

# Conclusion Report: ██████████ Spinach

## Replication #1

of

██████████ Trial, Summer 2019

### Overview:

**Crop & Acreage:** Organic Spinach  
 Design: Treated (T), ██████████ Lot 20—22.6 acres  
 Untreated (U), ██████████ Lot 21—17.48 acres  
 ██████████, AZ  
 Soil sample analyses etc., available upon request

**Treatments:** Two soil (Day 0 & Day 8) and one foliar app (Day 19)  
 Product cost \$1,498 or \$66.88/acre

**Trial Goals:**  
 1) Improve Yield  
 2) Replicate ██████████ Trial results, Summer 2019

### Results (Yield expressed in lbs/acres):

██████████ AZ			
██████████ Feb-Mar 2020			
<u>Lot</u>	<u>Total lbs</u>	<u>Lot Acres</u>	<u>lbs/acre</u>
Treated (Lot 20)	230,938	22.60	10,218
Untreated (Lot 21)	113,613	17.48	6,500
<b>Treated (Lot 20) vs Untreated (Lot 21) =</b>			<b>+57.2%</b>

Source: Urth Agriculture results; derived from Table 1

Table 1: ██████████, AZ Harvest Data

Total Lbs.	Actual_Ranch	Crop	Variety	Grower_Lot	Plant_Date	Est_Harvest	Acres	Cont. QTY	avg lbs./cont	Lbs./A	Cont.	Bed_Count	Hvst Date
62,947	██████████	SB	SUN ANGEL	██████████	02/15/20	03/17/20	7.60	180	350	8,283	Bins	36	3/23
85,119	██████████	SB	TRAIL BOSS	██████████	02/15/20	03/17/20	7.60	236	361	11,200	Bins	36	3/23
82,872	██████████	SB	CRATER	██████████	02/15/20	03/17/20	7.40	168	493	11,199	Bins	35	3/24
89,454	██████████	SB	MINKAR	██████████	02/16/20	03/18/20	8.74	4,200	16.54	7,947	RPC's	41	3/23
44,159	██████████	SB	TRAIL BOSS	██████████	02/16/20	03/18/20	8.74	102	433	5,053	Bins	40	3/24-3/25

Source: ██████████

### Supplemental Info

**Table 2: Spinach Tissue Analysis—“Trailboss” Variety—(Day 23 of 31)**

Lots 20 & 21					
Organic Spinach, Tissue Analysis - 3/13/20 for Sample 3/10/20					
Variety: "Trailboss"					
	Logan Labs Target Ranges			Treated (L-20)	Untreated (L-21)
	Low - Def	Sufficient	High		
N%		4.2 - 6.0%		5.86	5.96
P%		0.30 - 0.55		0.53	0.56
K%		3.0 - 4.0		4.77	4.64
Ca%		0.65 - 1.3		0.83	0.84
Mg%		0.85 - 1.2		1.03	1.09
S%					
Na%					
B ppm		40 - 60		33.18	33.11
Cu ppm		6 - 8		5.27	4.83
Fe ppm		220 - 400		235.7	290.9
Mn ppm		35 - 65		69.48	74.19
Zn ppm		50 - 75		85.25	88.43

One cup of raw spinach contains:

- 7 calories.
- 0.86 grams (g) of protein.
- 30 milligrams (mg) of calcium.
- 0.81 g of iron.
- 24 mg of magnesium.
- 167 mg of potassium.
- 2,813 interational units (IU) of Vitamin A.
- 58 micrograms of folate.

Jun 29, 2018

Spinach: Nutrition, health benefits, and diet - Medical News Today  
<https://www.medicalnewstoday.com/articles>

**Notes:**

- Nutrient values most meaningful in context of *Treated vs Untreated* harvest volume data;
- Samples collected on Day 23 of projected 31 day growth cycle;
- Values informative of spinach nutrition and soil nutrient adequacy;

Source: UrthAg; Logan Labs analysis; Notes attributed to UrthAg & Logan Labs.

**Brix Data by variety:**

BRIX Values--processed 3-16-20 at 1PM										
TREATED										
Lot 20--Organic Spinach										
Variety	1	2	3	4	5	6	7	8	Ave.	
Sun Angel	8.0	7.5	7.8	7.0	7.5	7.3	8.0	7.0	7.5	
Trailboss	7.0	7.3	7.8	8.0	7.5	8.0	7.0	7.5	7.5	
Crater	5.0	4.3	4.0	5.5	4.8	4.0	4.3	4.3	4.5	
UNTREATED										
Lot 21--Organic Spinach										
Variety	1	2	3	4	5	6	7	8	Ave.	
Minkar	3.5	4.0	3.3	4.3	3.0	3.3	3.5	3.3	3.5	
Trailboss	4.0	3.0	3.5	3.3	3.5	3.3	4.3	3.3	3.5	

**Notes:**

- Samples collected on Day 30 of projected 31 day growth cycle;
- Each sample included three leaves from three different plants;
- Treated BRIX values exceeded Untreated by significant margin.

Source: UrthAg collected samples, performed tests and presents results.

**Highlights from Urth Field Notes:**

*“That’s the third ladybug I’ve seen on the Treated Lot 20.... I’ve seen few insects and fewer pests.”*  
Scott Seely, Urth Agriculture, 17 March 2020

*“I like what I see on [the Treated] Lot 20, but I want to see the numbers.”*  
[REDACTED], Field Manager, 17 March 2020

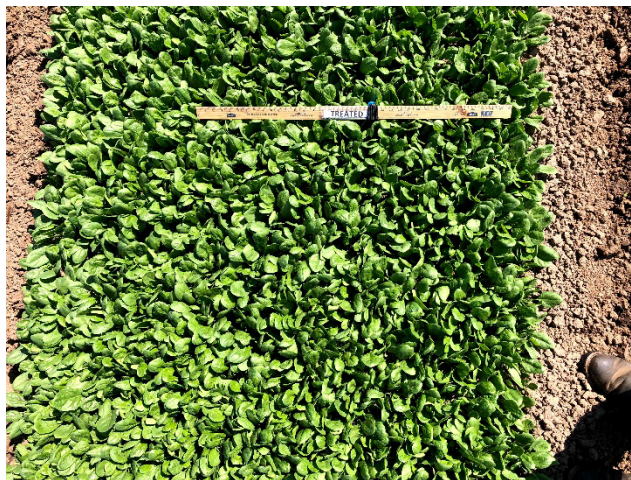
**Select Photos reveal relative germination and density:**



*Treated Trailboss (Day 23)—IMG 1380*



*Untreated Trailboss (Day 23)—IMG 1392*



*Treated Trailboss (Day 30)—IMG 1428*



*Untreated Trailboss (Day 30)—IMG 1410*

Source: Photos from UrthAg.