

November 8, 2019

Case Study on Almond Trees Treated with Unleash™



Almond Trees in Patterson, CA

I. Introduction

California is the leading producer of almonds in the world, producing about 2.27 billion pounds in 2017 alone, nearly 80% of the world's almonds being grown in the state (California Agricultural Statistics Review 2016-2017, www.cdfa.ca.gov). Almonds are the most valuable export crop, and the third most valuable crop overall grown in California, with a worth of about \$5.2 billion (California Almond Objective Measurement Report, www.nass.usda.gov/Statistics_by_State/California).



From March 2019 through August 2019 a study was done with a major almond grower to test the effect of Unleash™ treatment on almond production on 5 acres of young four-year-old Independence almond trees in the San Joaquin Valley of California.

II. Test Process

- 2 total Unleash™ applications (0.5 Liter/acre each application)
 - Late March 2019 – 1st application
 - Early April – 2nd application
- This trial was done on 4 year old Independence Almond Trees. It is a self-pollenating, and because of this, it is a popular varietal for almond tree growers. While related to nonpareil almond varieties, it is sold as a “California” varietal.
- The almond harvest occurred in late August 2019 for both the Unleash-treated and Untreated areas.
- Unleash™ was used to treat 5 acres of land on the South side of a farm near Patterson, CA.
- 5 acres of the North side of the same farm near Patterson, CA was used for the Untreated area.
- For the 5 acre final yield totals, shelled almond meats were weighed in large bins with assigned Bin Tag numbers to keep track of the Unleash-treated and Untreated areas. Bin Tag 221000508 included combined results from almonds harvested from both the Unleash-treated and the Untreated areas, so the weight from this bin has been evenly divided between the Unleash and Untreated final results.
- Results also include a random sampling of 3 X 100 count almonds weighed in the shell and then the same samples weighed with just almond meats for both the Unleash-treated and the untreated control.



III. Results and Conclusions

Bin Weights for 5 Acres of Almond Meat (all weights in pounds)

Unleash-Treated (South Orchard)		Untreated Control (North Orchard)	
Bin Tag #	Bin Weight (Lbs)	Bin Tag #	Bin Weight (Lbs)
221000505	2,289	221000509	2,105
221000506	2,176	221000510	2,110
221000507	2,261	221000511	2,052
221000508 (1/2)*	1,148	221000508(1/2)*	1,148
Total Treated Weight	7,874	Total Control Weight	7,415

* Bin 221000508 divided between treated and untreated due to harvest error

Unleash™-treated area had 6.19% higher almond meat yield than the untreated area

	5 acre Total	1 Acre Total
Unleash™	7,874 Lbs	1,574.8 Lbs
Control	7,415 Lbs	1,483 Lbs
Unleash-treated Wt Increase	459 Lbs	92 Lbs
Unleash -treated % Increase	6.19%	6.19%

- The total harvest for the Unleash™-treated area was 1,574 pounds of almond meat per acre.
- The total harvest for the untreated control area was 1,483 pounds of almond meat per acre.
- The Unleash™-treated area harvested 92 pounds of almond meat per acre, a **6.19% yield increase over the untreated area.**



100 Count Almond Samples (all weights in ounces)

	Unleash-Treated (South Orchard)		Untreated Control (North Orchard)	
	Shell+Meat Weight	Meat Weight	Shell+Meat Weight	Meat Weight
Sample 1	5.50	3.95	5.65	3.95
Sample 2	5.90	4.25	5.55	3.75
Sample 3	6.00	4.35	5.85	4.00
Total Weight	17.40	12.55	17.05	11.70
% Increase	+2.053%	+7.265%		

- Unleash™-treated almonds had a 2.053% increase in total shell plus meat weight over untreated almonds.
- Unleash™-treated almonds had a 7.265% increase in almond meat weight over untreated almonds, which roughly correlates with the 6.19% increase in total almond meat yield seen in the final five acre harvest results.

IV. Conclusions

- Unleash™-treated acreage had a 6.10% higher overall almond meat yield than untreated acreage during the 2019 growing season in an almond tree orchard near Patterson, CA.
- Three random samplings of 100 count almond weights (both with and without the shell) showed a 7.265% increase in almond meat weight for Unleash-treated almonds than untreated almonds. This roughly correlates with the overall yield increase for the five acre trial.
- At \$2.50/pound, the 459 pound yield increase for the Unleash™-treated area results in a total increased revenue of \$1,147.50 for the five acre total.
- Subtracting the Unleash™ cost (\$100/acre), a final **Return on Investment of \$647.50 was achieved.**