Fermented Plant Extract on Navel Oranges in Strathmore, CA (2025)

Manda
FERMENTATION USA

Agenda Overview

- Fermented Plant Extracts (FPEs)
- Results and Observations from **Manda Harvest** Navel Trial
- Summary and Best Practices

Fermented Plant Extracts (FPEs)

Definition and Production of Fermented Plant Extracts

Fermentation Process

Selected plant materials are fermented with beneficial microbes to produce bioactive compounds that improve plant health. (**citrus peels**, **fresh foliage**, **seaweeds**, etc)

Bioactive Compounds

Fermentation yields bioactive compounds that promote plant growth and increase resilience to environmental stress. (**organic acids**, **phytohormones**, **polyphenols**, **peptides**, etc)

Agricultural Application

These compounds elicit a physiological response that a straight nutrient spray cannot. (**nutrient uptake**, **stress resilience**, **cell division**, **bioavailability of nutrients**)

Manda Harvest
Fermented Plant Extract

Inputs

41 botanical inputs (grains, fruits, vegetables, seaweeds)

Fermentation

Naturally fermented for over three years (**no heat** or **water** added)

Applications

Both foliar and fertigation options with foliar being slightly more cost effective

Sustainable Farming Practices

Manda Harvest is registered as a Packaged Agricultural Mineral and is OIM certified with CDFA

Manda Harvest on Navel Oranges

Trial

Assess foliar application of Manda Harvest vs. untreated control for foliage vigor and nutrient status

Location

Strathmore, CA

Two Blocks

South block treated with Manda Harvest, north block as control

Application

3oz per 100gal per acre, foliar spray

Timing and Dosage Optimization

4 Spring applications aligning with fertilization and other inputs

Measure

Leaf analyses (N,P,K, secondary, micronutrients), visual scoring (color, canopy), fruit size sampling


Manda
Untreated

Control Block

Nutrient	Mar 31 “N Block”	Apr 22 “N Block”	Δ % (Apr vs. Mar)
K (%)	1.62	1.63	+0.6 %
Ca (%)	1.76	2.16	+22.7 %
Mg (%)	0.37	0.39	+5.4 %
Zn (ppm)	52	22	–57.7 %
Mn (ppm)	12	8	–33.3 %
B (ppm)	47	40	–14.9 %

Manda Block

Nutrient	Mar 31 “S Block”	Apr 22 “S Block”	Δ % (Apr vs. Mar)
K (%)	1.4	1.61	+15.0 %
Ca (%)	1.6	2.44	+52.5 %
Mg (%)	0.32	0.43	+34.4 %
Zn (ppm)	44	43	–2.3 %
Mn (ppm)	11	12	+9.1 %
B (ppm)	45	44	–2.2 %

4 Applications, Mar – May 2025

Key Nutrient Changes – Manda-Treated vs Untreated Citrus Block

Nutrient	North % Change	South % Change	Difference (South − North)
Potassium (K)	-17.3%	-29.3%	-12.0%
Calcium (Ca)	+71.6%	+97.5%	+25.9%
Magnesium (Mg)	+10.8%	+18.8%	+8.0%
Zinc (Zn)	+21.2%	+29.5%	+8.3%
Manganese (Mn)	-8.3%	+18.2%	+26.5%
Boron (B)	+25.5%	+24.4%	-1.1%

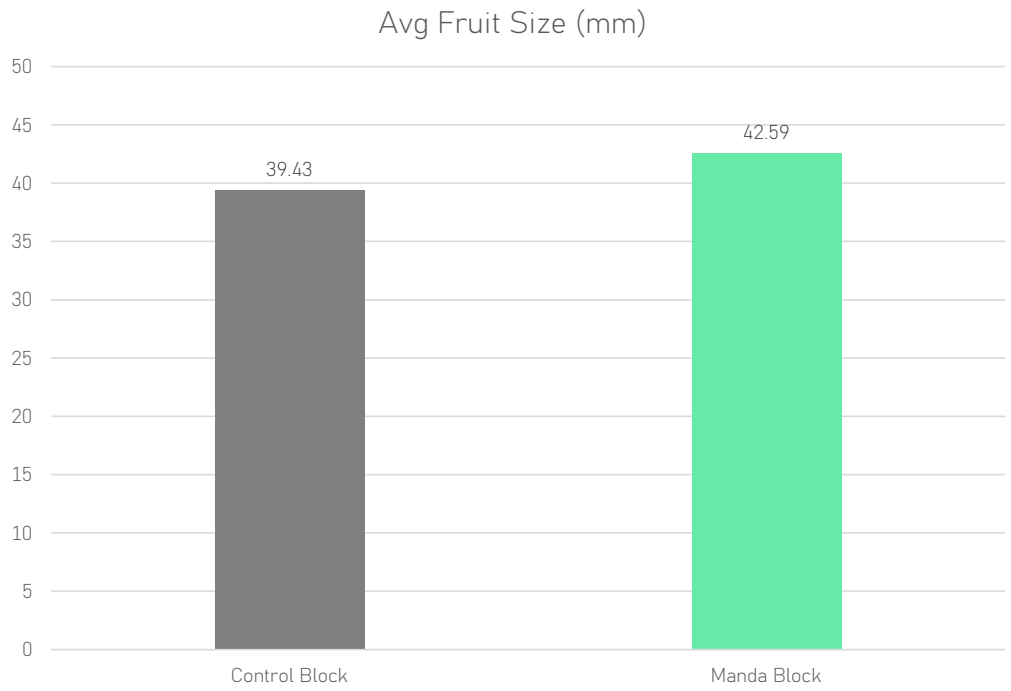
Numbers Match with Observations

- Stronger canopy density – Ca, Zn
- Darker green color uniformity – Mg, Mn
- Fruit set and sizing – K, Zn, B

Nutrient (Symbol)	Full Name	Role in the Plant
K	Potassium	Regulates water balance, improves fruit size & quality
Ca	Calcium	Strengthens cell walls, reduces fruit splitting
Mg	Magnesium	Central to chlorophyll, boosts photosynthesis
Zn	Zinc	Supports growth hormones, leaf size, and shoot growth
Mn	Manganese	Aids chlorophyll production and enzyme activity
B	Boron	Essential for pollination, fruit set, and sugar transport

Fruit Size Sampling – June 12, 2025

50 fruit samples measured per block using digital calipers

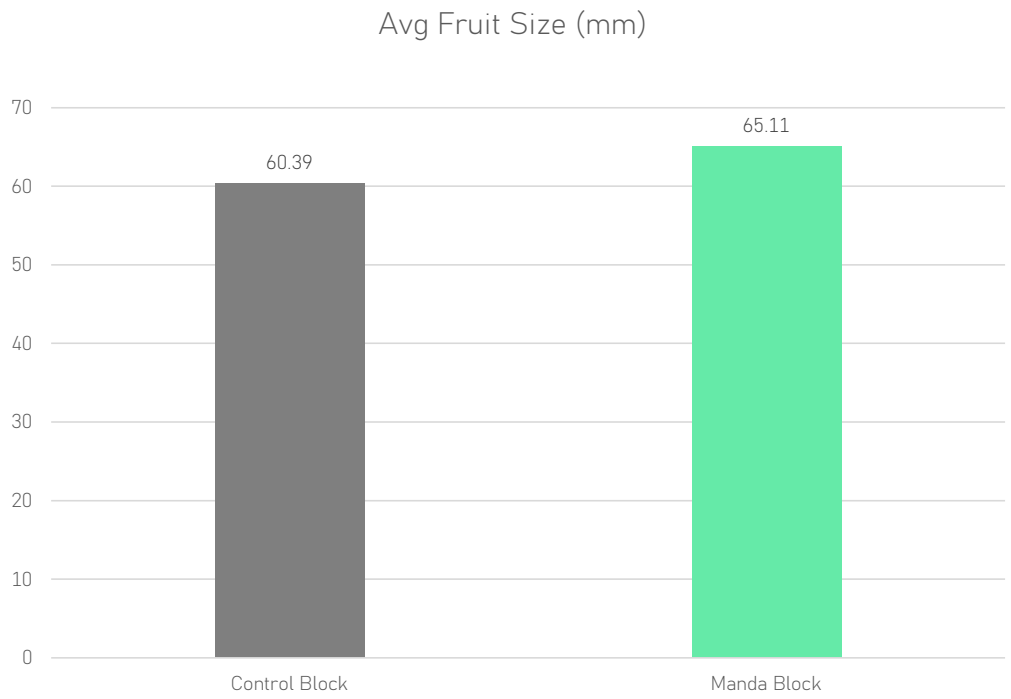


Average Difference:
+3.16mm

Percentage Increase:
+8.02%

Fruit Size Sampling – June 30, 2025

90 fruit samples measured per block using digital calipers



Average Difference:
+3.55mm

Percentage Increase:
+7.82%


Manda


May 1, 2025
Control

Thank you!

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Benefits for Navel Orange

Enhanced vigor, increased fruit size and quality, stress resilience, improved overall plant health

Best Practices

Early season applications for biggest impact, foliar applications most economical, apply in conjunction with fertilizers/other inputs

Cost

$23/acre for Navel Orange (discounts for full season purchase)

How?

Ask your suppliers for Manda Harvest