Parka™ POWERED BY Sure Seal™

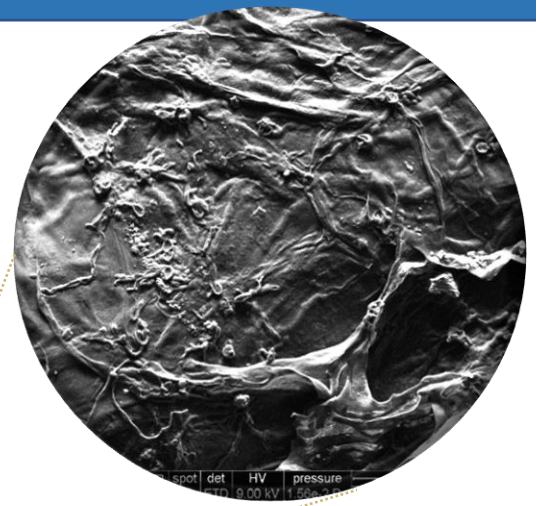
Sure Seal™

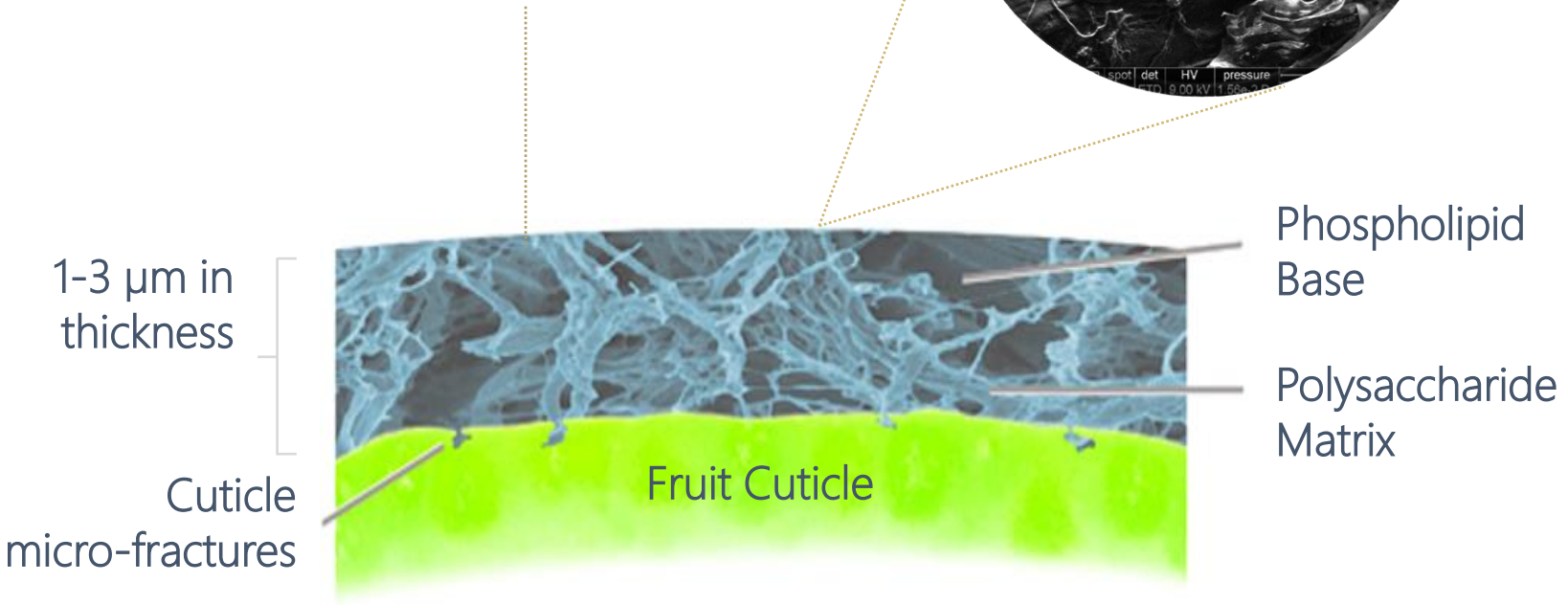
InSense

cultiva™

WHAT IS THE CUTICLE?

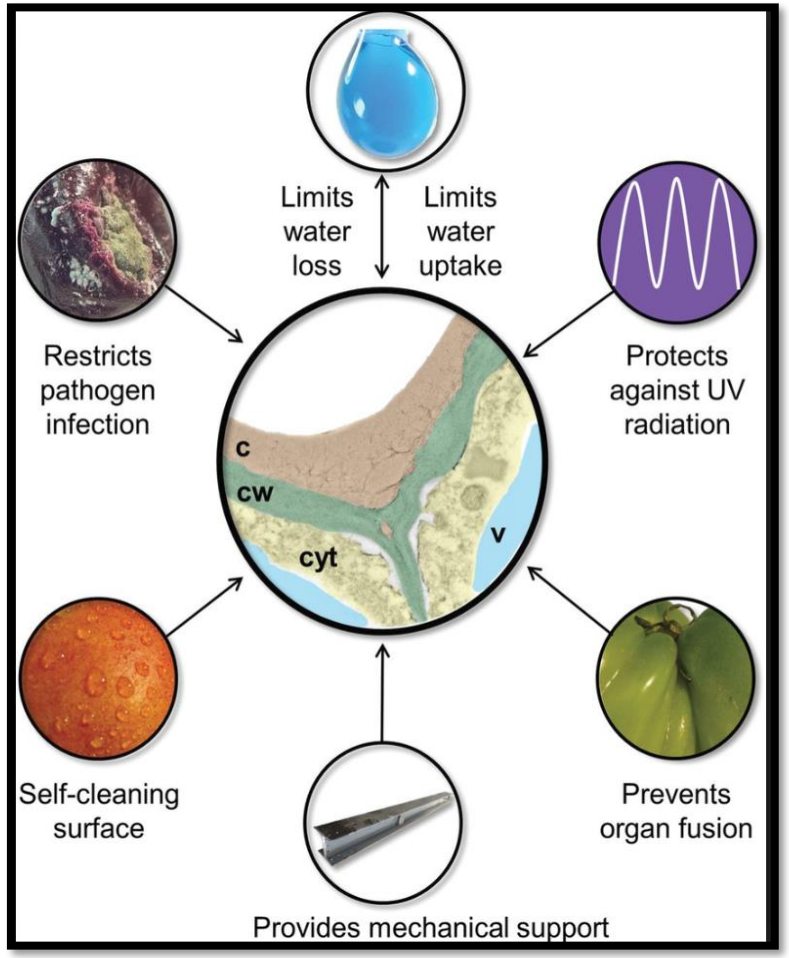
Parka – PHYSICAL MOA





ROLES OF THE CUTICLE

1. FIRST LINE OF DEFENSE
2. TRANSPORT BARRIER
3. BARRIER AGAINST PESTS AND PATHOGENS
4. PROTECTION AGAINS UV RADIATION
5. SELF CLEANING (The Lotus Effect)
6. MECHANICAL SUPPORT
7. ORGAN FUSION PREVENTION



THE CUTICLE AND STRESS

ABIOTIC STRESS

- The waxes protect the plant surfaces from excessive solar and UV radiations
- The hydrophobicity protects against freezing in sensitive plants.
- The cuticle mechanically protects plants by reducing the impact of external stresses such as wind or rain, preventing tissue breaking
- Higher fatty acid content is correlated to stronger stress resistance and better utilization of water uptake

BIOTIC STRESS

- The cuticle presents a physical barrier to pathogens that do not otherwise enter the plant by way of the stomata, wounds, or vectors.
- Epicuticular wax crystals can form an unstable surface that prevents pest attachment, penetration or insect locomotion

Attributes of Parka®

Parka™ POWERED BY SureSeal™

Phospholipid and polysaccharides, supplementing the cutin and waxylayers that make up the cuticle.

ELASTIC

Coating flexes & expands with plant & fruit growth.

HYDROPHOBIC

Repels water.

TANK MIX COMPATIBLE

High tank mixing capability

No surfactant needed

PERMEABLE

Allows continued transpiration and gas exchange. Not an antitranspirant.

EDIBLE

Made up of food grade ingredients

CLEAR

Leaves no residue

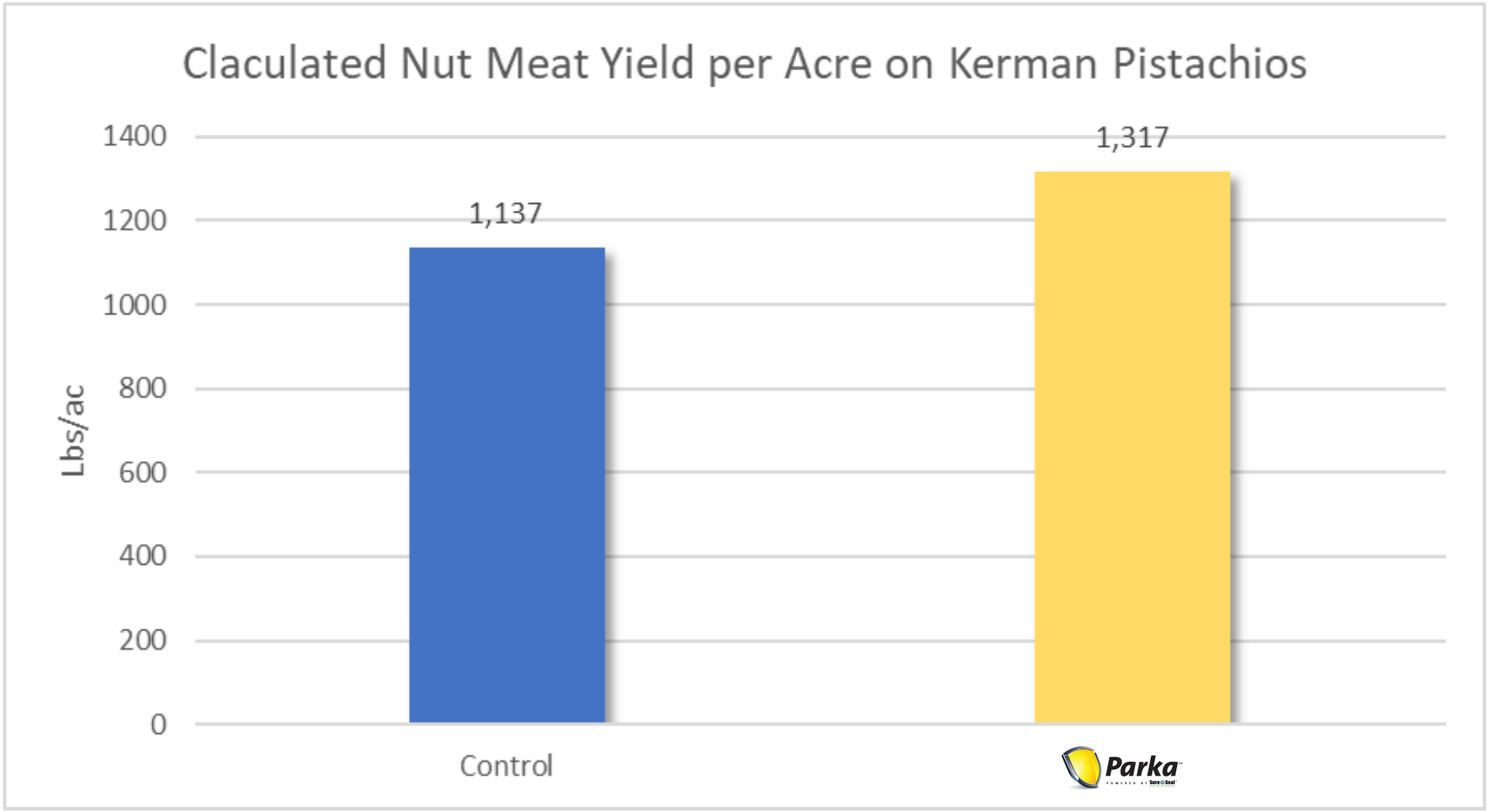
Major Parka Benefits for Pistachios

- Supplements the cuticle of the leaf to mitigate the impact of crop stress under hostile environmental conditions
- Enhanced yield through nut retention
- Optimized daily water utilization
- Less stress – higher productivity

- Supplements the cuticle of the shell protection from rain

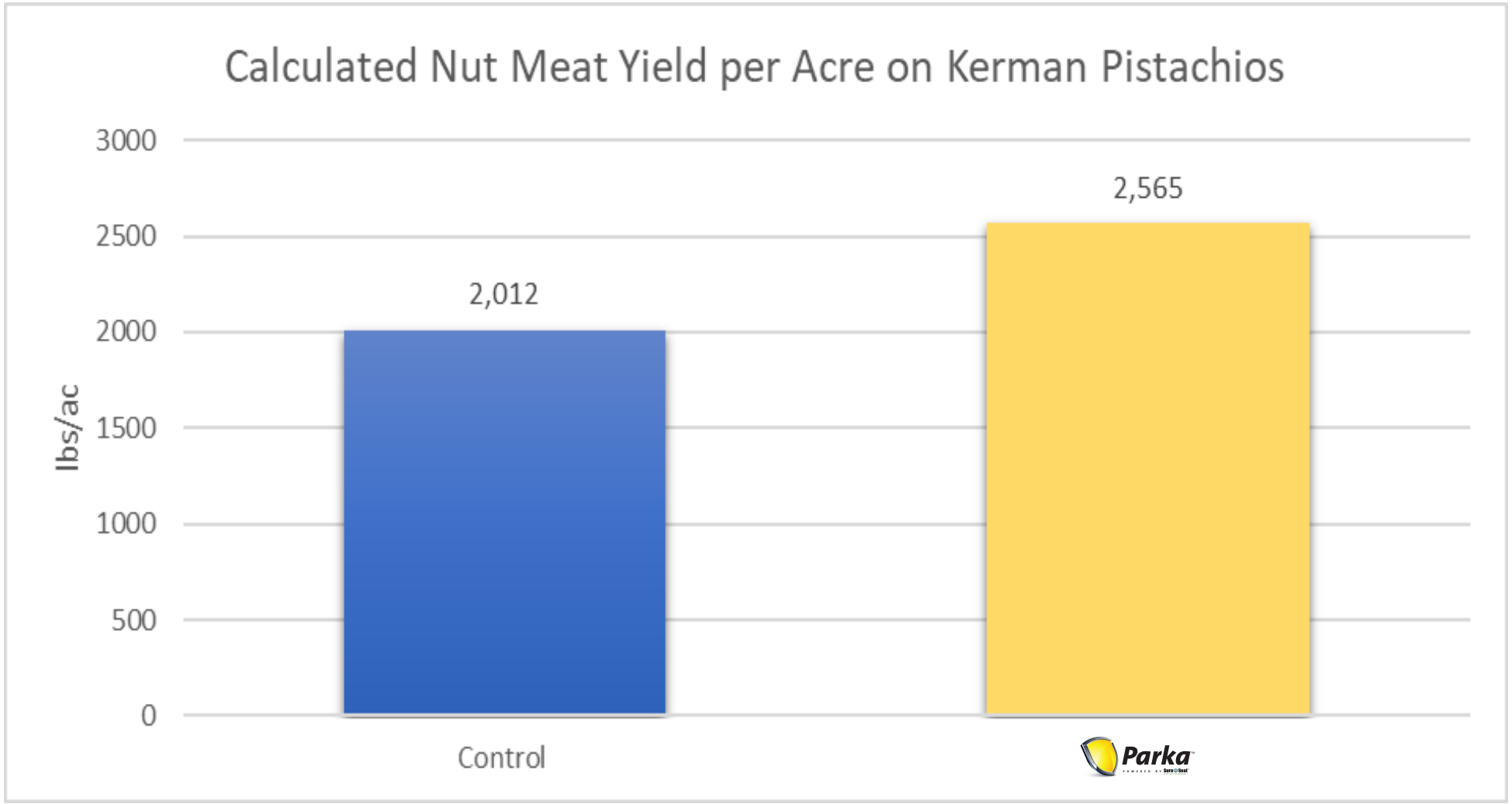
Pistachios Data

Parka Trial Results – Yield



- Variety: Kerman
- Rate: 1 gal/ac
- 3 Applications
  - Nut set
  - +30 days
  - +30 days
- Location: California
- Source: Bisabri Ag Research, 2021.

Parka Trial Results – Yield



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- Rate: 1gal/ac
- Location: California
- 3 Applications
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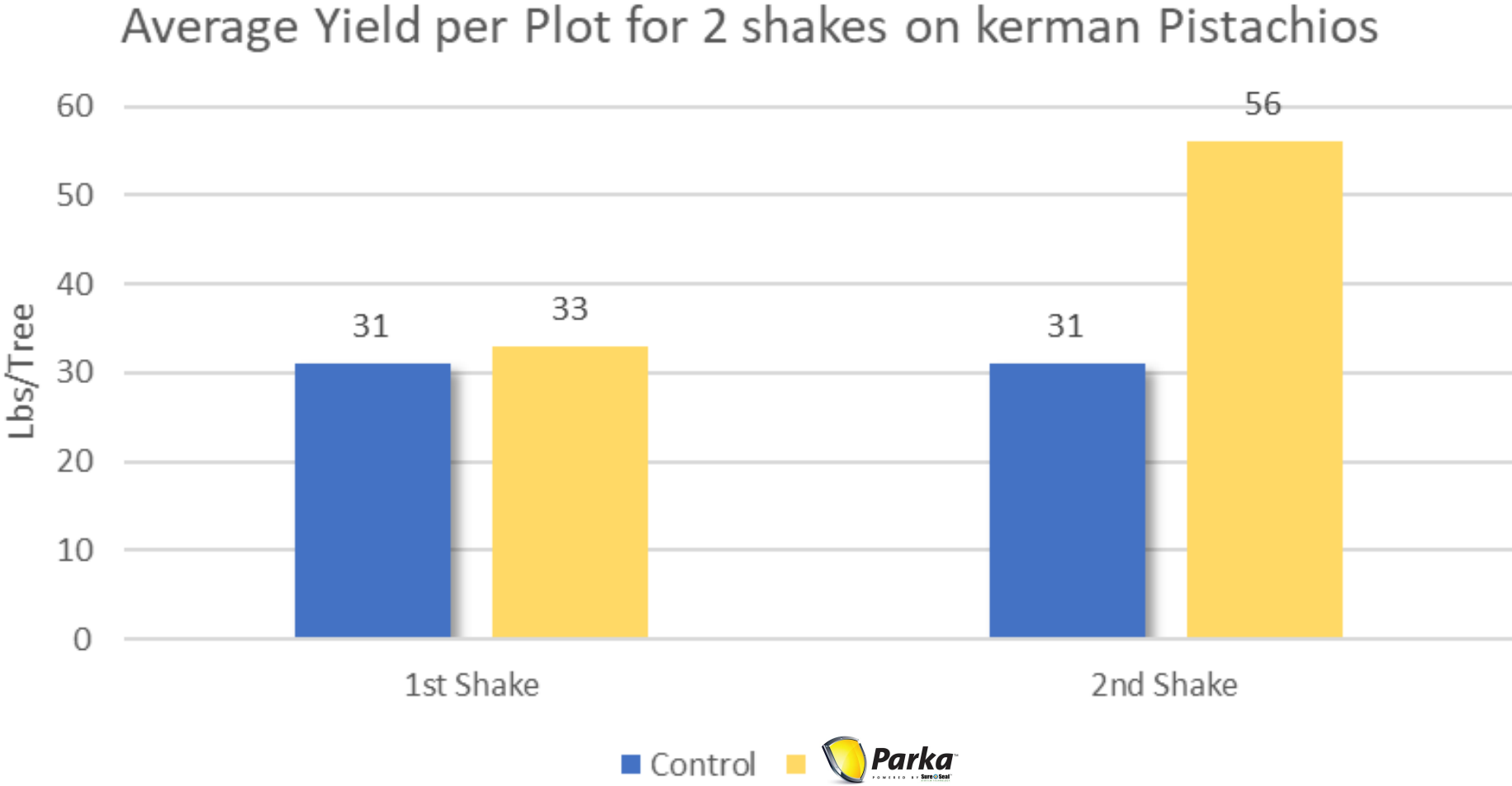
Parka Trial Results – Yield



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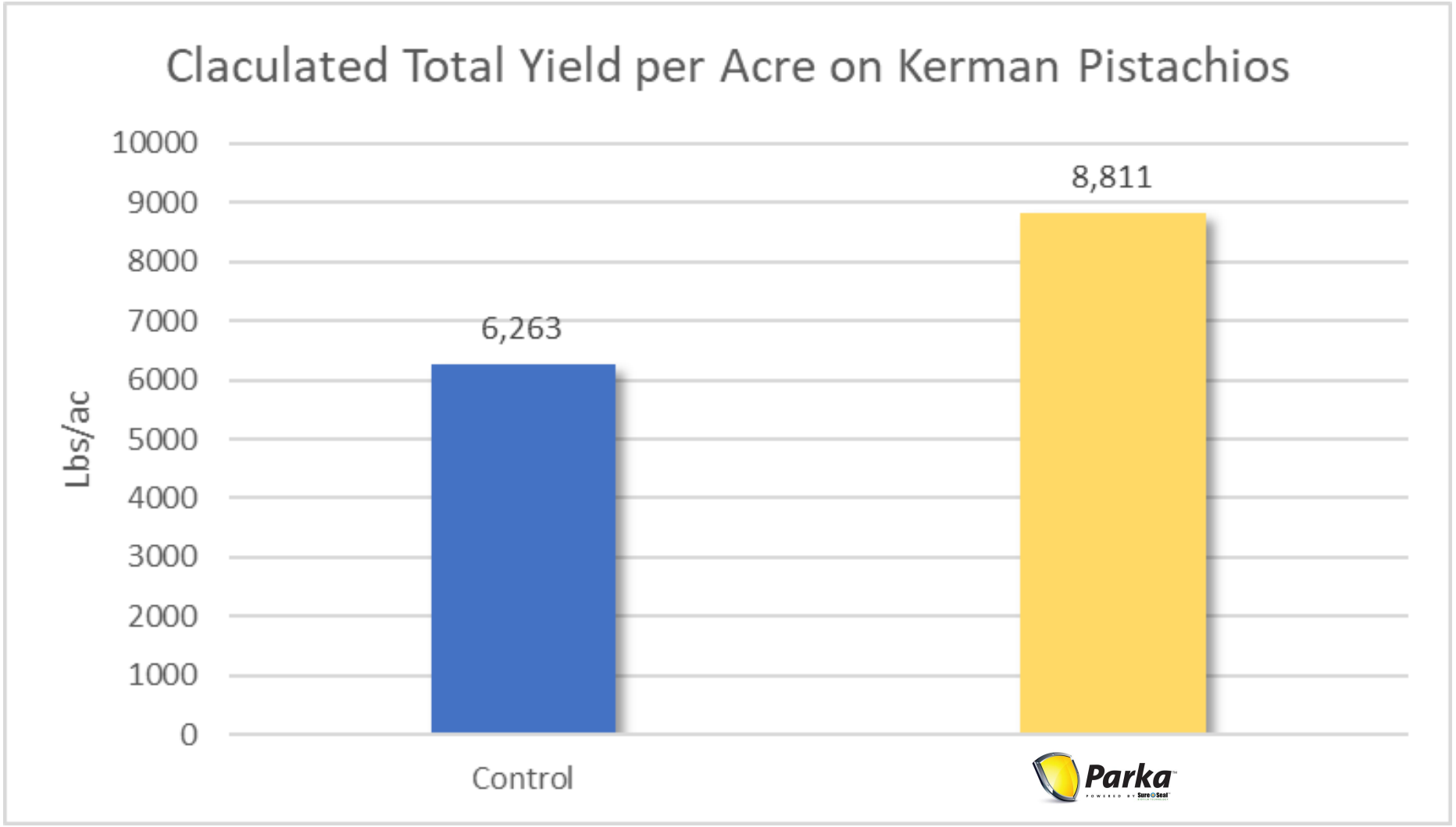
Parka Trial Results – Yield



- Variety: Kerman
- Rate: 1 gal/ac
- 3 Applications
  - Nut set
  - +30 days
  - +30 days
- Location: California
- Source: Research 4 Hire, 2020.

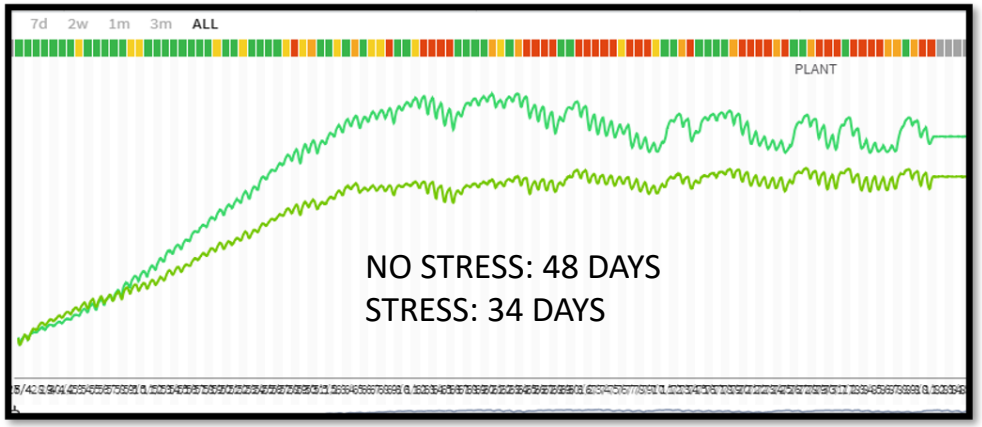
Parka Program for Yield Increase Pistachio

- 1 gal of Parka per acre in 100 gal of water spray
- 3 applications:
  - First – Nut Set
  - Second – 30 days after first application
  - Third –30 days after second application

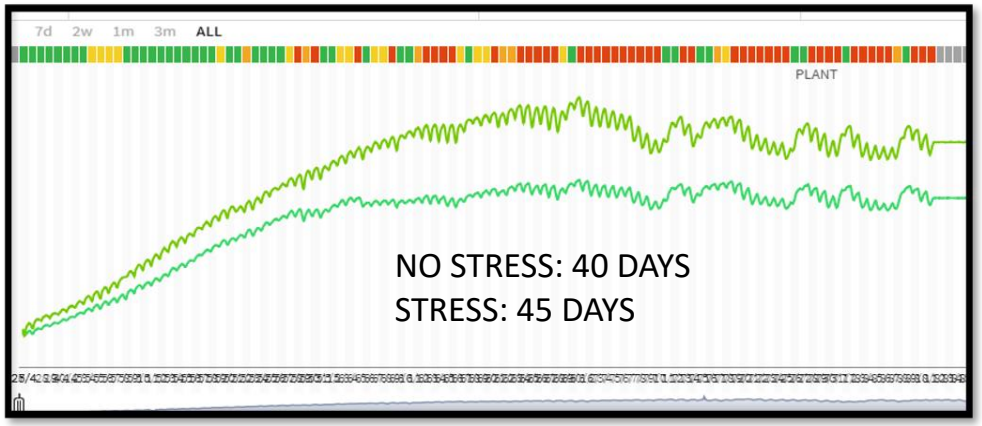
Almonds Data

Parka Trial Results – Water usage

Parka

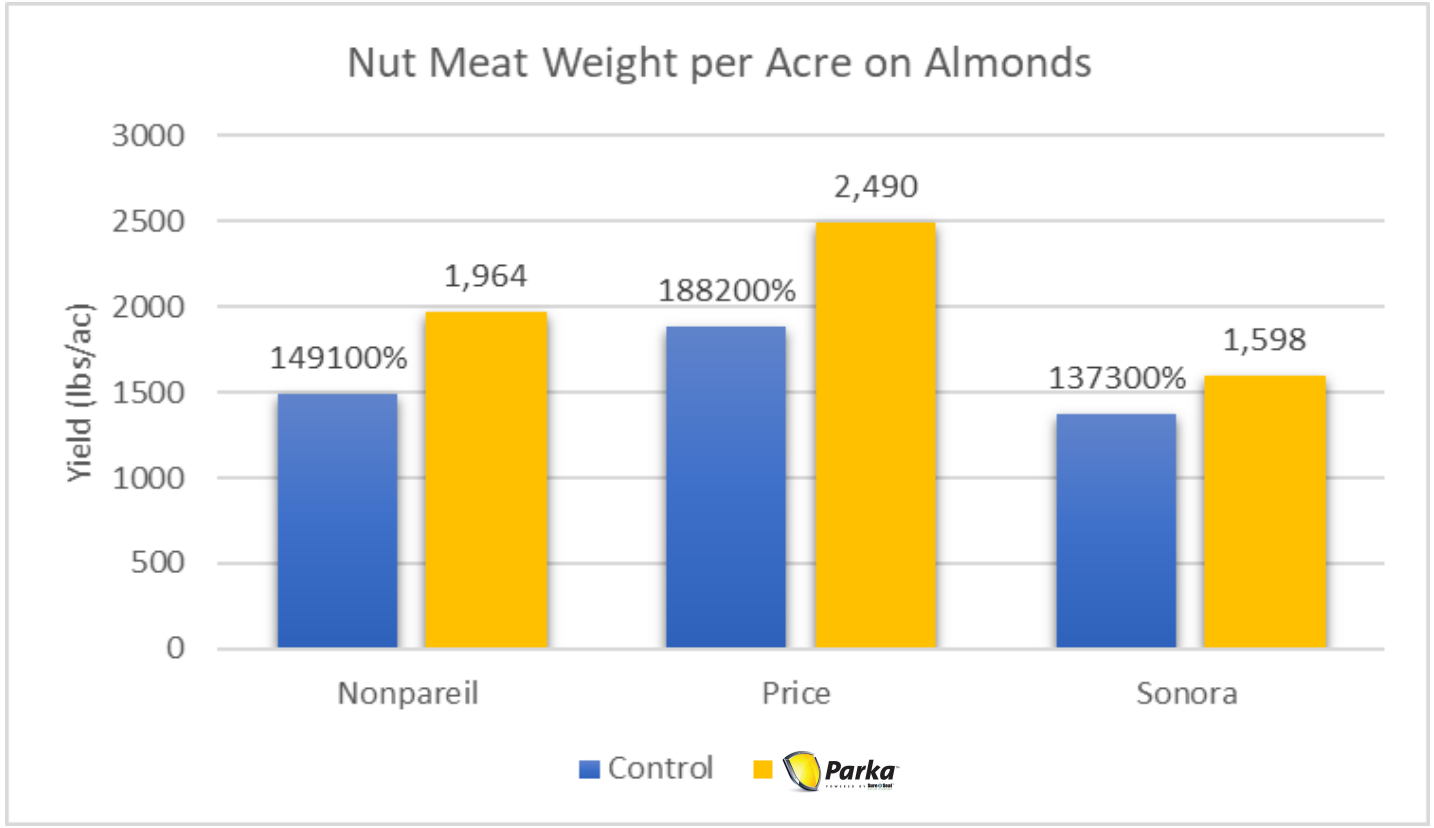


Control



- Rate: 1 gal/ac
- 2 Applications
- Location: California
- Source: Grower Phytech data, 2018.

Parka Demo Results – Yield



- Variety: Nonpareil, Price and Sonora
- Rate: 1 gal/ac
- 3 Applications
  - Fruit set
  - +30 days
  - +30 days
- Location: Delano California
- Source: Grower Demo, 2019.

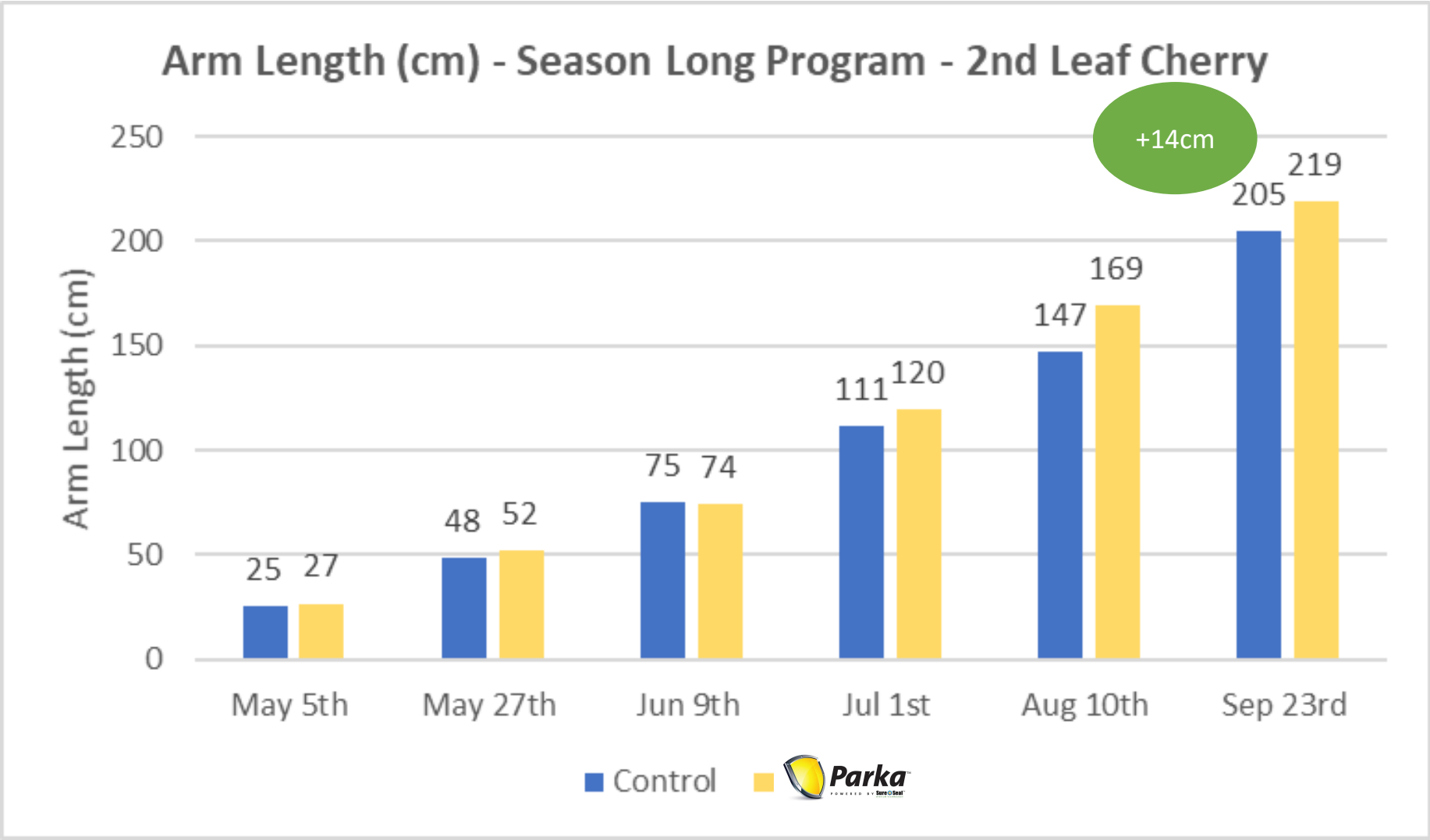
Parka Trial Results – New Plantings

Parka

Control

- Source: Serve Ag, 2019.

Parka Trial Results – New Plantings



- Rate: 1%v/v
- 6 Applications
  - May 1st
  - May 12th
  - May 23rd
  - June 5th
  - June 23rd
  - August 8th
- Location: Washington
- Source: Grower Demo, 2020.

Early Application Program

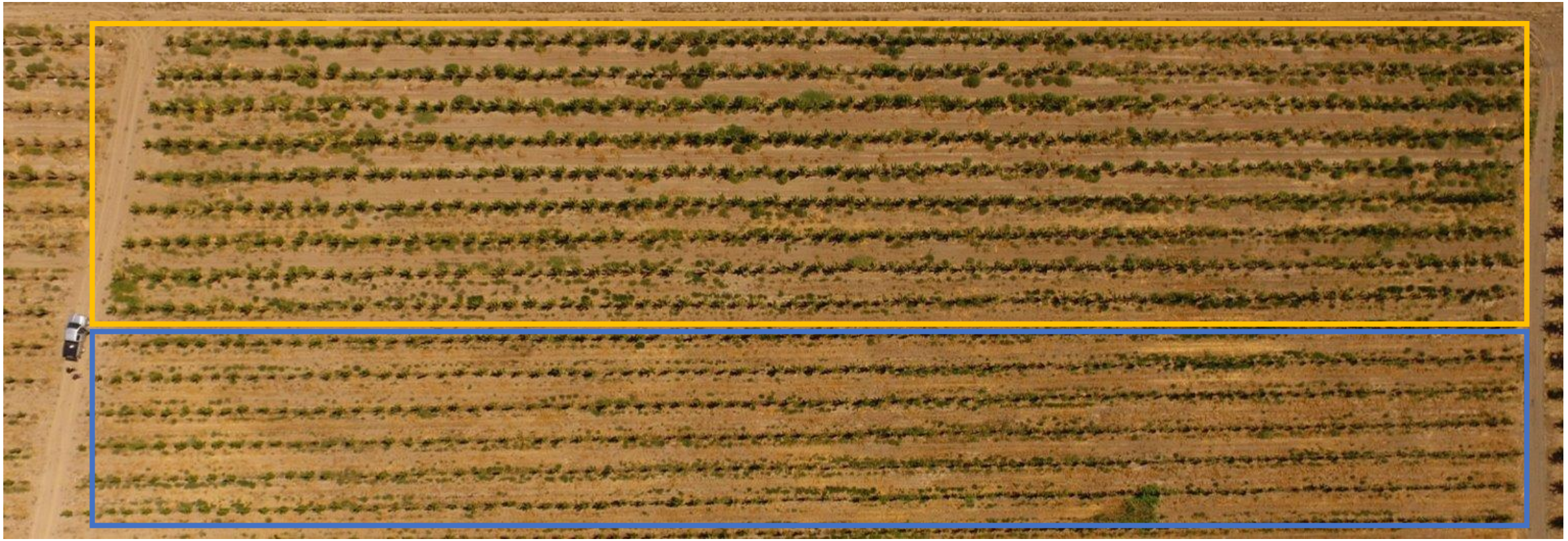
Parka™ POWERED BY SureSeal™

Control

Late Application Program

Late Application Program

Parka™ POWERED BY SureSeal™



Control

Parka – Use Recommendations Young Trees

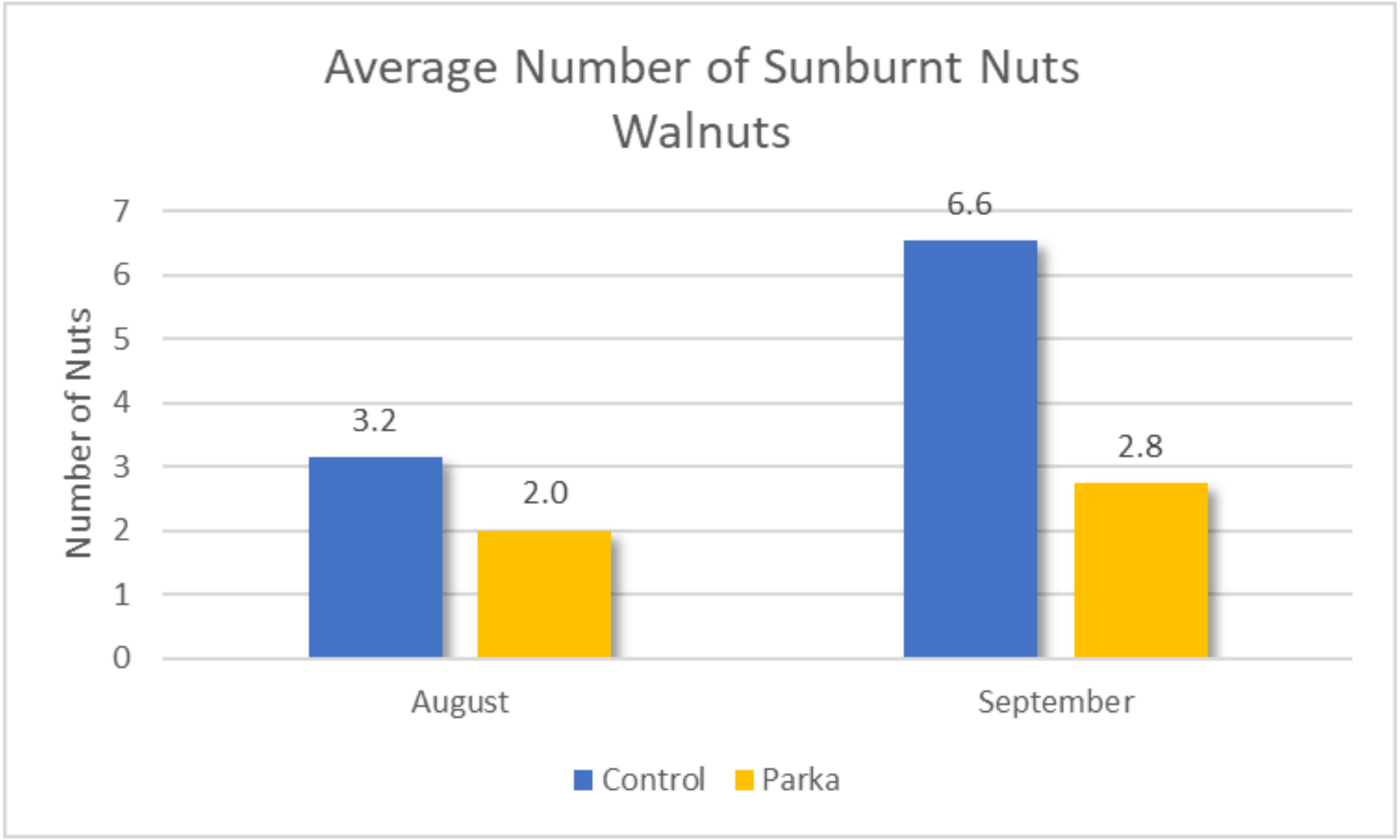
- Use 1% v/v Solution
- 3 applications:
  - First – When day temperatures exceed 85 °F (30 °C)
  - Second – 14 to 30 days after 1st application
  - Third – 14 to 30 days after 2nd application

Walnuts
Chestnuts
Hazelnuts

Parka®

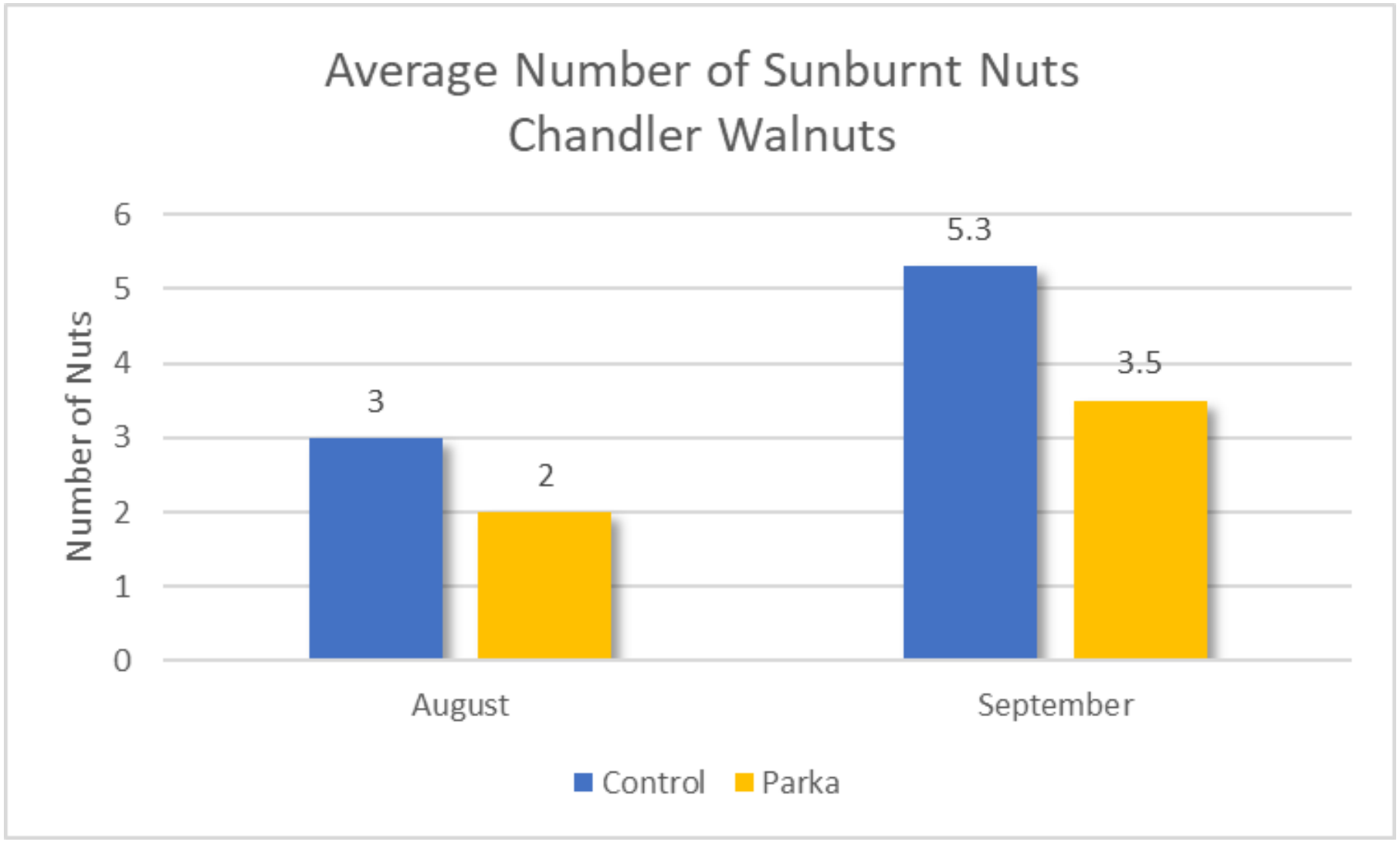
Superior Cuticle Care Starts with Parka

Parka Trial Results – Sunburn



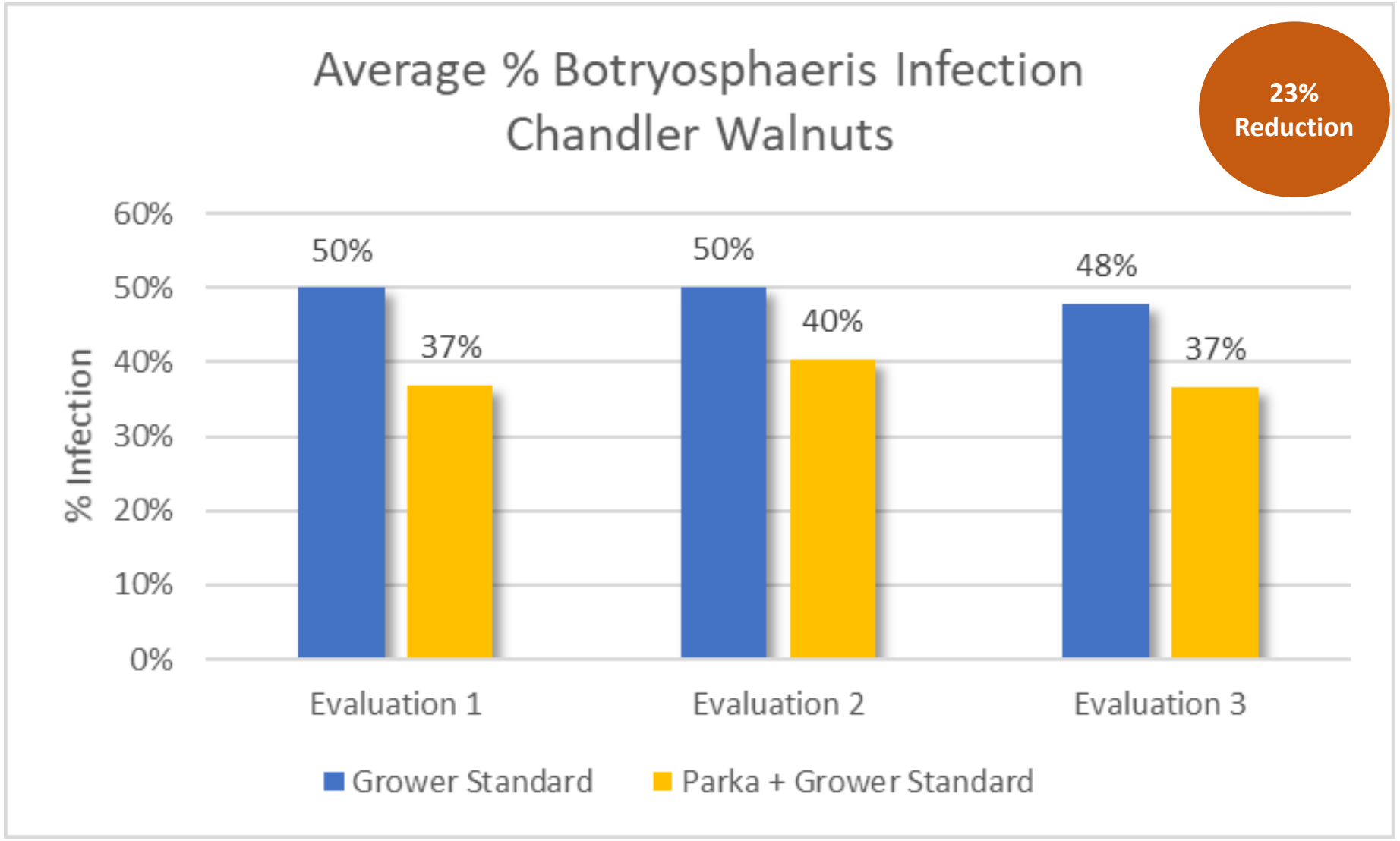
- Rate: Chandler
  - Parka: 1 gal/ac
- 3 Applications
  - Fruit Set
  - +30 days
  - +30 days
- Location: California
- Source: Helena R&D, 2019/20

Parka Trial Results – Sunburn



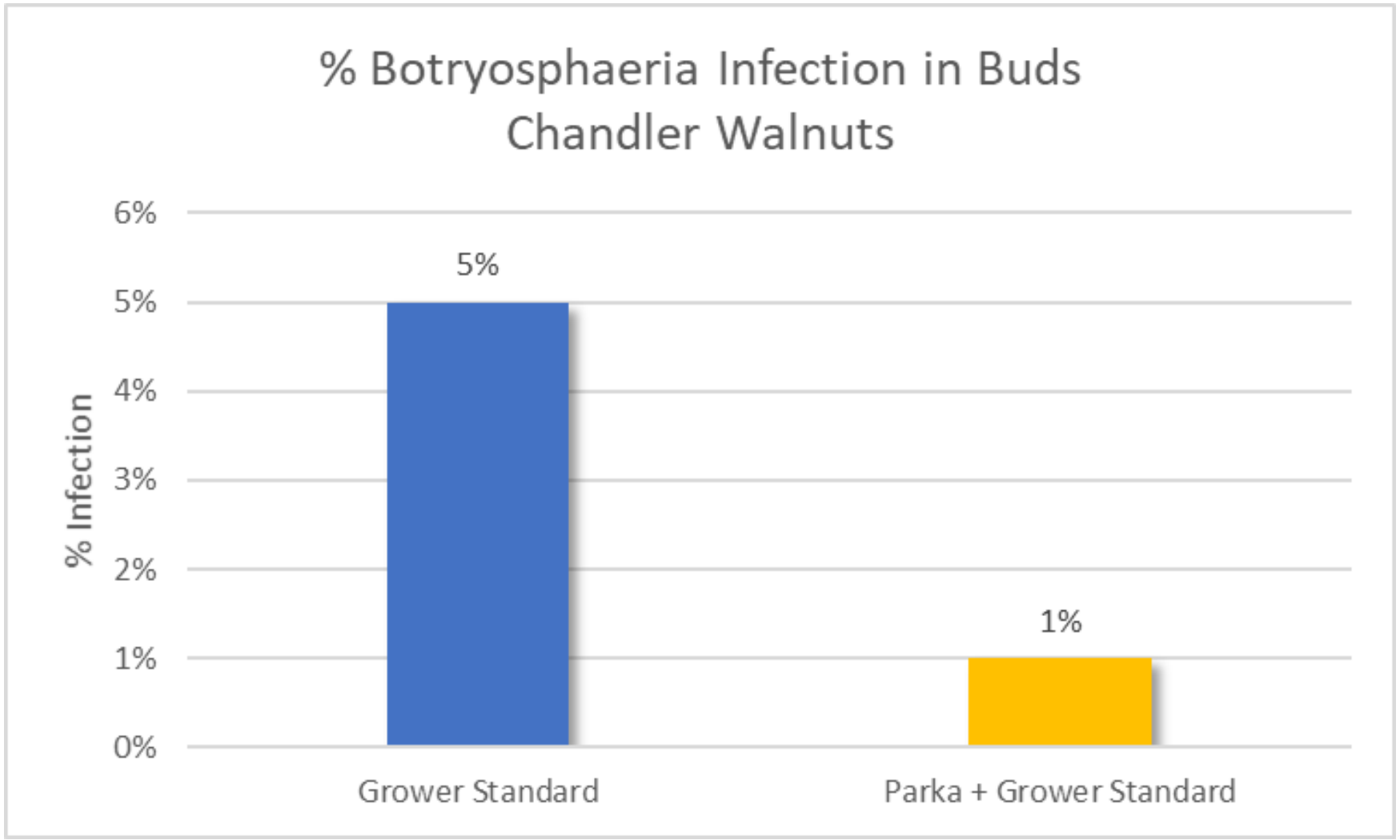
- Variety: Chandler
- Rate:
  - Parka: 1 gal/ac
- 3 Applications
  - Fruit Set
  - +30 days
  - +30 days
- Location: California
- Source: Helena R&D, 2019

Parka Trial Results – Botryosphaeria



- Variety: Chandler
- Rate:
  - Parka: 1 gal/ac
- 3 Applications
  - Fruit Set
  - +30 days
  - +30 days
- Location: California
- Source: Helena R&D, 2019/20

Parka Trial Results – Botryosphaeria



- Variety: Chandler
- Rate:
  - Parka: 1 gal/ac
- 4 Applications
  - Fruit Set
  - Repeating every 21-30 days
- Location: California
- Source: Helena R&D, 2019

TAKE AWAY

Cracking:

- **Parka seals microfractures and increases membrane stability by increasing FA, reducing ROS, LOX and MDA, which reduces the incidence of cracking**

Abiotic Stress and Sunburn:

- **Parka increases antioxidant defense and POX which reduces LOX and MDA** that decrease the potential oxidative stress that causes harvest and post-harvest oxidative damage.
- **Parka enhances photosynthetic activity** which leads to **higher sugar accumulation** and it **reduces ethylene production** which slows down the senescence process. This increase in photosynthesis allows the fruit and leaves to **move the solar energy down the pathway** preventing damage caused by photo-oxidative stress (ROS).

New growth and yield

- **Parka enhances transpiration and photosynthetic activity** which leads to **higher sugar accumulation** it also **reduces ethylene production and stress** which allows trees to **retain more fruit** and **produce more biomass**

Fruit quality

- **By reducing cracking, sunburn, stress and disease incidence Parka, overall, yields better quality fruit at harvest and potentially post-harvest.**

Attributes of Parka®

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Phospholipid and polysaccharides, supplementing the cutin and waxylayers that make up the cuticle.

ELASTIC

Coating flexes & expands with plant & fruit growth.

HYDROPHOBIC

Repels water.

TANK MIX COMPATIBLE

High tank mixing capability

No surfactant needed

PERMEABLE

Allows continued transpiration and gas exchange. Not an antitranspirant.

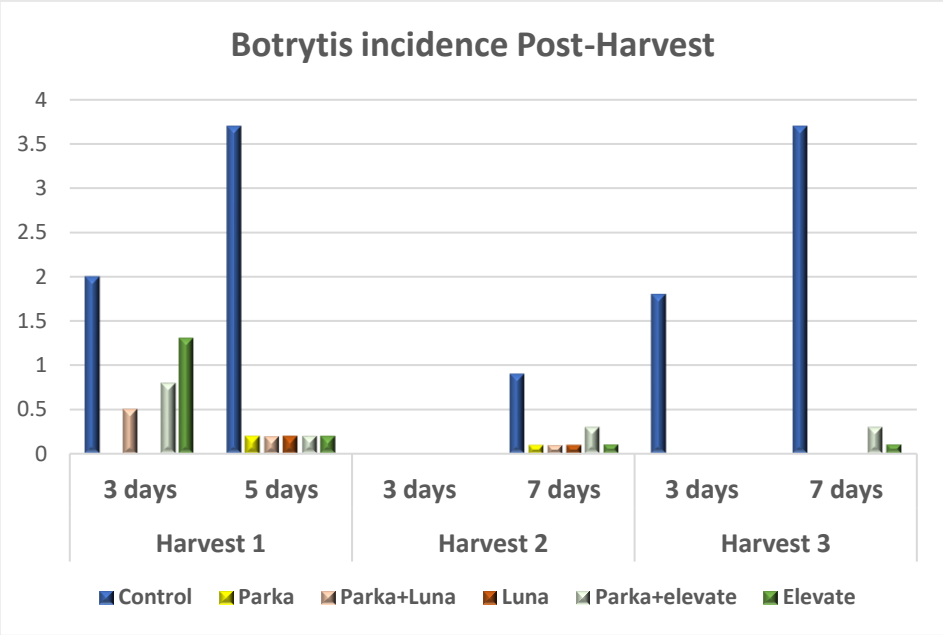
EDIBLE

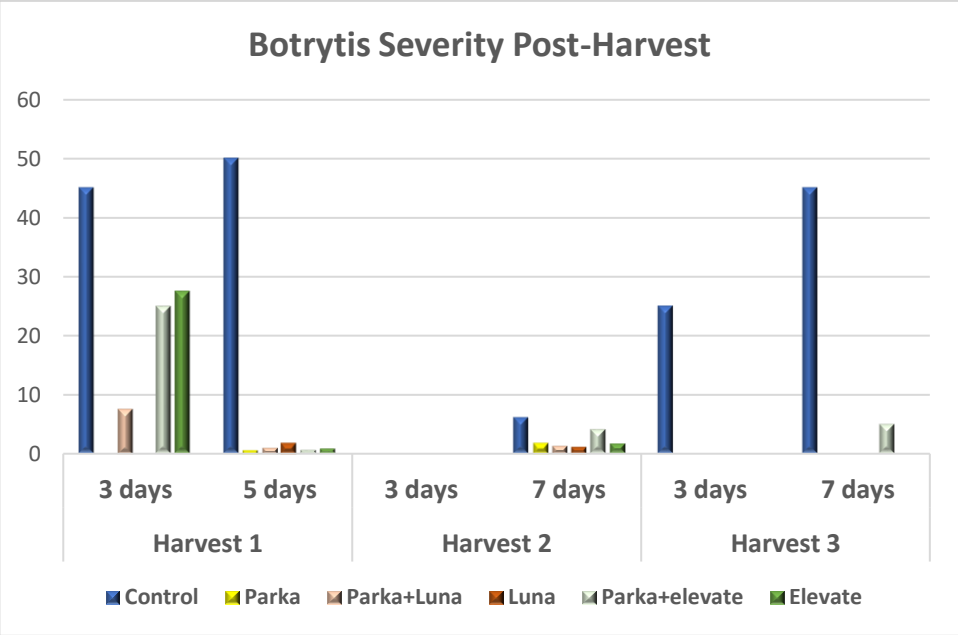
Made up of food grade ingredients

CLEAR

Leaves no residue

PARKA TRIAL RESULTS – DISEASE INCIDENCE





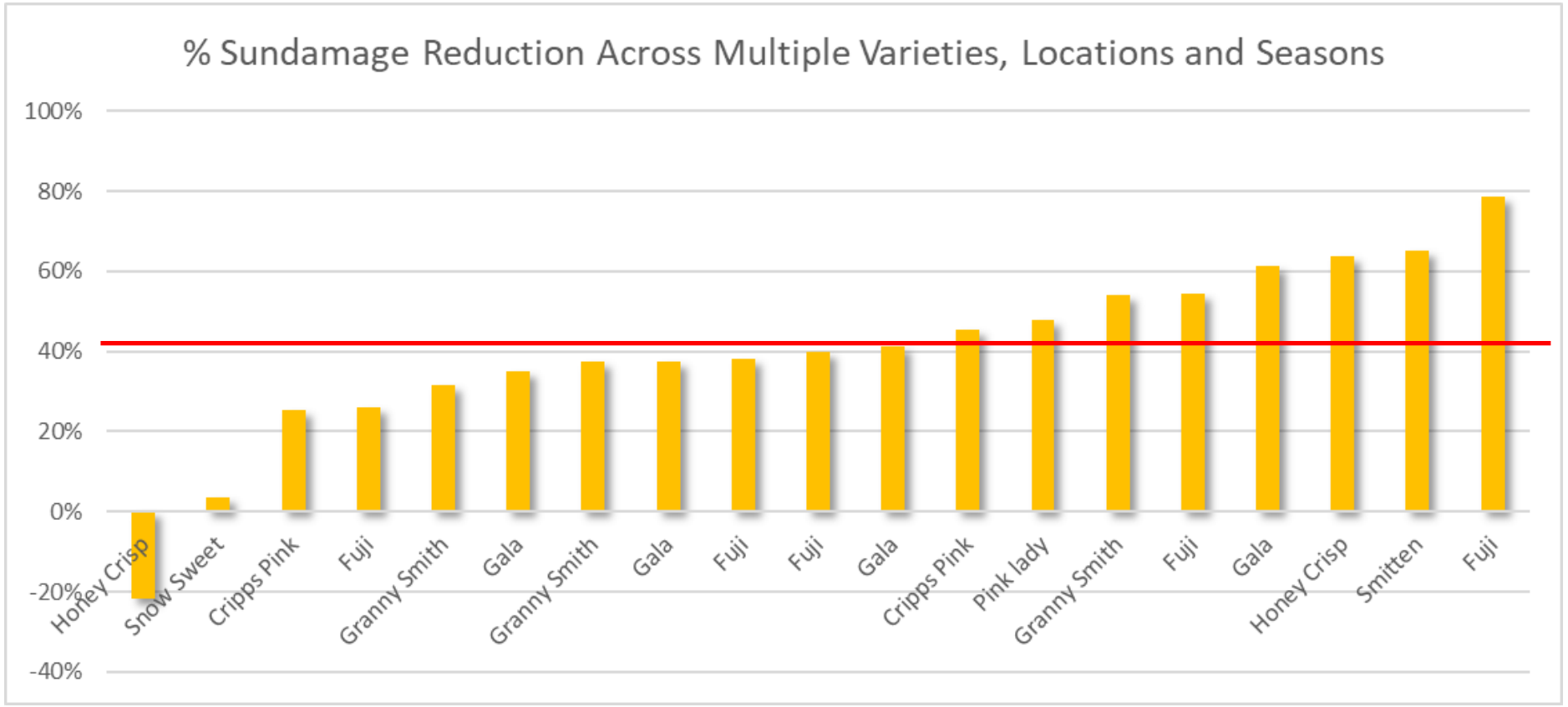
Product	Rate	Application Program
Parka	0.5 gal/ac	Every other week – 5 apps
Parka + Luna Sensation®	0.5 gal/ac + 6.4 fl.oz/ac	Every other week – 5 apps
Luna Sensation®	6.4 fl.oz/ac	Every other week – 5 apps
Parka + Elevate®	0.5 gal/ac + 1.25 lb/ac	Every other week – 5 apps
Elevate®	1.25 lb/ac	Every other week – 5 apps

Source: Helena R&D, CA, 2020.

Luna Sensation® is a registered trademark of Bayer

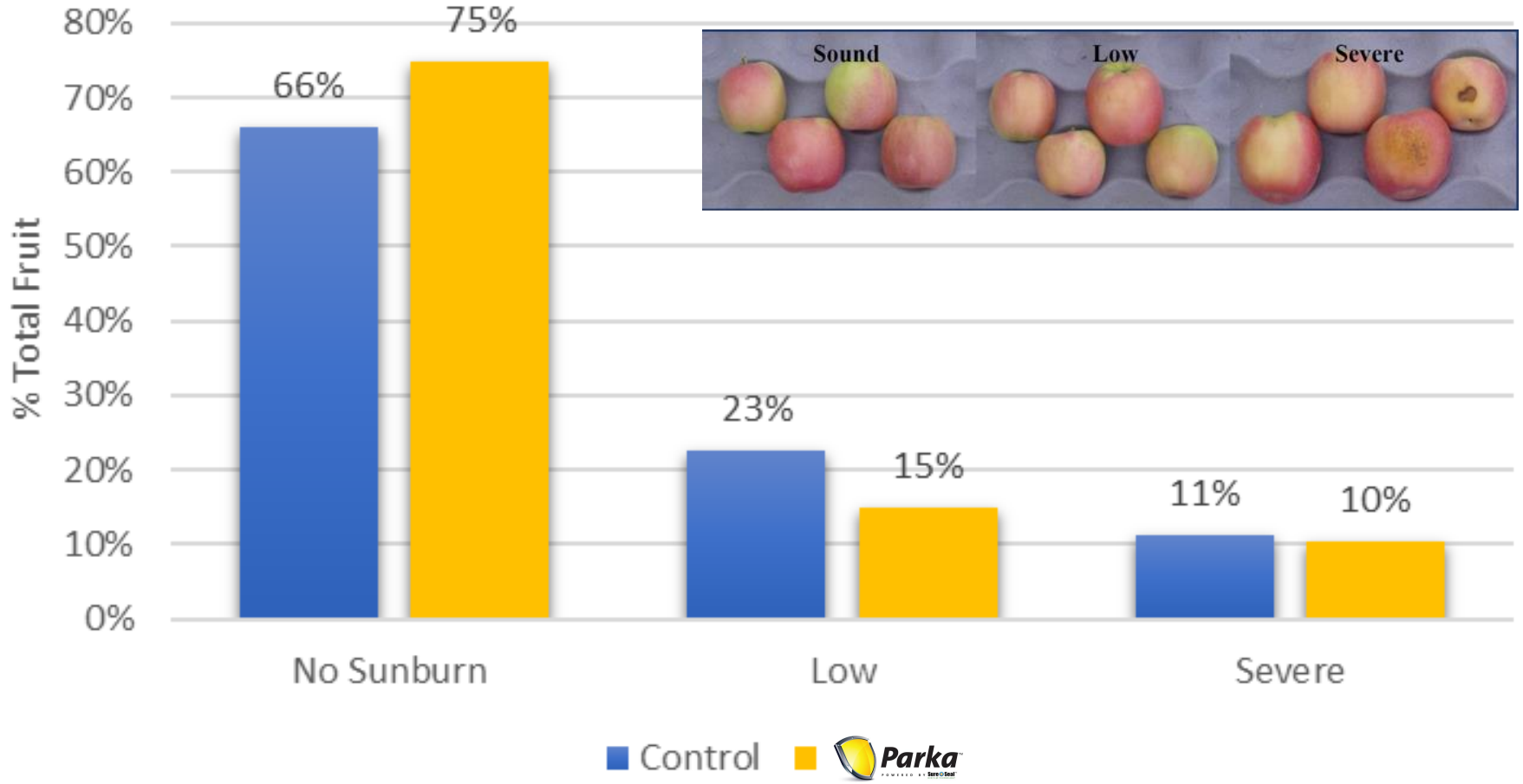
Elevate® is a registered trademark of UPL

Parka Rate of Success to Reduce Sunburn Damage



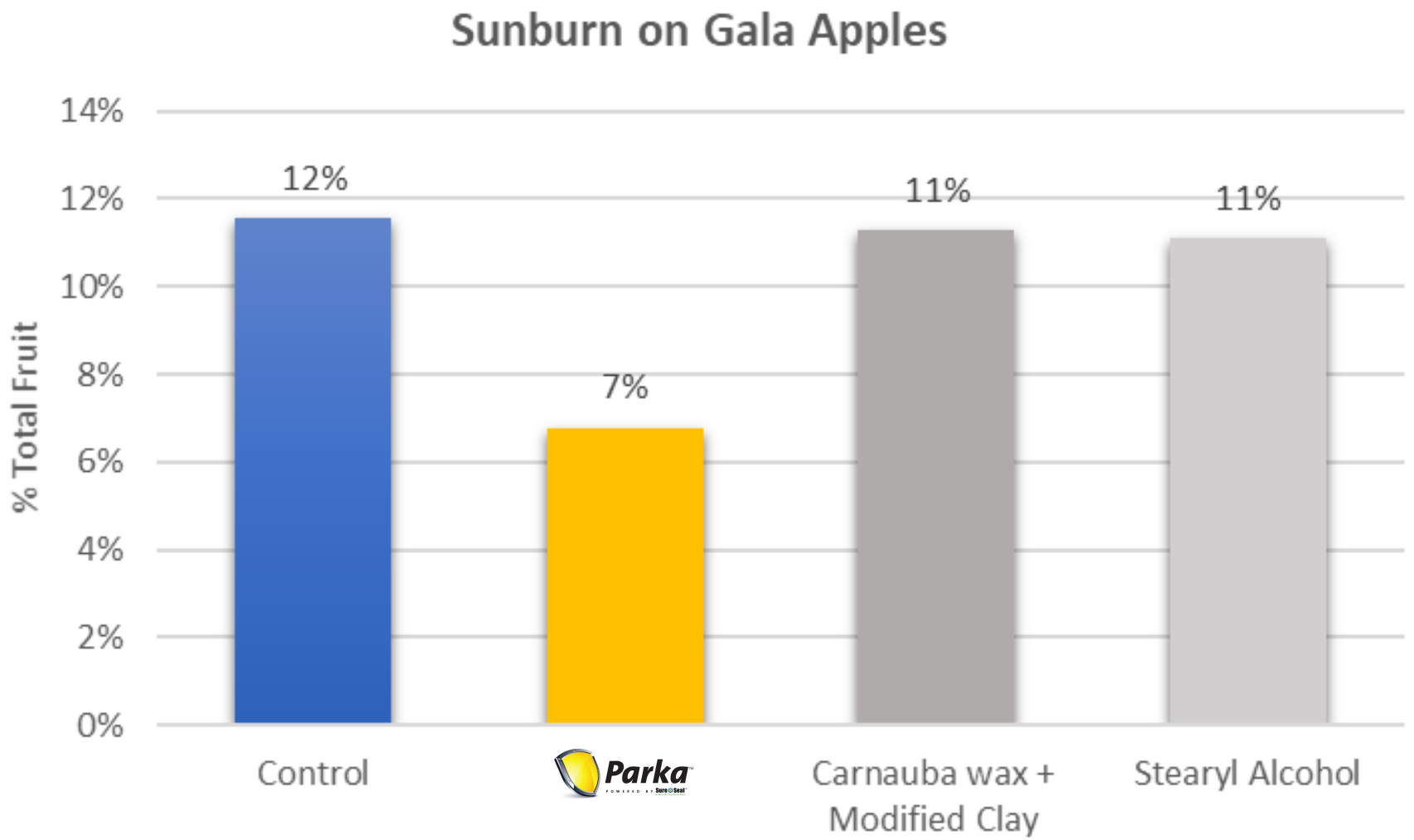
- Parka rate of 1 gal/acre per application;
- 3 to 4 applications in the season;
- Out of 19 field trials Parka showed positive results compared to untreated;
- A success rate of 94.7%;
- The red line represents the average reduction in sunburn compared to untreated trees (42%).

Parka Trial Results – Sunburn



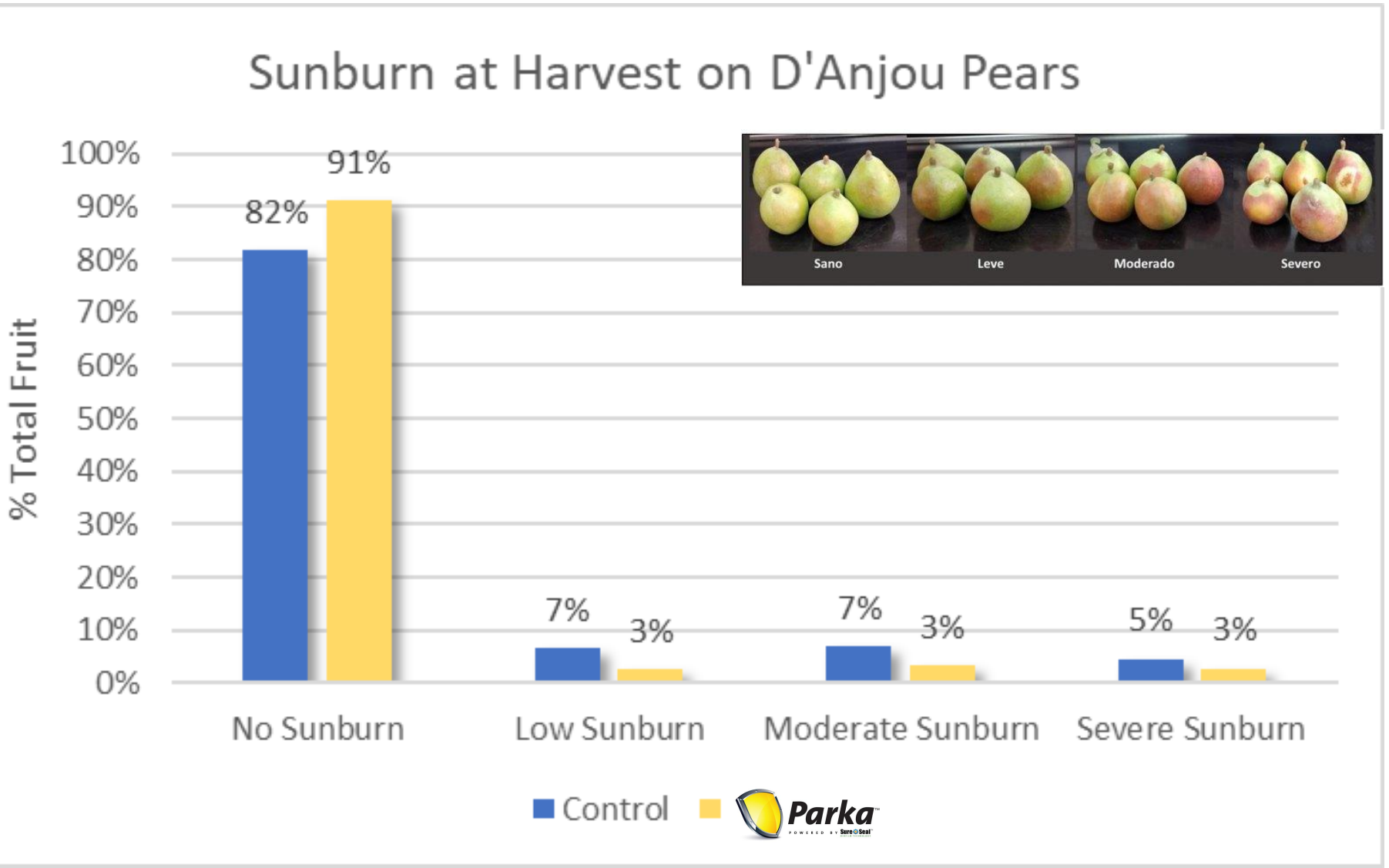
- Variety: Cripps pink
- Rate: 0.5 gal/ac
- 3 Applications
  - 12-15 mm fruit size
  - +21 days
  - +21 days
- Location: Argentina
- Source: CONICET, Argentina, 2020/21.

Parka Trial Results – Sunburn



- Variety: Gala
- Rate:
  - Parka 1 gal/a
  - Carnauba Wax + Modified Clay 2.5 gal/ac
  - Stearyl Alcohol 0.5 gal/ac
- 4 Applications
- Location: WA
- Source: Research Division Independent Retailer, 2016.

Parka Trial Results – Sunburn



- Variety: D'Anjou
- Rate:
  - Parka- 0.5 gal/ac
- Location: Argentina
- 3 Applications
  - Fruit set
  - +30 days
  - +30 days
- Source: INTA, 2021/22