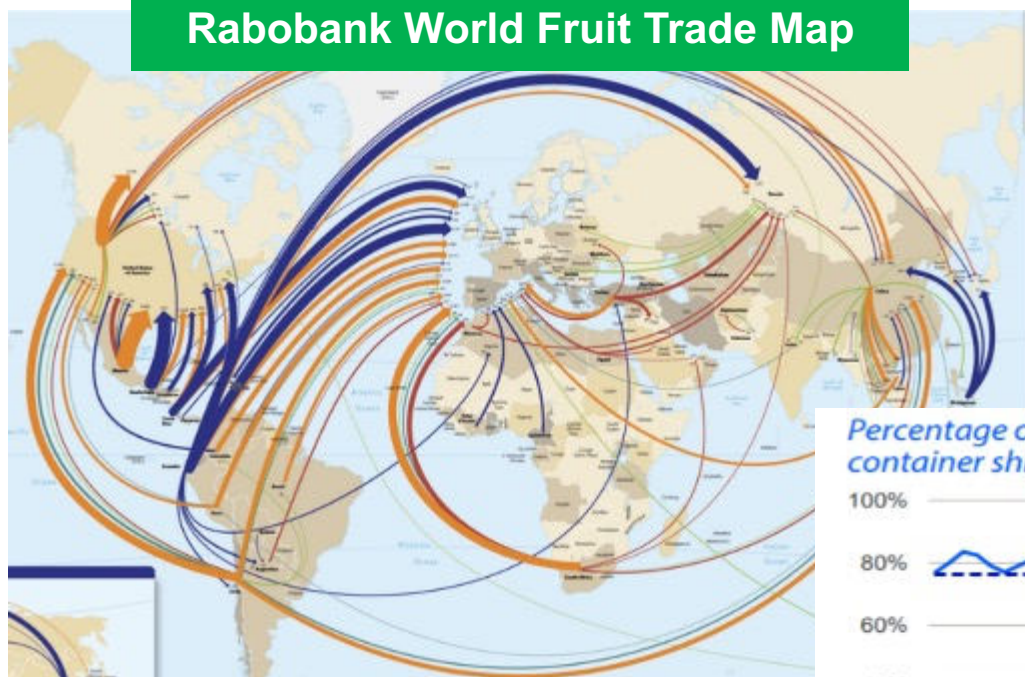
(3) PROMAR International; The Global Market for Post-Harvest Technology, 2019

Produce Loss Across the Supply Chain

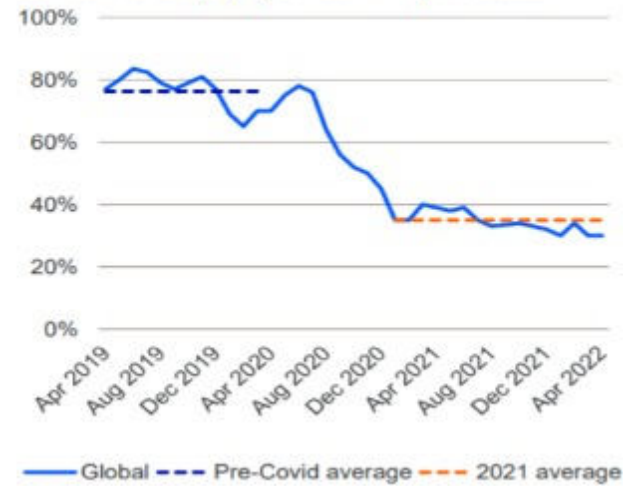


Fresh Produce Traveling Longer Distances

Increasing supply chain time and risk of over ripening and produce loss and waste

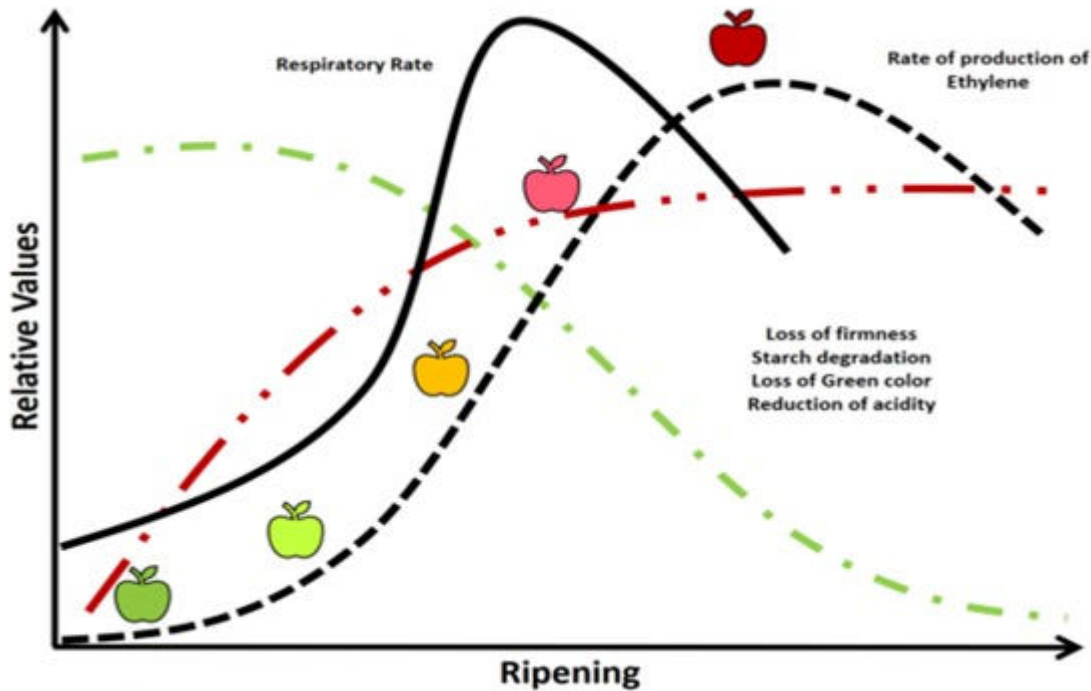


Percentage of on-time arrivals of container ships, April 2019-April 2022



The importance of managing ethylene to maintain fruit quality

- Ethylene is the natural plant compound that governs the speed at which produce ripens



Quality Metrics Drive Profitability



- Flavor, Taste
- Appearance, Color, size
- Texture, Firmness
- Freshness
- Maturity, Firmness
- Size, Shape Uniformity
- Texture, Firmness
- Absence of decay

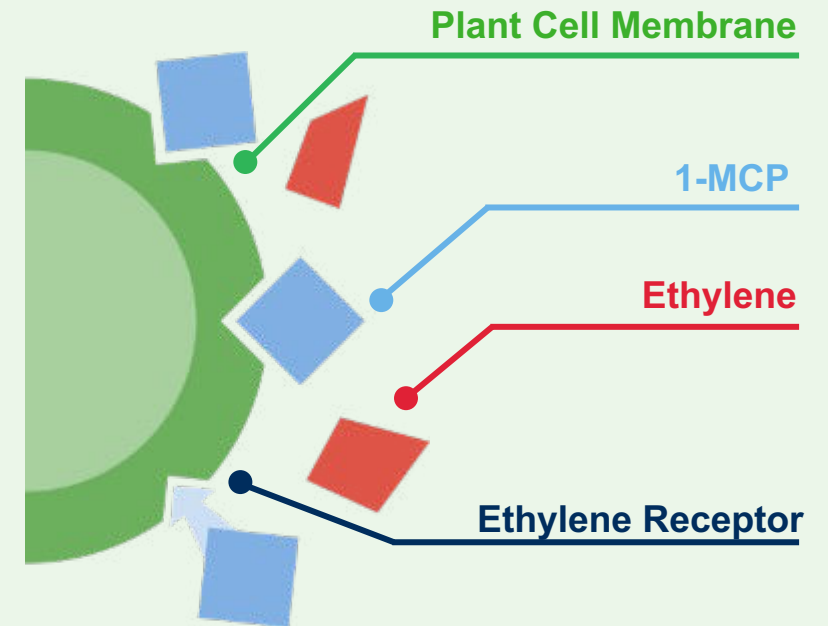
4

Our core building block, Ethylene Management

- Ethylene-rich environments trigger the ripening process too quickly, results in spoilage, loss and waste
- The active ingredient, 1-methylcyclopropene (1-MCP), similar to ethylene, a naturally occurring plant hormone
- SmartFresh™, the pioneer 1-MCP solution slows down fresh produce's natural ripening process to extend shelf life and enhance quality & freshness
- Available in 50+ countries used near and post harvest across multiple crops.

Unlocking the secrets of freshness for 20 years!

How *Smarter Freshness* starts with 1-MCP (1-Methylcyclopropene)





Ethylene Management in the Orchard

Quality Starts from the Field



Harvista™, near harvest 1-MCP Solutions

Controls peak ripeness for better fruit quality,
increased orchard revenue potential



UNIQUE MODE OF ACTION
CONTROL OF ETHYLENE RESPONSE



EXPANDS HARVEST WINDOW
OPTIMAL COLOR, SIZE AND FIRMNESS,
QUALITY & YIELD
FLEXIBLE LABOR MANAGEMENT

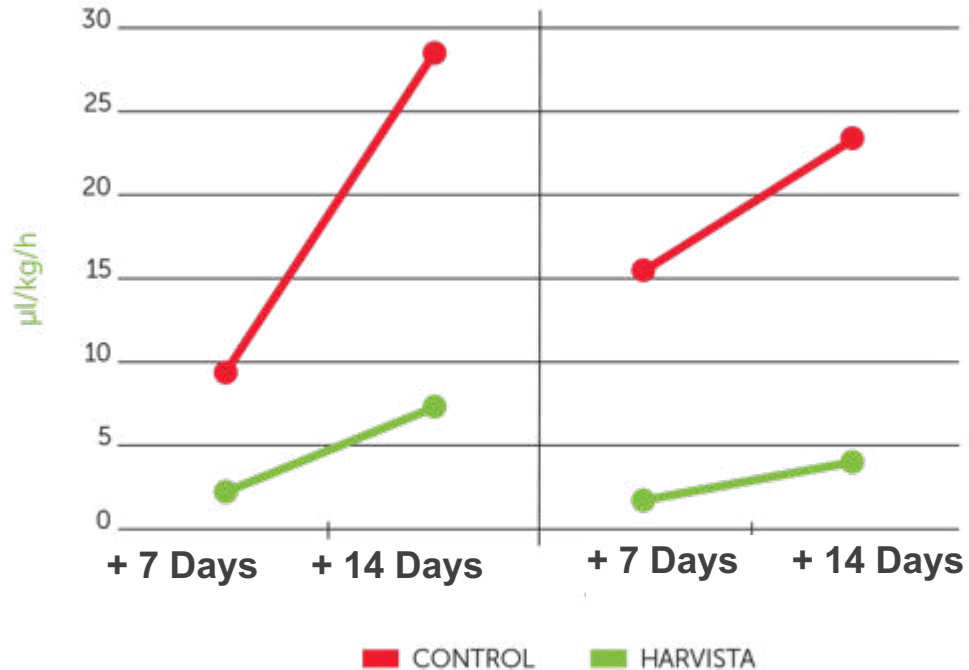


Reduced ethylene production in apples and pears

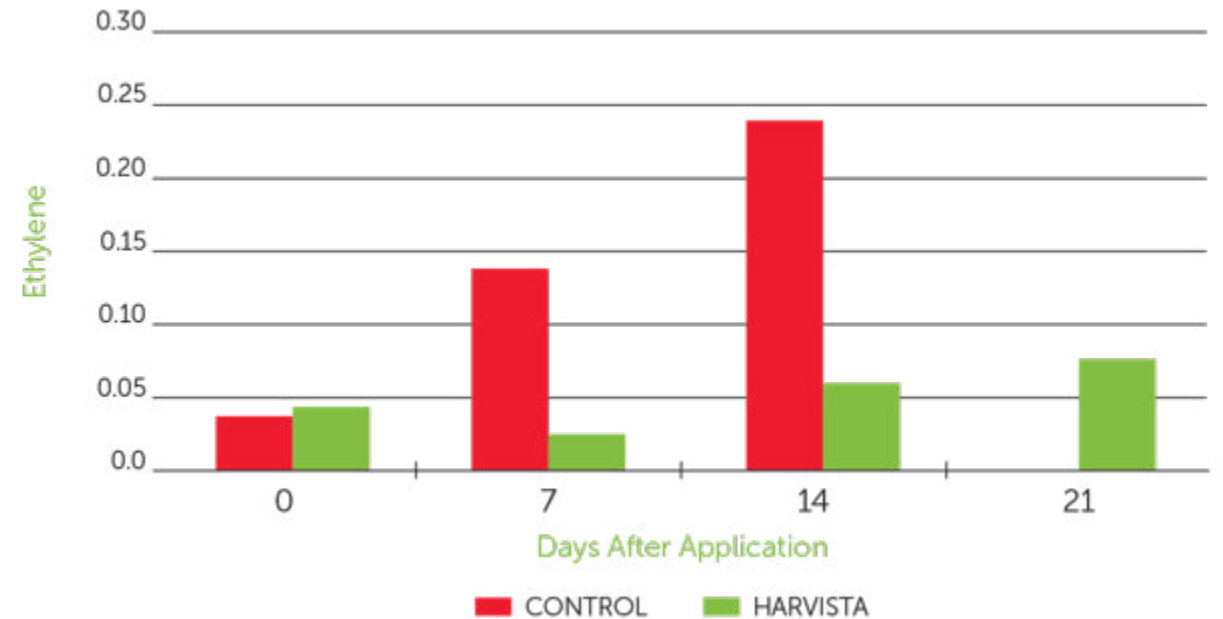
SIGNIFICANT REDUCTION OF ETHYLENE PRODUCTION UP TO 3 WEEKS AFTER APPLICATION



Ethylene production of apples
after shelf life



Ethylene production pears
after 7 days at ambient temperature

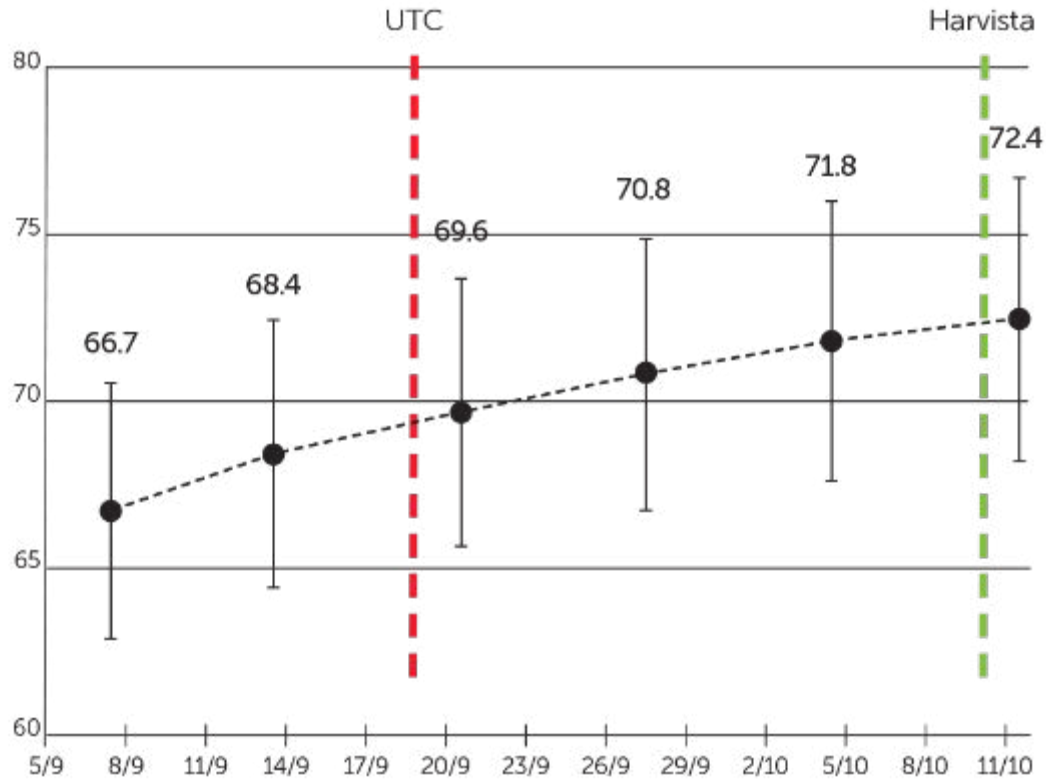


Increases fruit size and revenue potential by delaying harvest

SIGNIFICANT PREMIUM-QUALITY YIELD INCREASE

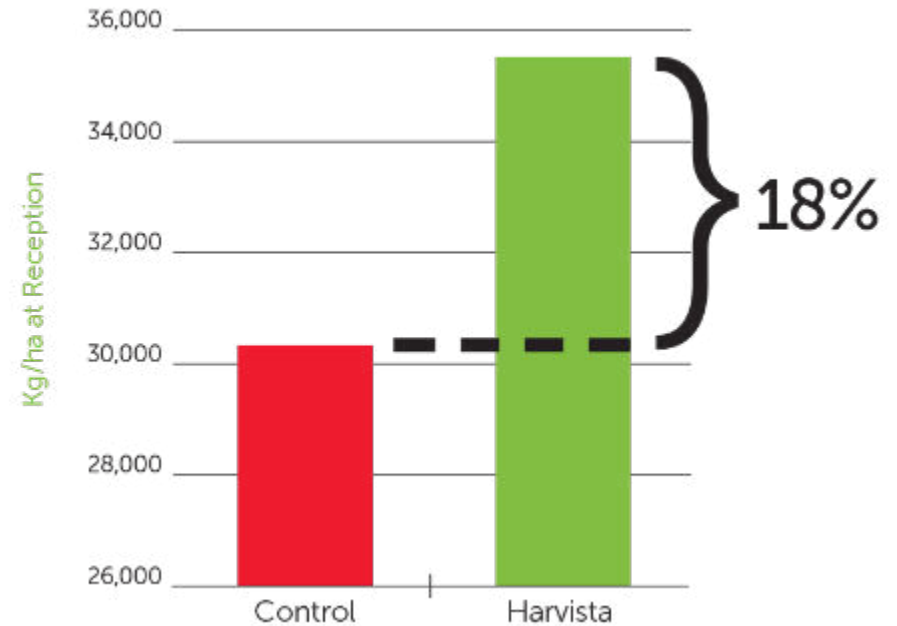
Fruit size development with Harvista

2021, Germany, Gala, Franz Giebler



Harvista effect on the yield of Gala apples

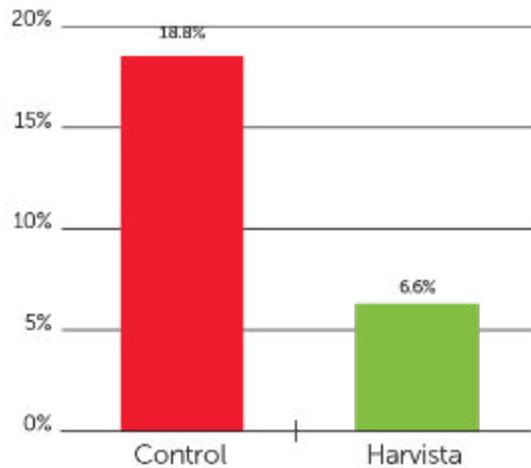
2017, Argentina



Minimizes occurrence of disorders in apples



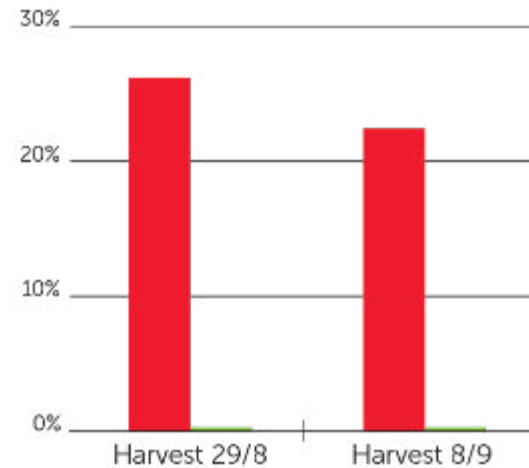
% Fruits with Stem Cracking
2016, Trial on Gala, CEFEL, Harvista 16/08



16/09 Full tree harvested



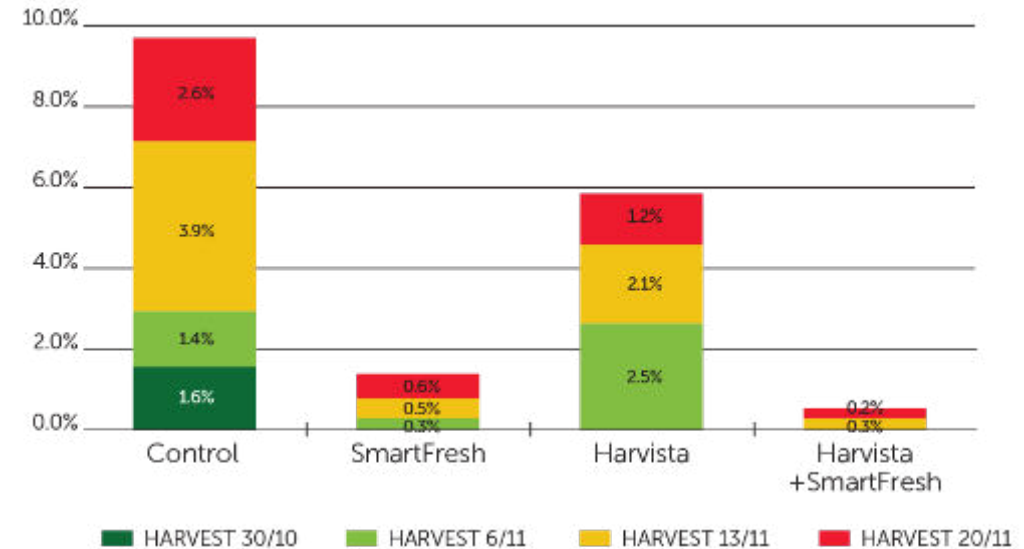
% Fruits with Senescence Breakdown
after 3 months storage in RA +9 days of shelf life
2016, Trial on Gala, CEFEL



■ CONTROL ■ HARVISTA



% Weighted Fruits with *Neofabraea alba*
Over all picks after RA storage 25/02
2018, CEFEL, France, Pink Lady®, Harvista applied 30/10,
picking started 7 days later than untreated

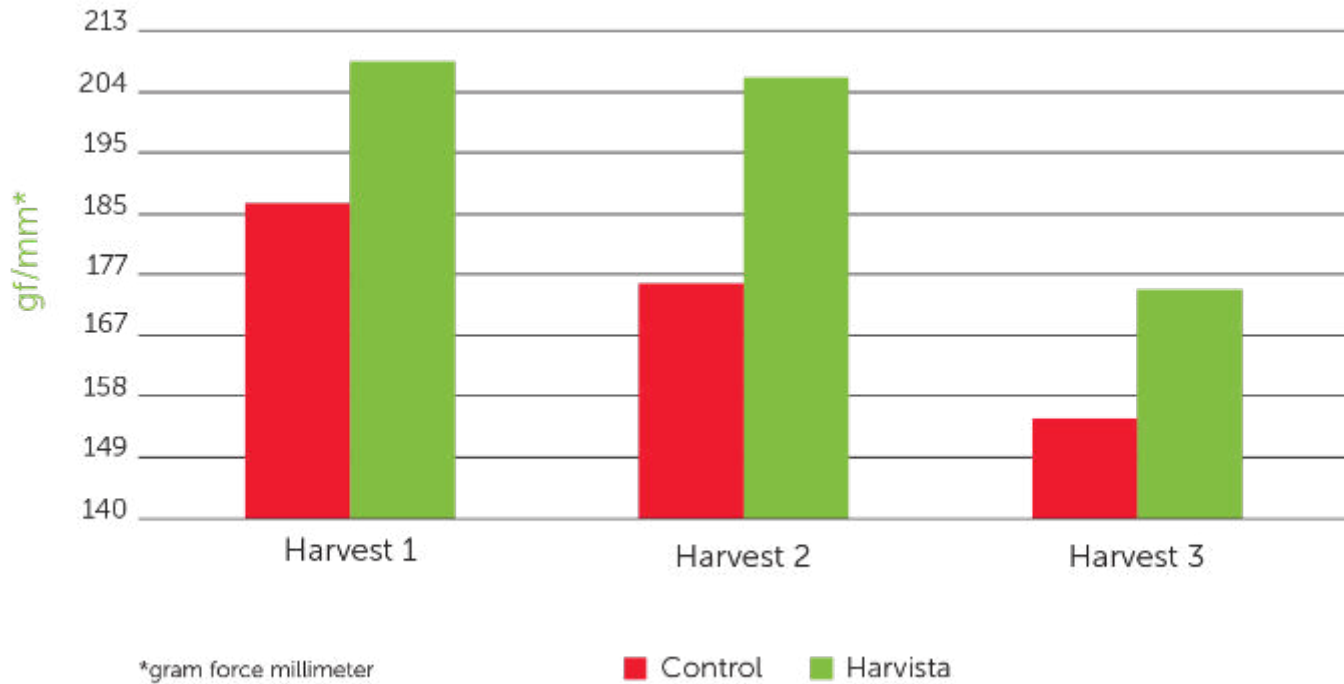


■ HARVEST 30/10 ■ HARVEST 6/11 ■ HARVEST 13/11 ■ HARVEST 20/11

Harvista improves storage potential and reduces incidence of disorders like stem end cracking, watercore, internal browning and Gloeosporium (*Neofabraea alba*)

Firmer Berries provides harvest flexibility and higher yield

BLUEBERRY FIRMNESS AT HARVEST



11-12% on-average firmness retention vs. Control



- ✓ Flexibility to hand-pick or machine harvest
- ✓ Reduce cost by managing labor
- ✓ Increase quality by managing blueberry time in the field



Post-Harvest Ethylene Management During Storage/Packing/Distribution



SmartFresh™

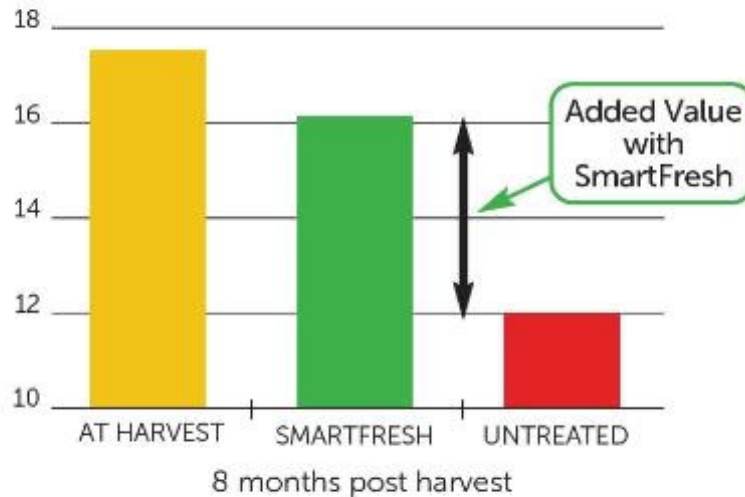
an AgroFresh solution

SmartFresh – Proven post-harvest ripening control

SmartFresh™ manages fruit response to ethylene – a plant's natural hormone that accelerates maturation and softening.

It slows respiration and the ripening process – maintaining the firmness, color and weight for optimal pack-out volume and quality!

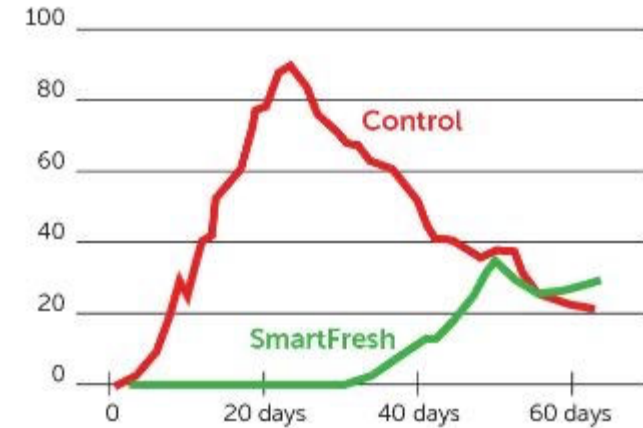
MEAN FIRMNESS OF APPLES



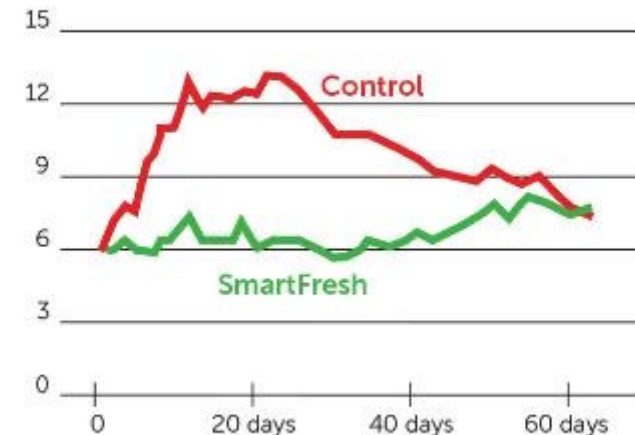
SOURCE: Dr Jim Mattheis - USDA-ARS
Wenatchee - Fan et al., 1999

Helps manage ripening from day 1

ETHYLENE PRODUCTION



RESPIRATION RATE



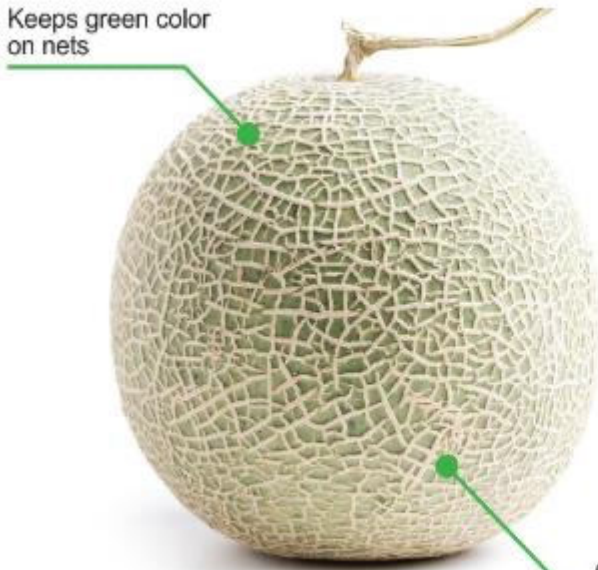
Offer Better Quality Melons with SmartFresh™



CANTALOUPES & HONEYDEWS

See the Difference

Keeps green color on nets



Reduces the incidence of brown spots on the skin



CONTROL

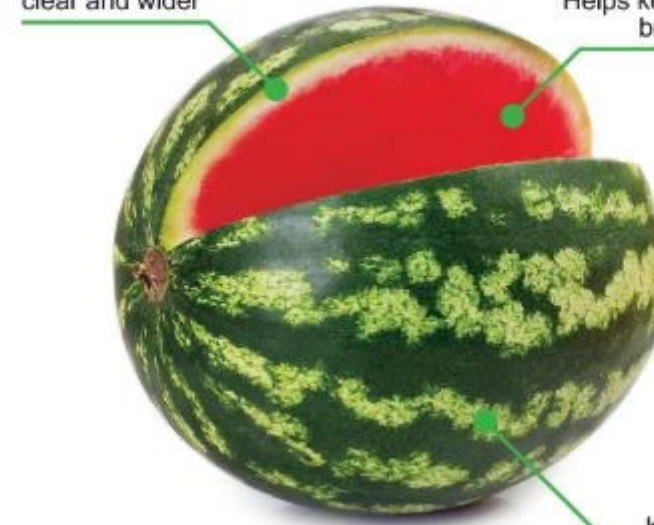


SmartFresh™

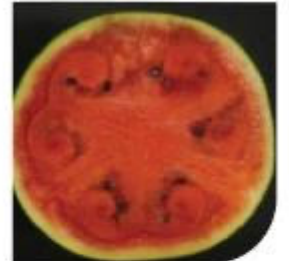
WATERMELONS

See the Difference*

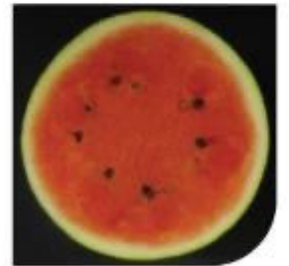
Keeps white rind clear and wider



Helps keep flesh color bright and fresh



CONTROL @ DAY 6



SmartFresh™

@ DAY 11

Keeps green skin color

Simulating a commercial shipment from US to Europe, and then a shelf life of 12 days*, **SmartFresh™ melons** were clearly **greener, firmer** and **less watery**

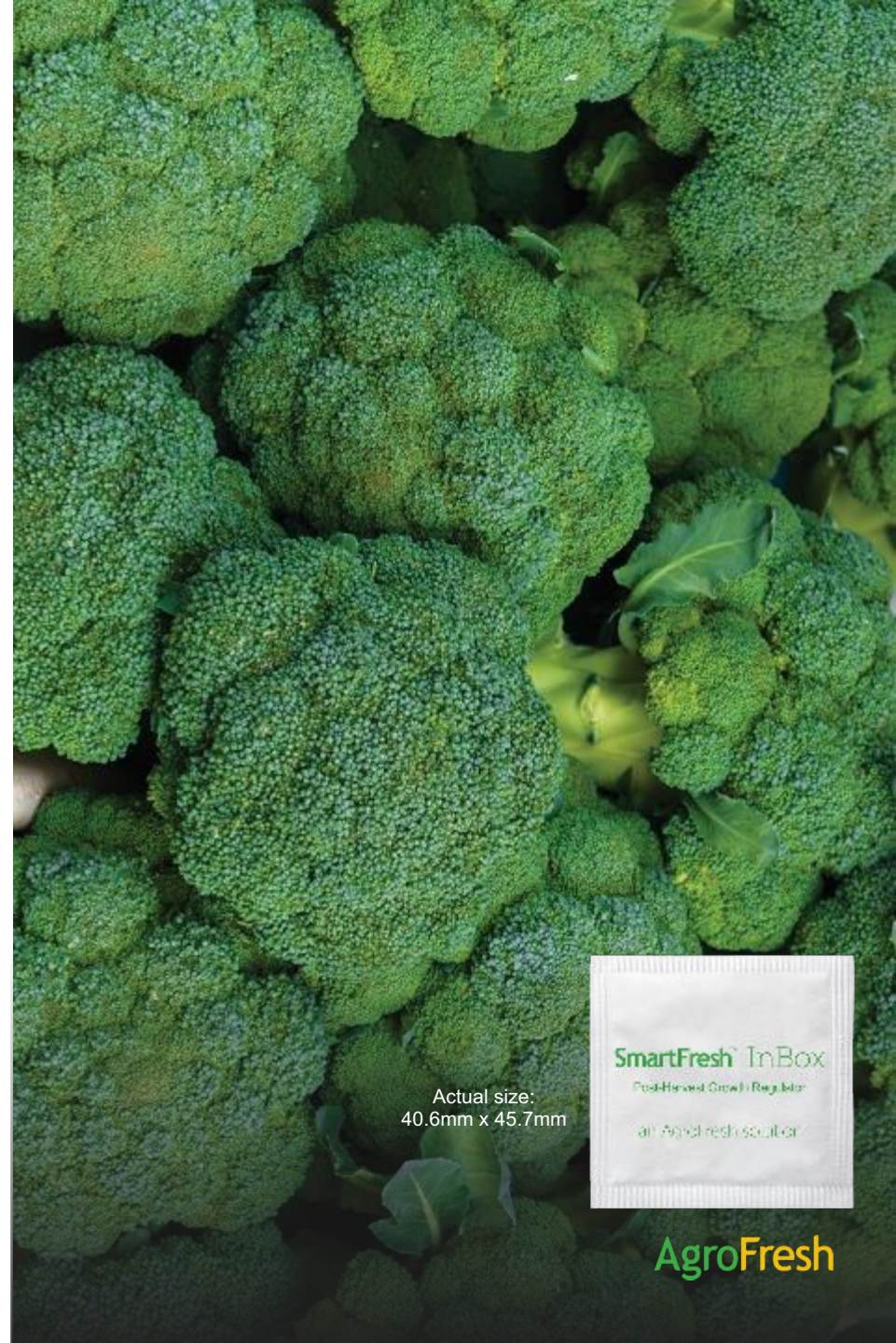
21 Days After the Start of the Trial



Polystyrene & Ice



SmartFresh[™] InBox
with a Normal Liner



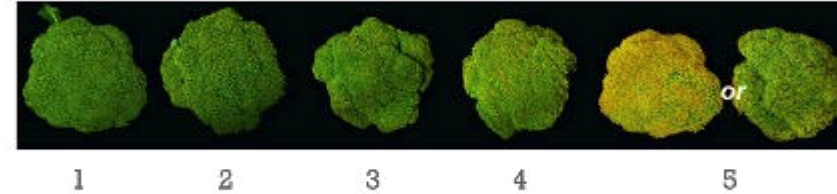
Actual size:
40.6mm x 45.7mm

AgroFresh

Increases marketable yield in broccoli after storage

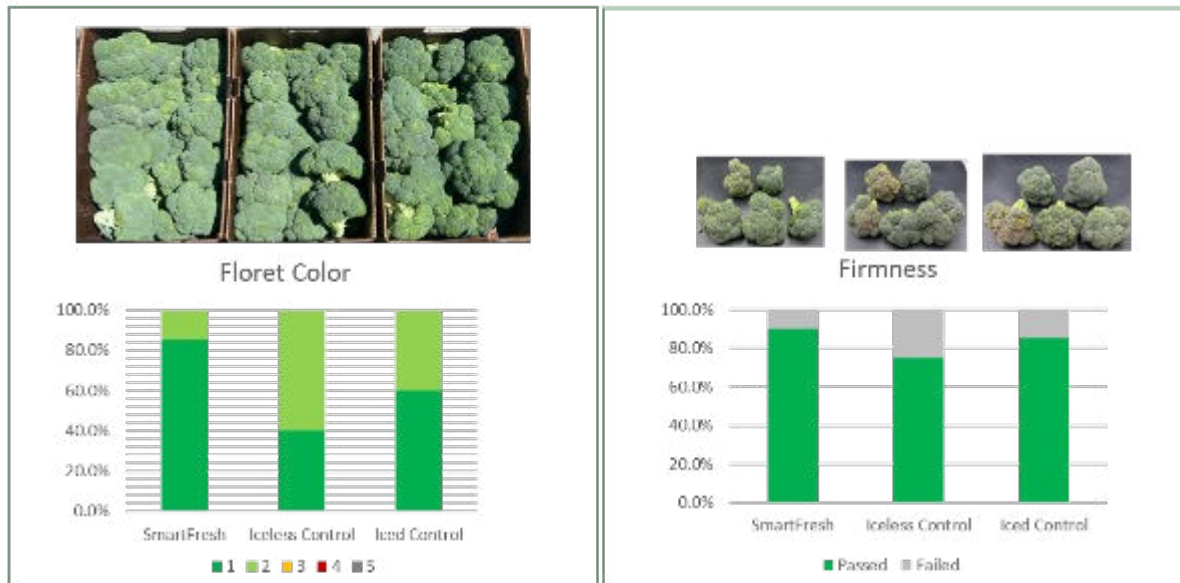
Evaluations:

1. Floret color: scale of 1-5 (1 = fully green, 5 = rotten and/or yellow)

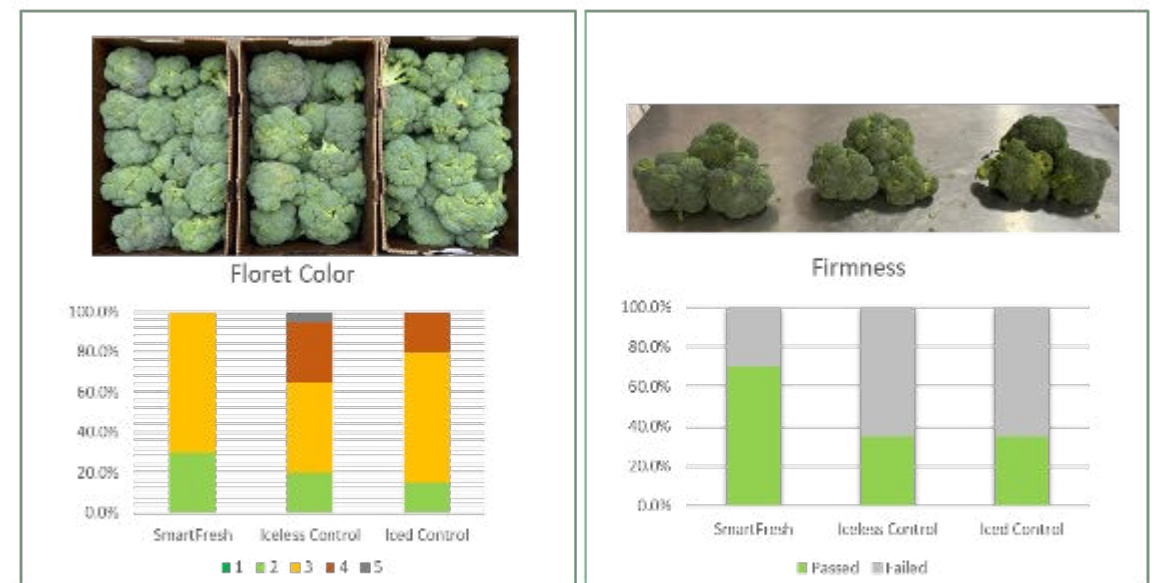


2. Floret firmness: simple pass/fail inspection (5 florets inspected on each crown, over 2 fails on a crown = total crown failure)

Day 11 (End of Storage)



Day 22 (End of Trial)



Marketable Broccoli: (Color ≤ 3 and firmness passed)	SmartFresh™	90%
	Iceless Control	75%
	Iced Control	85%

Marketable Broccoli: (Color ≤ 3 and firmness passed)	SmartFresh™ +	70%
	Iceless Control	15%
	Iced Control	30%

A Proven Sustainability Track Record

The Sustainability Impact¹ of SmartFresh™



SmartFresh™ reduced apple waste

>259k Metric Tons

of apples saved from landfill¹



CO2 reductions equivalent to taking more than

2 Million Cars

off the road for a year



As a result of spoilage reduction

2.5m Metric Tons

of water saved

Sources

¹ The Context Network, SmartFresh Sustainability Impact Study 2002 – 2018;

SmartFresh™ usage in the United States, France, Italy plus global extrapolations

AGFS ESG Report https://www.agrofresh.com/wp-content/uploads/2022/03/Agrofresh_ESGReport_2020.pdf

Manage Ethylene --- Achieve Quality, Improve Yield and Reduce Food Loss & Waste

AgroFresh



SMARTFRESH HELPS REDUCE CO₂ EMISSIONS:



- Allows produce to be stored at higher temperatures
- Helped take more than **10 million metric tons** of CO₂ out of the air from 2002 to 2018 in the U.S., France and Italy alone.*

*Analysis by The Context Network®



THE ORIGINAL 1-MCP

- The SmartFresh™ Quality System is a unique post-harvest tool for counteracting many of the undesirable effects of ethylene on fresh produce
- Simple, convenient application options for large and small storage rooms, transition bins and transport to retail



PROVEN PERFORMANCE

- Safely protects produce quality for peak flavor and texture
- Helps reduce food waste, energy use and emissions



20 YEARS

OF
SmartFresh™

Trust the Original 1-MCP

Reduce fruit loss and waste.
Increase pack out.

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The AgroFresh Difference, addressing customer needs, reducing waste, and maintaining quality across the supply chain



Near-harvest



Ethylene management to promote longer ripening time for improved quality, yield and color and better labor and harvest management



Post-harvest Storage/Packing/Processing



Ethylene management and digital monitoring to maintain freshness, firmness, and quality during storage, transport and ripening



Transit/Retail



Antimicrobials to prevent fungal decay, disinfectants for food safety prevention and equipment cleanliness



Plant-Based Coatings to prevent dehydration and extend shelf life
Solutions to maintain freshness in flowers



Integrated digital platform providing end-to-end visibility into real-time fruit quality inspection data, reporting and insights



Post-Harvest Solutions Leadership

Across 50+ Countries & 7 Innovation Centers in Key Fruit Growing Regions



Industry Leading

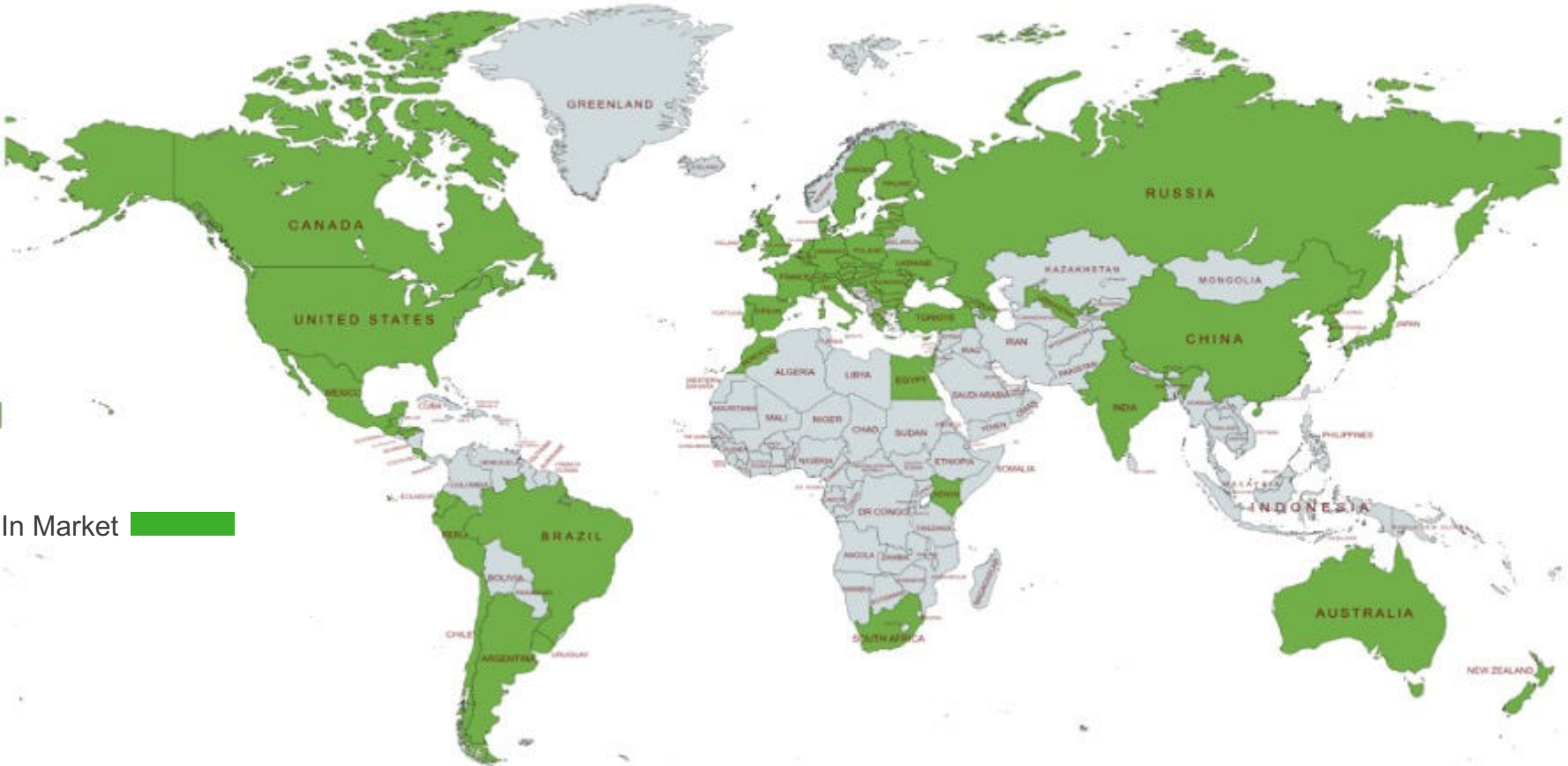
R&D and regulatory expertise
in more than 50 countries



Direct selling model
with 3,700 customers



Innovation Centers
Located in key
fruit-growing regions



AgroFresh

We Grow Confidence

Our team will be present at our booth to provide post-harvest knowledge, insight and advice.



Dr. Duncan T. Aust
Chief Technology Officer



Nicolas Sanders
Regional Commercial Director
APAC



Xisheng Sun
Asia R&D Manager
China Commercial Manager

Visit Us at Stand Hall 3-3C55

AgroFresh

We Grow Confidence

info@agrofresh.com

The leader in Post-Harvest Freshness Solutions for the Fresh Produce Market – Across the Supply Chain

