

# Yuma Cantaloupe Trial

Spring 2024

Commercial Product: Humic Acid +  
Nitrogen, sulfur, iron, zinc, manganese

Robert Masson  
Assistant Ag Extension Agent



THE UNIVERSITY OF ARIZONA

**Cooperative Extension**

Yuma County



THE UNIVERSITY OF ARIZONA

# Cooperative Extension

Yuma County

Planted: 3/15/24  
First Harvest: 6/13/24  
Second Harvest: 6/18/24

Stand Count: 4/18  
NDVI\_1: 4/24  
NDVI\_2: 5/6  
NDVI\_3: 5/20

Rye grass cover crop grown without nutrition. Mown and biomass removed.  
Drip tape cut 3/18 and manifolds installed.

Fert program:  
Phos Acid added through drip at seeding 13.3 GAL/AC  
UAN-32 In-season  
Application A: 15# N 3/25/24  
Application B: 35# N 4/9/24  
Application C: 50# N 5/16/24

Cantaloupe Variety: Harris Moran  
Deluxe F1

Photos 1: 5/12  
Photos 2: 5/20

Soil  
Compaction  
Level (PSI) 3  
measures per  
plot: 6/19

Soil Moisture:  
3 Measures  
per Plot: 6/19

# Trial Details

## Four Treatments:

1. UTC
2. Humic\_Acid\_Mix: 1 app, 0.5 Gal/A
3. Humic\_Acid\_Mix: 1 app, 1.0 Gal/A
4. Humic\_Acid\_Mix: 5 apps, 0.5 Gal/A

Replications: 6

Variable plant rate seen in some plots due to inconsistent thinning by station crew.

Drop plot 1002 kinked pipe

Drop plot 1203 low stand count

Drop plot 1205 low stand count

Product application dates

3/26

4/8

4/30

5-20

6-1

**Trial Map Treatment Description**

Trt	Code	Description
1	CHK	UTC
2		Humic, low rate, single app
3		Humic , higher rate, single app
4		Humic, low rate, 5 apps



# Trial Summary

- Similar yield characteristics across treatments (Cartons per acre)
- Trt 1: UTC = 564 cpa
- Trt 2: Low rate, single app = 542 cpa
- Trt 3: Higher rate, single app = 553 cpa
- Trt 4: Low rate, 5 apps = 558 cpa

Drip tape dug on 31' increments and cut to form 30' beds one row wide  
Injections made with battery pump and 15 gallon tank filled to 5 gallon mark.



# Initial Soil Test

- Ryegrass transition
- Soil Nitrate 2-14 lb/a
- High phosphorous levels
- Naturally occurring high potassium and calcium levels
- Low zinc levels
- Other soil characteristics high


REPORT NUMBER  
**24-051-0430**

COMPLETED DATE  
Feb 27, 2024

RECEIVED DATE  
Feb 20, 2024

ACCOUNT  
57161

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IDENTIFICATION  
YUMA COUNTY COOPERATIVE EXTENS  
VALLEY  
ICEBERG 2023

PAGE 1/9

TODAY'S DATE  
Feb 27, 2024

**SOIL ANALYSIS REPORT**

LAB NUMBER	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I.	PHOSPHORUS			NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE)				pH		CATION EXCHANGE CAPACITY C.E.C.	PERCENT BASE SATURATION (COMPUTED)						
			P (WEAK BRAY) ppm RATE	P (STRONG BRAY) ppm RATE	OLSEN BICARBONATE P ppm RATE	POTASSIUM K ppm RATE	MAGNESIUM Mg ppm RATE	CALCIUM Ca ppm RATE	SODIUM Na ppm RATE	SOIL pH	BUFFER INDEX		% K	% Mg	% Ca	% H	% Na		
*430*																			
26324	RyeRange1	1.1 VL	14 L	115 VH	24 VH	442 VH	791 VH	4047 H	292 VH	8.2		29.2	3.9	22.6	69.2	0.0	4.3		
26326	RyeRange2	1.7 L	4 VL	112 VH	24 VH	447 VH	851 VH	4119 H	291 VH	8.4		30.1	3.8	23.6	68.4	0.0	4.2		
26327	RyeRange3	1.4 VL	2 VL	123 VH	22 H	452 VH	862 VH	4124 H	303 VH	8.4		30.3	3.8	23.7	68.2	0.0	4.3		
26328	Test1 Trt1	2.1 L	3 VL	139 VH	30 VH	431 VH	866 VH	4103 H	315 VH	7.9		30.2	3.7	23.9	67.9	0.0	4.5		
26329	Test1 Trt2	0.9 VL	2 VL	137 VH	34 VH	417 VH	852 VH	4034 H	299 VH	8.0		29.6	3.6	24.0	68.0	0.0	4.4		
26330	Test1 Trt3	1.4 VL	7 VL	124 VH	29 VH	406 VH	827 VH	3924 H	286 VH	8.3		28.8	3.6	23.9	68.2	0.0	4.3		
26331	Test1 Trt4	1.3 VL	11 L	136 VH	29 VH	424 VH	848 VH	3984 H	284 VH	8.1		29.3	3.7	24.1	68.0	0.0	4.2		
26332	801	1.3 VL	7 VL	130 VH	21 H	423 VH	822 VH	3905 H	299 VH	8.2		28.8	3.8	23.8	67.9	0.0	4.5		
26333	802	1.6 L	4 VL	140 VH	29 VH	429 VH	834 VH	3943 H	301 VH	8.2		29.1	3.8	23.9	67.8	0.0	4.5		
26334	803	1.3 VL	4 VL	131 VH	29 VH	439 VH	861 VH	4060 H	322 VH	8.1		30.0	3.8	23.9	67.6	0.0	4.7		

LAB NUMBER	NITRATE-N (FIA)						SULFUR S ICAP	ZINC Zn DTVA	MANGANESE Mn DTVA	IRON Fe DTVA	COPPER Cu DTVA	BORON B NOBEL DTVA	SOLUBLE SALTS L1		
	SURFACE		SUBSOIL 1		SUBSOIL 2									Total lb/a/K	ppm RATE
*430*															
26324	6	14	0-8				14	59 VH	0.8 L	3 VL	17 H	2.4 VH	1.8 H	H	0.9 L
26326	6	14	0-8				14	58 VH	1.0 L	4 VL	19 H	2.7 VH	1.8 H	H	0.9 L
26327	5	12	0-8				12	53 VH	1.0 L	3 VL	19 H	2.5 VH	1.7 H	H	0.9 L
26328	129	310	0-8				310	101 VH	1.1 M	4 VL	21 H	2.3 VH	1.8 H	H	1.8 M
26329	53	127	0-8				127	78 VH	1.1 M	2 VL	20 H	2.4 VH	1.8 H	H	1.4 M
26330	14	34	0-8				34	59 VH	1.0 L	2 VL	16 M	2.3 VH	1.7 H	M	1.0 L
26331	7	17	0-8				17	64 VH	0.8 L	2 VL	18 H	2.3 VH	1.7 H	H	1.1 M
26332	9	22	0-8				22	77 VH	0.9 L	2 VL	19 H	2.4 VH	1.8 H	H	1.0 L
26333	8	19	0-8				19	71 VH	1.0 L	2 VL	19 H	2.3 VH	1.8 H	H	1.0 L
26334	15	36	0-8				36	94 VH	1.1 M	2 VL	18 H	2.3 VH	1.8 H	H	1.1 M

REV.10/17

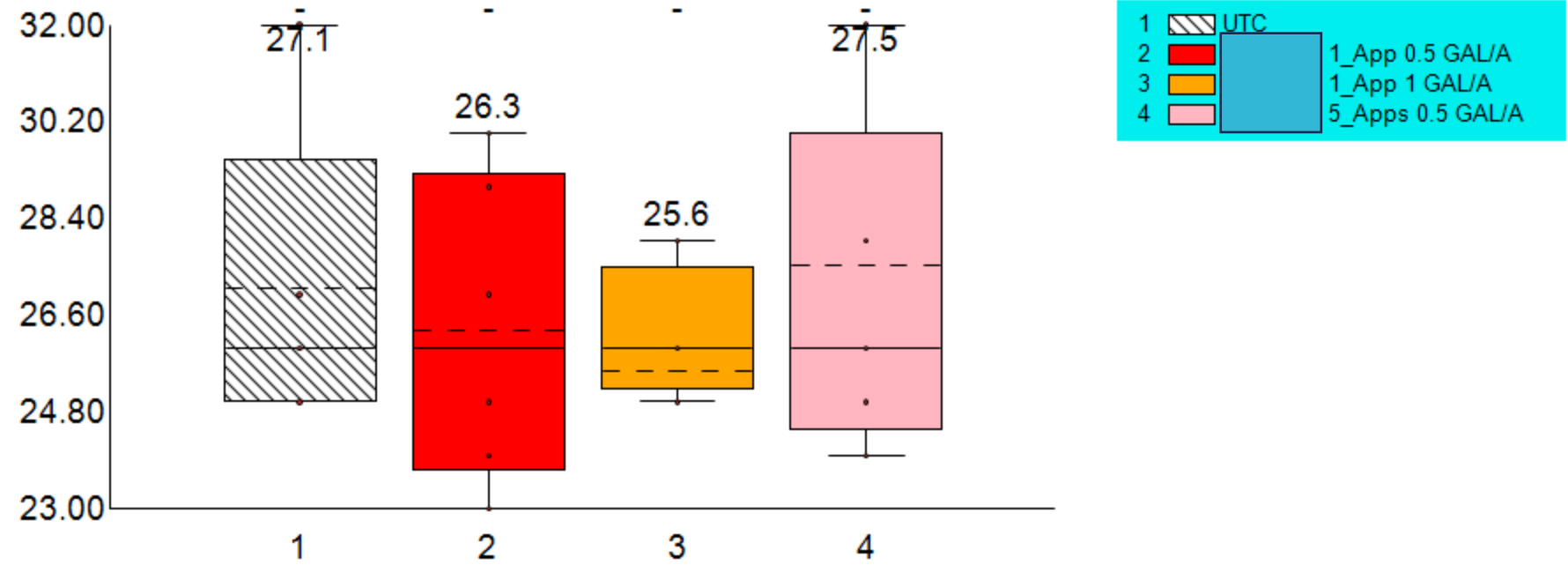
# Irrigation

Irrigation Date	Amount	Unit	Method
Mar-15-2024	0.5	IN	Sprinkler (set herbicide)
Mar-18-2024	0.372	IN	Drip irrigation system (phos)
Mar-26-2024	0.465	IN	drip irrigation system
Mar-30-2024	0.18	IN	rain
Mar-31-2024	0.129	IN	rain
Apr-1-2024	0.14	IN	rain
Apr-4-2024	0.186	IN	drip irrigation system
Apr-8-2024	0.186	IN	drip irrigation system
Apr-12-2024	0.186	IN	drip irrigation system
Apr-18-2024	0.186	IN	drip irrigation system
Apr-23-2024	0.186	IN	drip irrigation system
Apr-26-2024	0.186	IN	drip irrigation system
Apr-30-2024	0.186	IN	drip irrigation system
May-7-2024	0.372	IN	drip irrigation system
May-13-2024	0.372	IN	drip irrigation system
May-14-2024	0.372	IN	drip irrigation system
May-20-2024	0.372	IN	drip irrigation system
May-21-2024	0.372	IN	drip irrigation system
May-25-2024	0.744	IN	drip irrigation system
May-28-2024	0.744	IN	drip irrigation system
May-31-2024	0.744	IN	drip irrigation system
June-1-2024	0.744	IN	drip irrigation system
June-4-2024	0.744	IN	drip irrigation system
<b>Total Water Use</b>	<b>8.66</b>	<b>IN</b>	



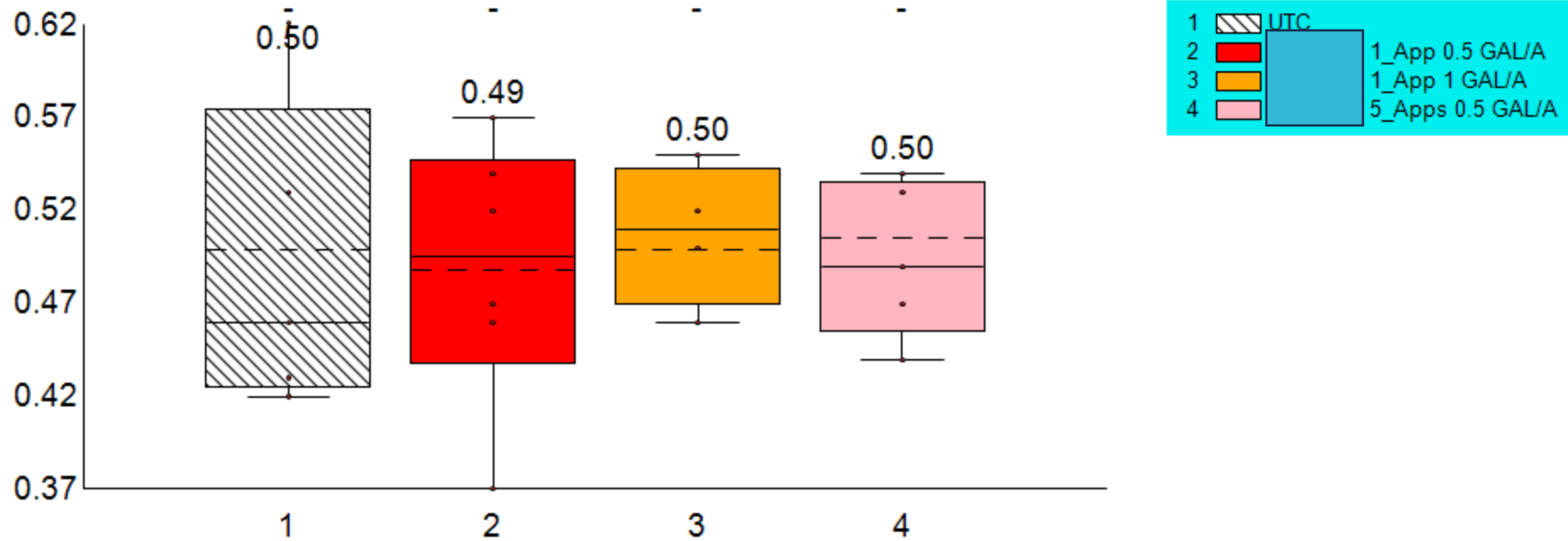
product testing. Stand Count

Plants per plot



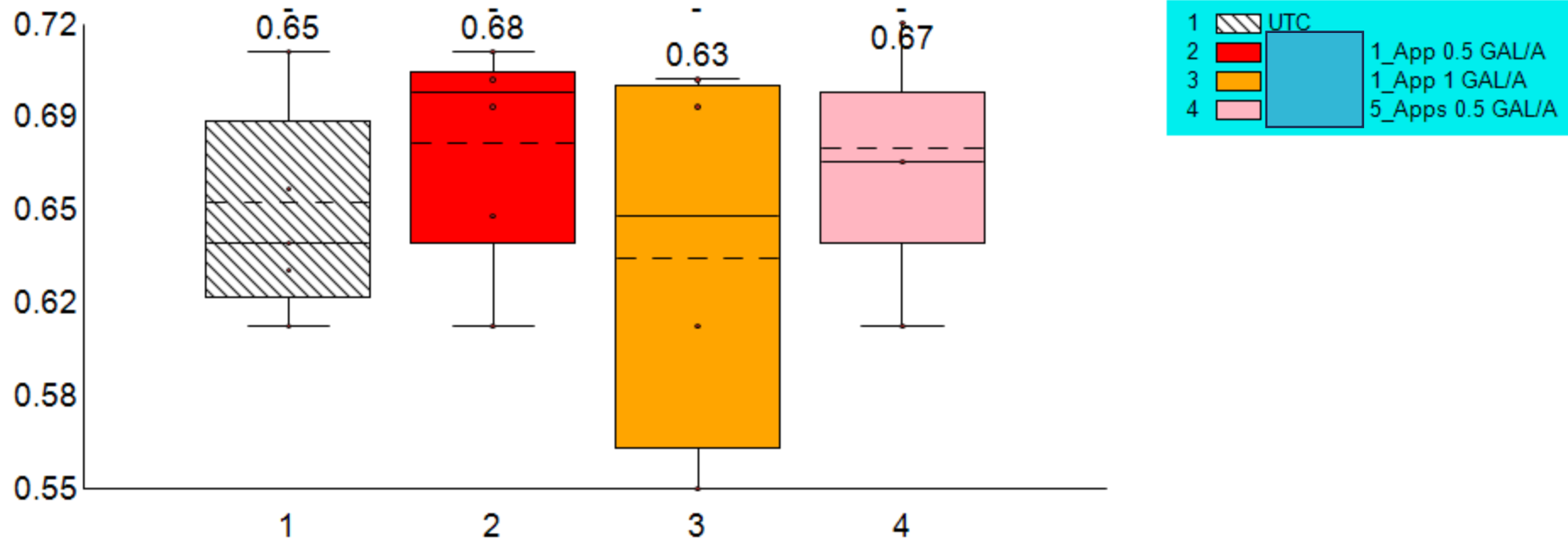
Trial ID: T3\_Cantaloupe\_2024

product testing. NDVI\_1



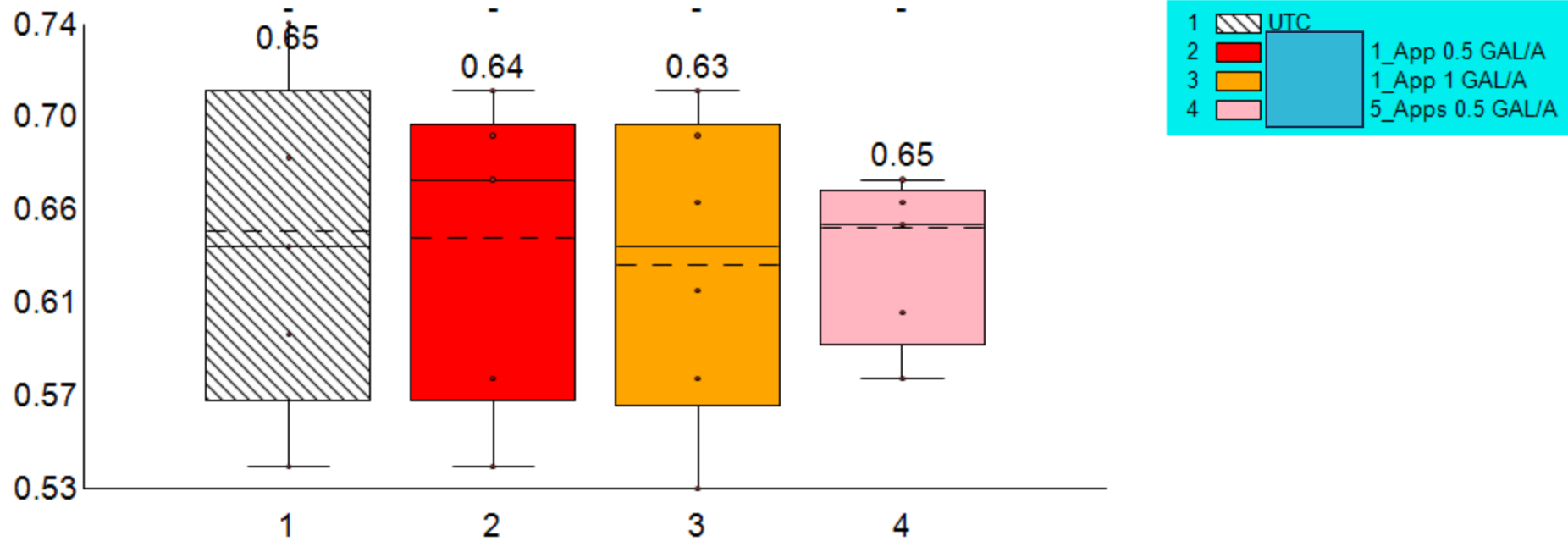
Trial ID: T3\_Cantaloupe\_2024

product testing. NDVI\_2



Trial ID: T3\_Cantaloupe\_2024

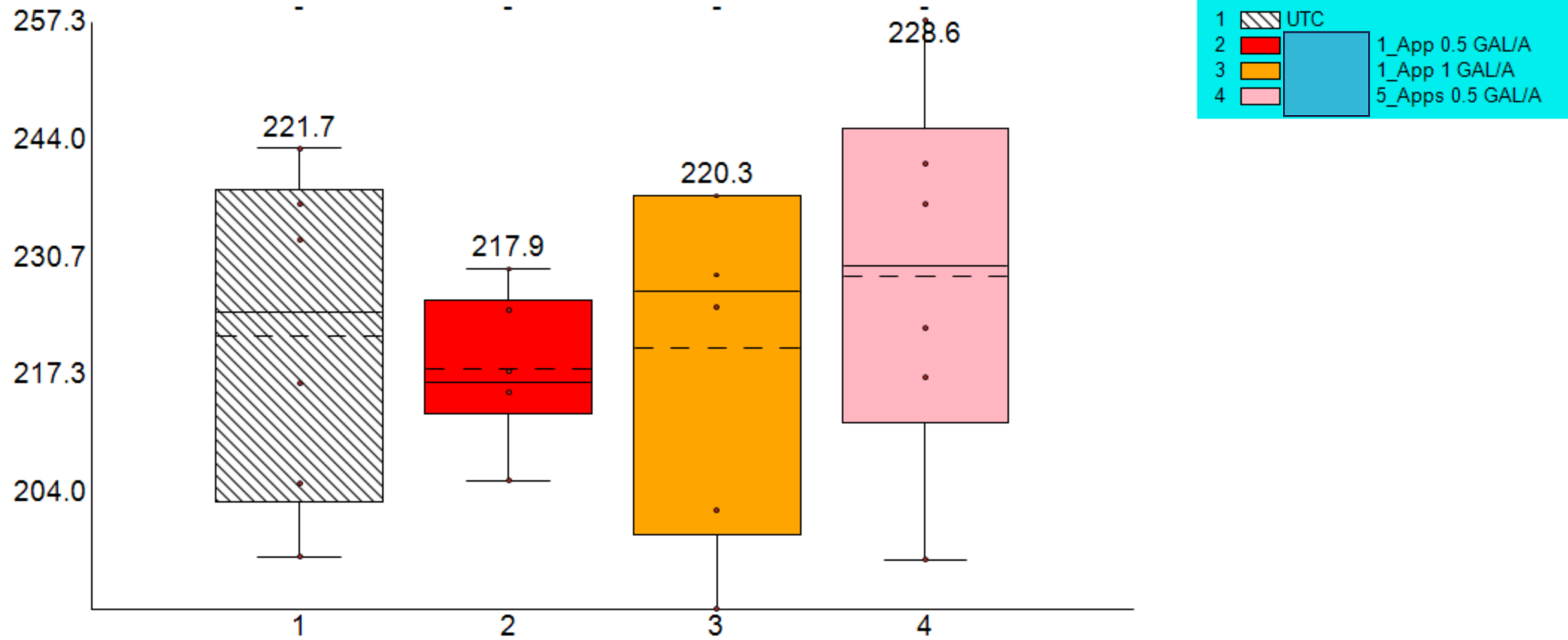
product testing. NDVI\_3



Trial ID: T3\_Cantaloupe\_2024

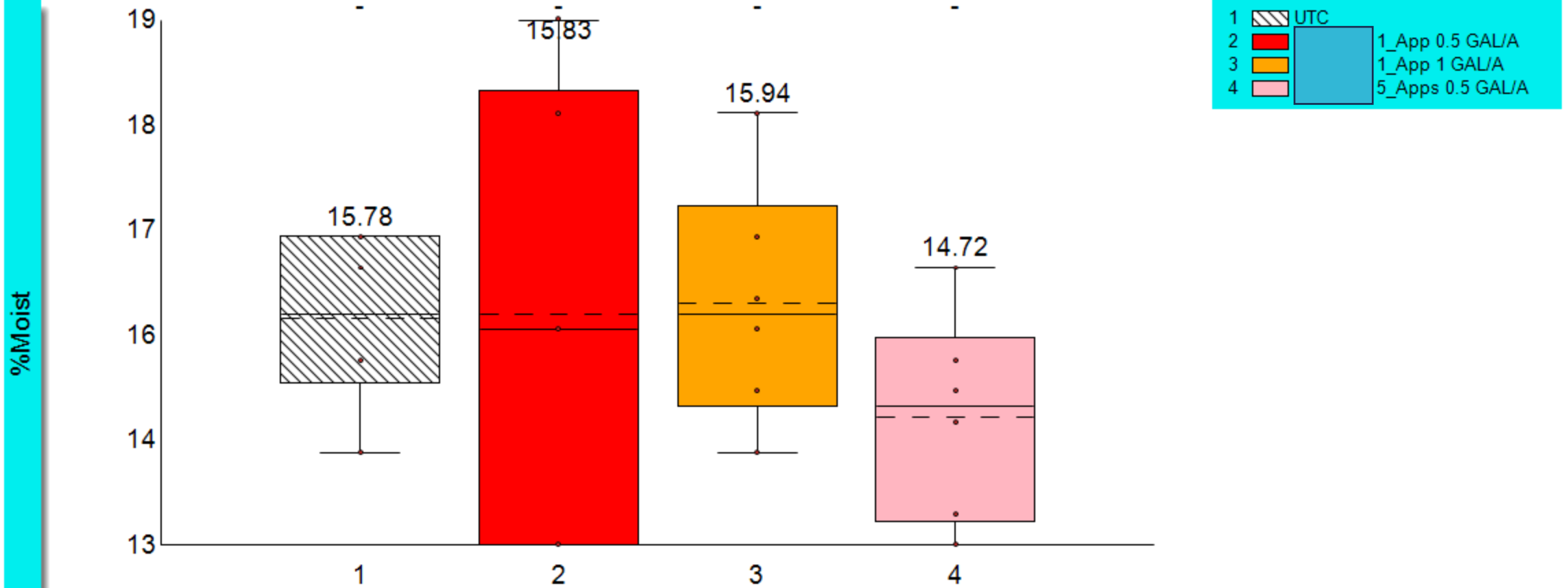
Yuma Cantaloupe. Soil Compaction

PSI



Trial ID: T3\_Cantaloupe\_2024

Yuma Cantaloupe. Soil Moisture Probe Readings (Post Harvest)



Trial ID: T3\_Cantaloupe\_2024

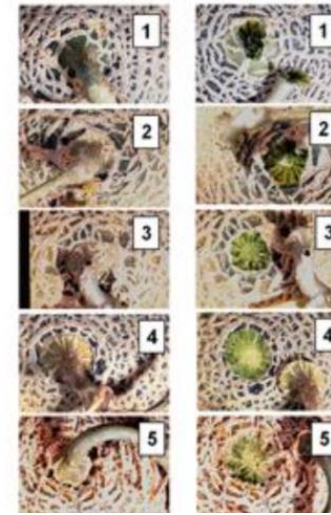
# Harvest

- Two picking dates
- All ripe fruit was picked in the plot on the first harvest.
- All fruit ripe or unripe was picked on second harvest,
- Each fruit was individually weighed, sized, and rated for maturity
- A subsample of three melons per plot were tested for brix
- Yield reported as cartons per acre of marketable fruit broken into carton size grades.



# Harvest (Cont.)

- Slip measures ripeness:
  - 0 = No slip (not ripe)
  - 1 =  $\frac{1}{4}$  slip
  - 2 =  $\frac{1}{2}$  slip
  - 3 =  $\frac{3}{4}$  slip
  - 4 = full slip (very ripe)



## “Slip” & Cantaloupe Ripeness

1. Full size melon, no slip; “pull” fruit.
2. Slip just starting, near  $\frac{1}{4}$  slip. Requires high thumb force to push stem from fruit
3.  $\frac{1}{2}$ - $\frac{3}{4}$  slip; melon can be pushed with moderate thumb pressure from stem.
4. Full slip; stem scar with fresh appearance; stem easily pushed from fruit
5. Slip occurred day prior; very dry stem end; melon may be soft.

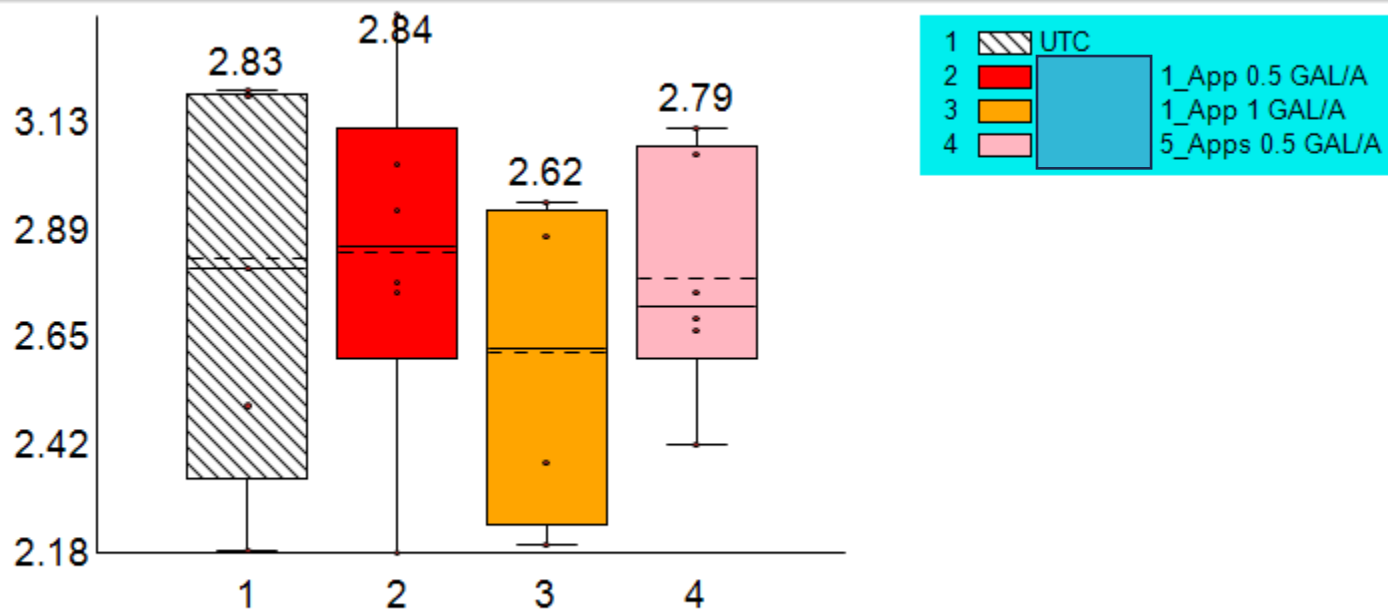
<https://postharvest.ucdavis.edu/produce-facts-sheets/cantaloupe>

- The number of fruit with blemishes on them, either ground spots or sunburn, were counted and reported as sunburn
- The number of visually marketable fruit was counted and reported as ‘keepers’
- The final carton yield was calculated based on formula that converted melon circumference into carton grade size.



### Yuma Cantaloupe Trial. Individual Melon Weights

LB

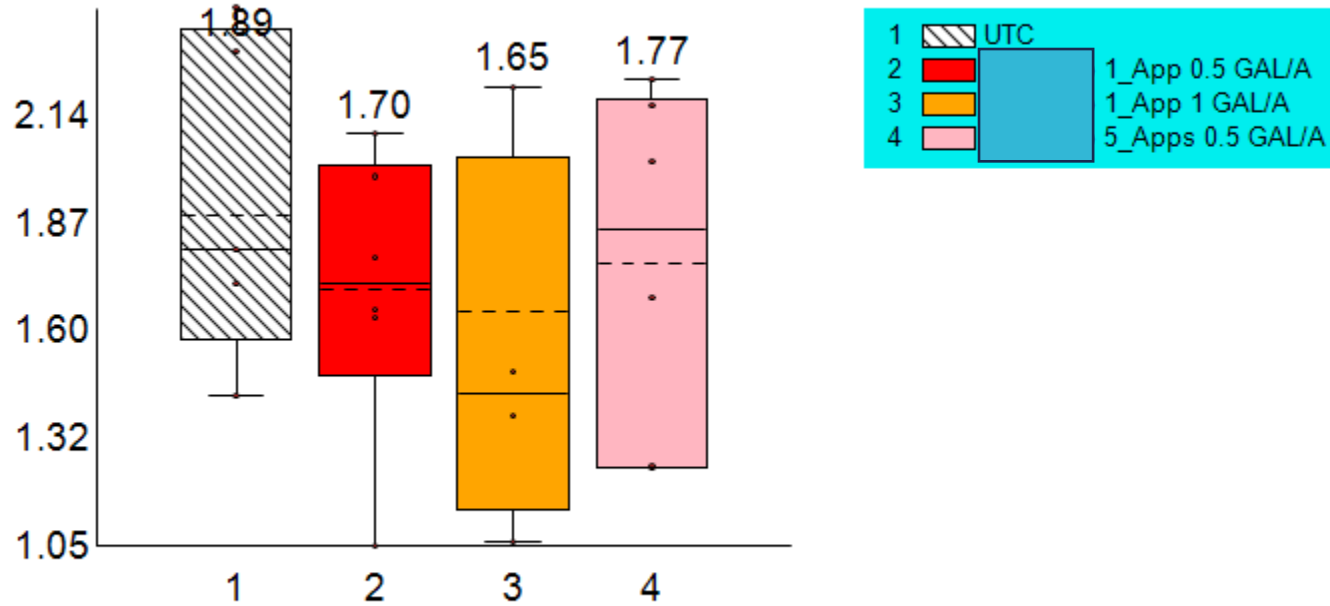


First\_Har\_Weight

Trial ID: T3\_Cantaloupe\_2024

### Yuma Cantaloupe Trial. Individual Melon Weights

LB

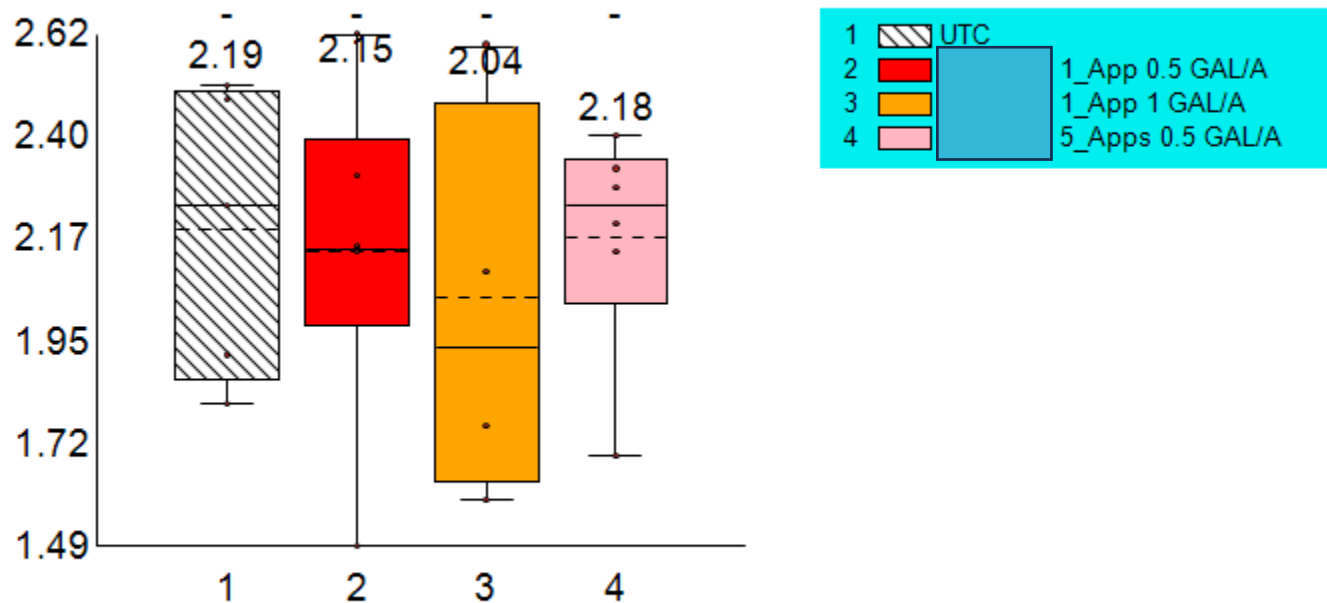


Trial ID: T3\_Cantaloupe\_2024

Second\_Har\_Weight

### Yuma Cantaloupe Trial. Individual Melon Weights

LB

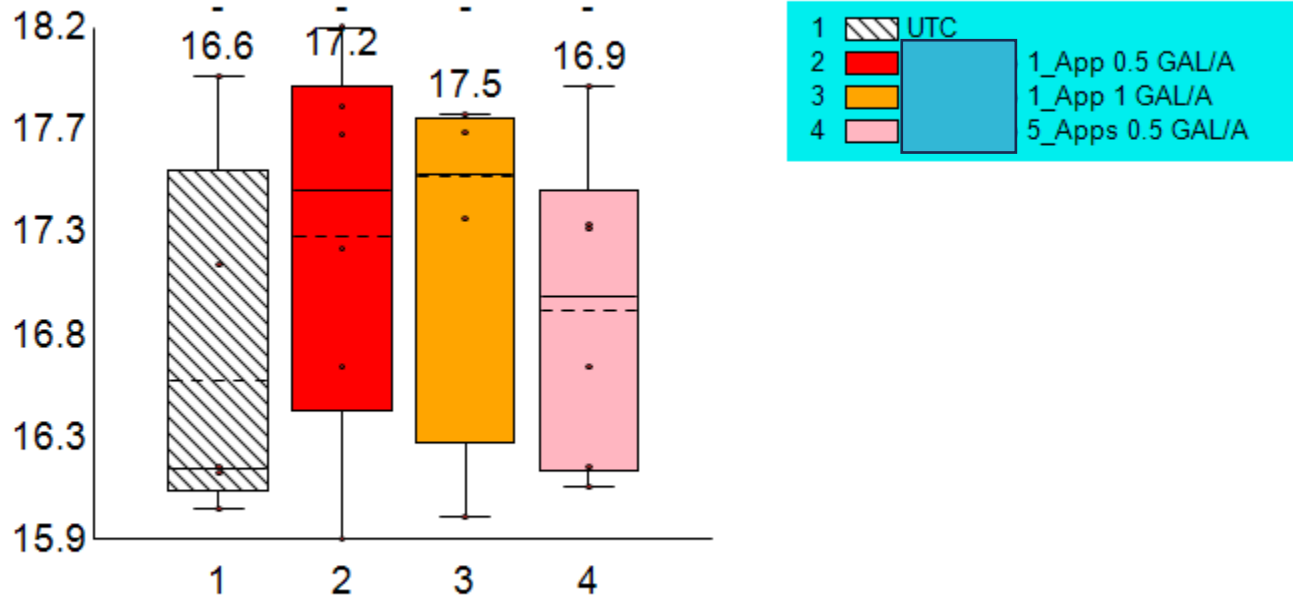


Combined\_Har\_Weight

Trial ID: T3\_Cantaloupe\_2024

Yuma Cantaloupes. Individual Melon Size

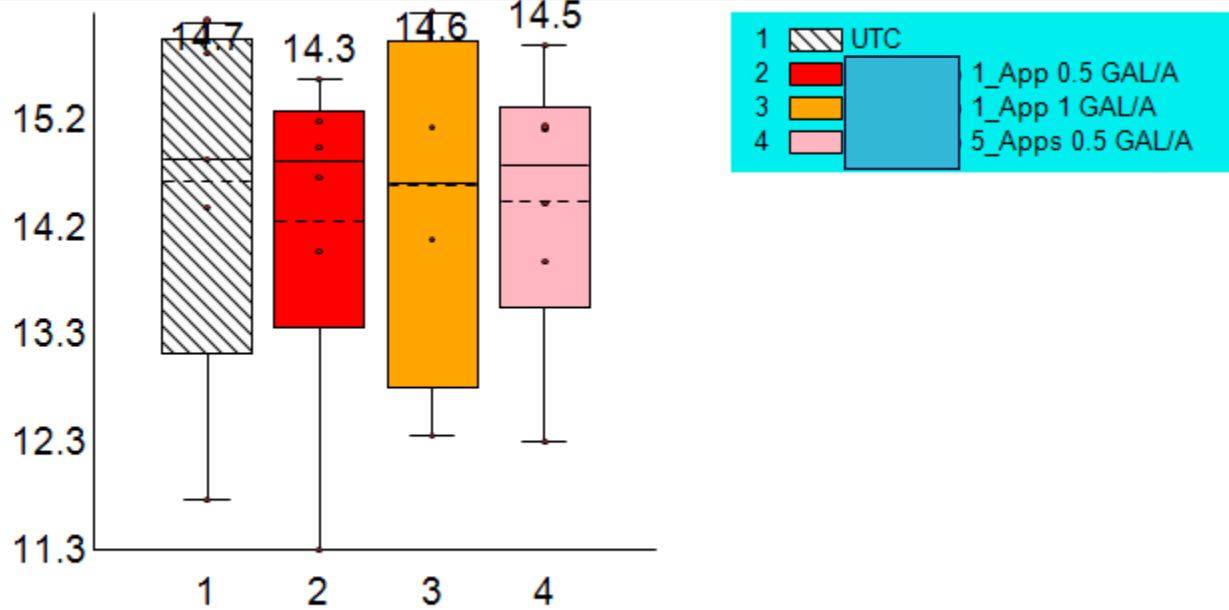
≧



First\_Har\_Circumference

Yuma Cantaloupes. Individual Melon Size

Σ

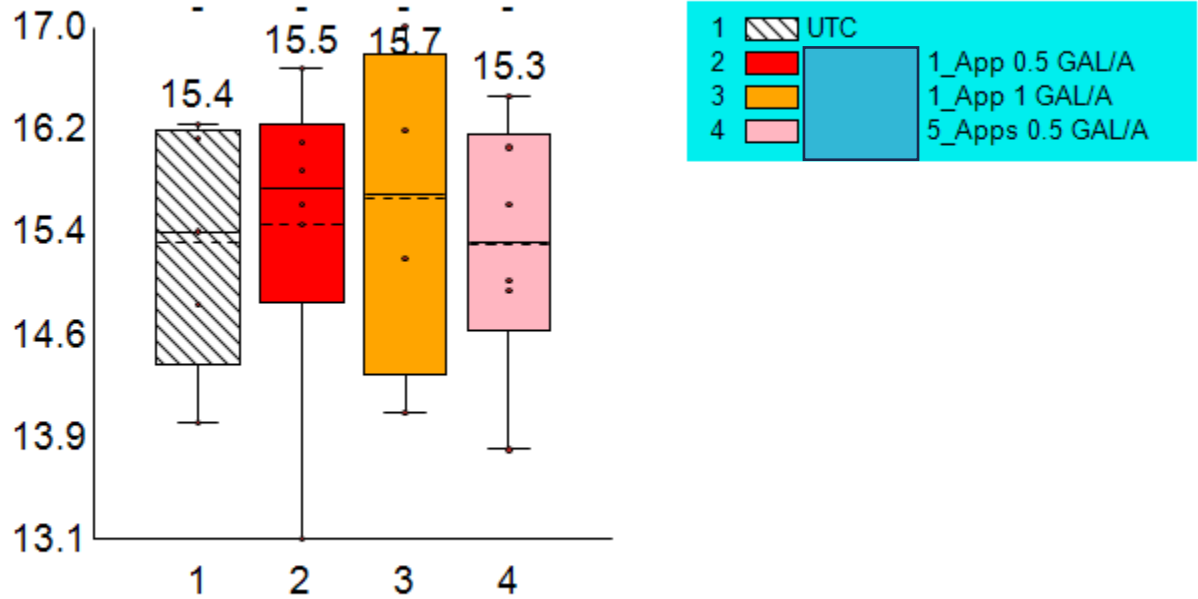


Second\_Har\_Circumference

Trial ID: T3\_Cantaloupe\_2024

Yuma Cantaloupes. Individual Melon Size

z

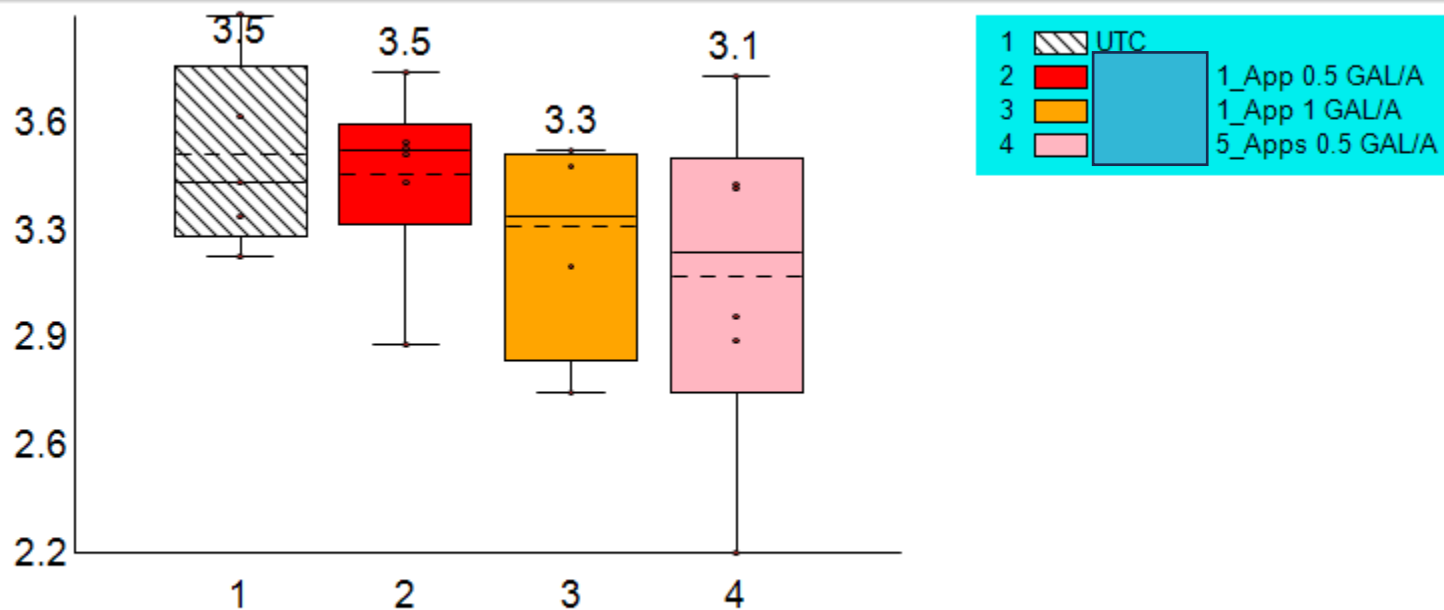


Combined\_Har\_Circumference

Trial ID: T3\_Cantaloupe\_2024

### Yuma Cantaloupes. Individual Melon Maturity

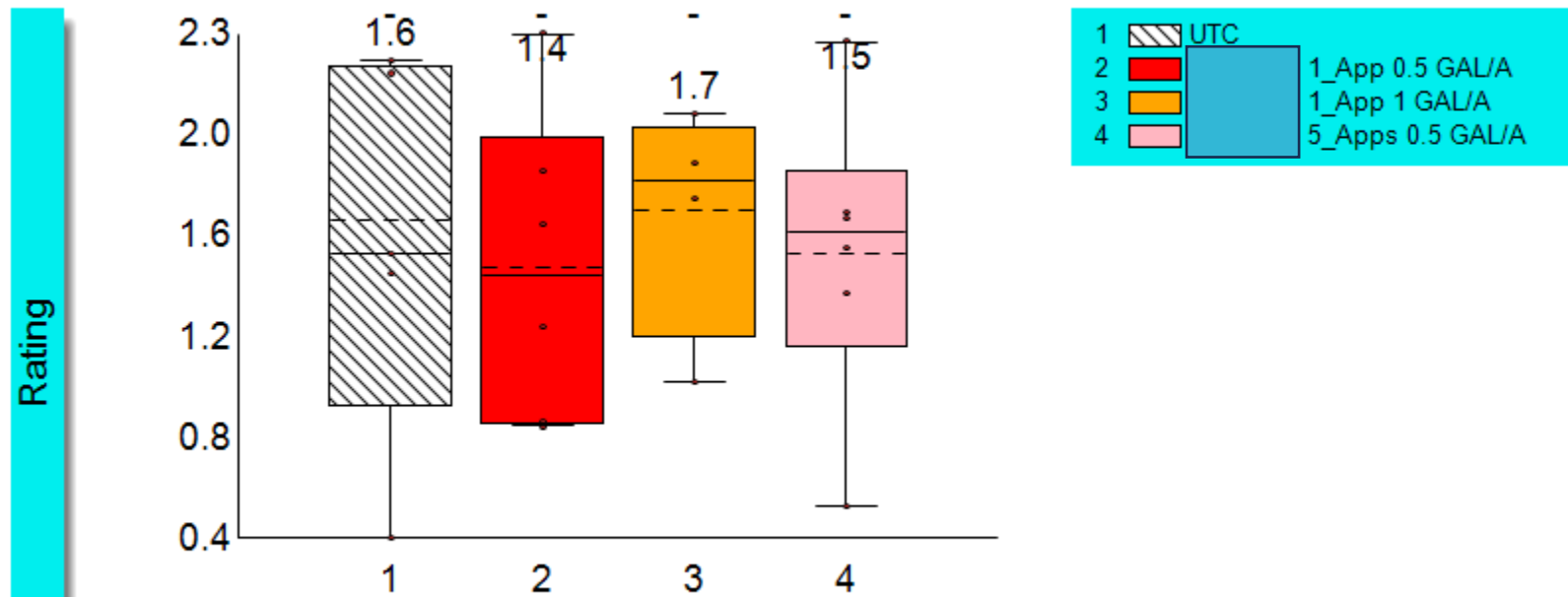
Rating



Trial ID: T3\_Cantaloupe\_2024

First\_Har\_Slip

### Yuma Cantaloupes. Individual Melon Maturity



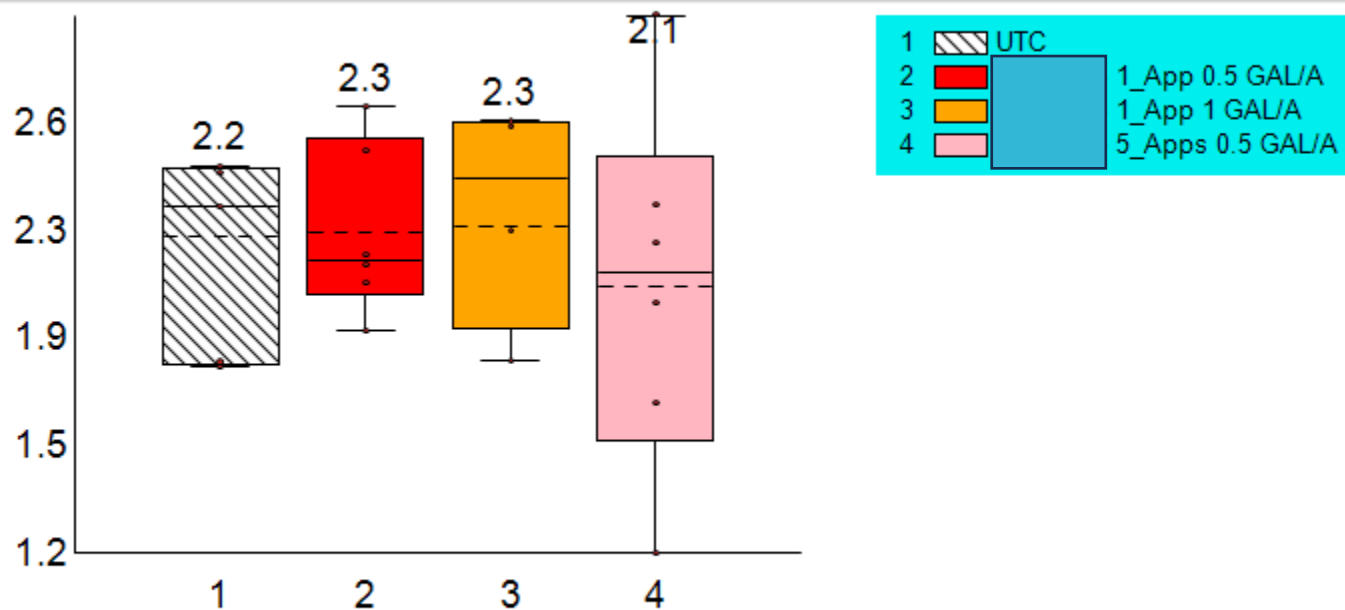
Trial ID: T3\_Cantaloupe\_2024

Second\_Har\_Slip



### Yuma Cantaloupes. Individual Melon Maturity

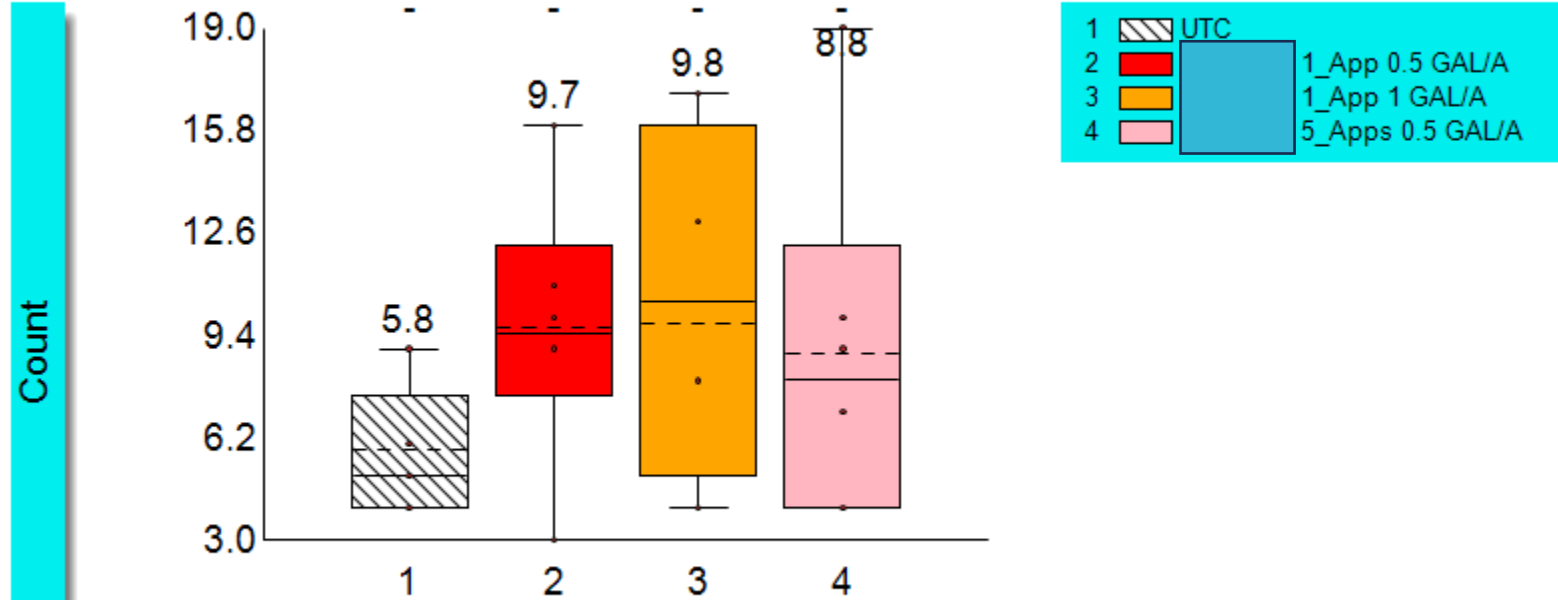
Rating



Trial ID: T3\_Cantaloupe\_2024

Combined\_Har\_Slip

Yuma Cantaloupes. Number of Sunburned in Plot

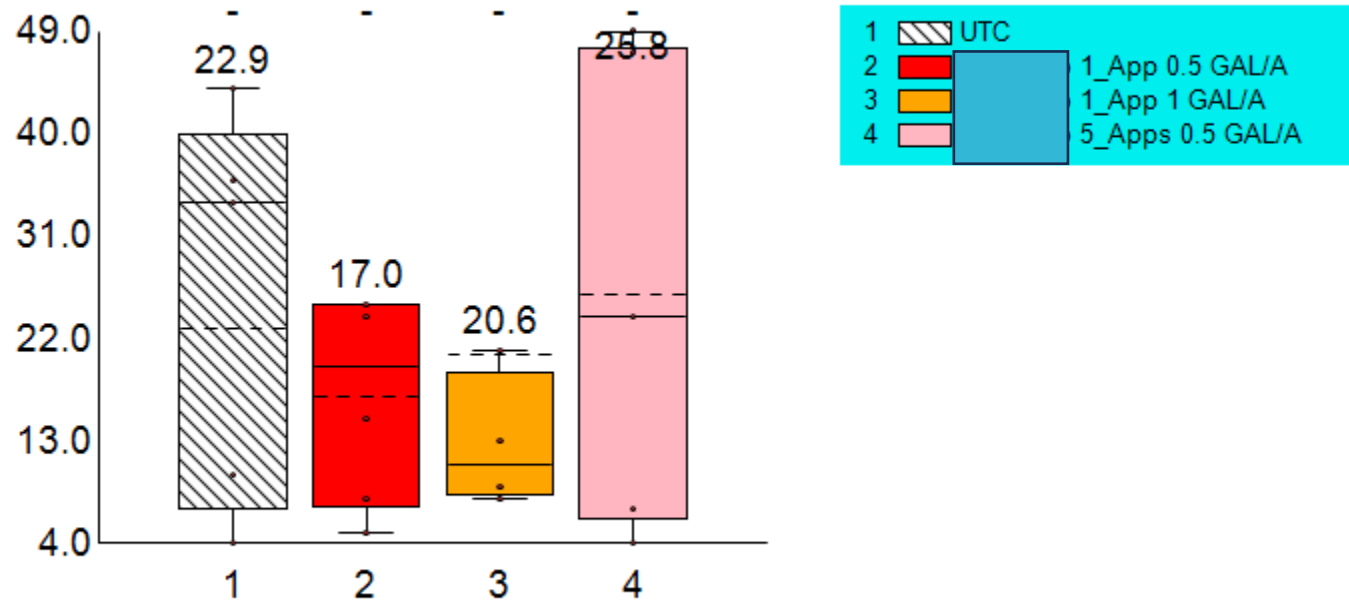


First\_Har\_Sunburn

Trial ID: T3\_Cantaloupe\_2024

Yuma Cantaloupes. Number of Sunburned in Plot

Count

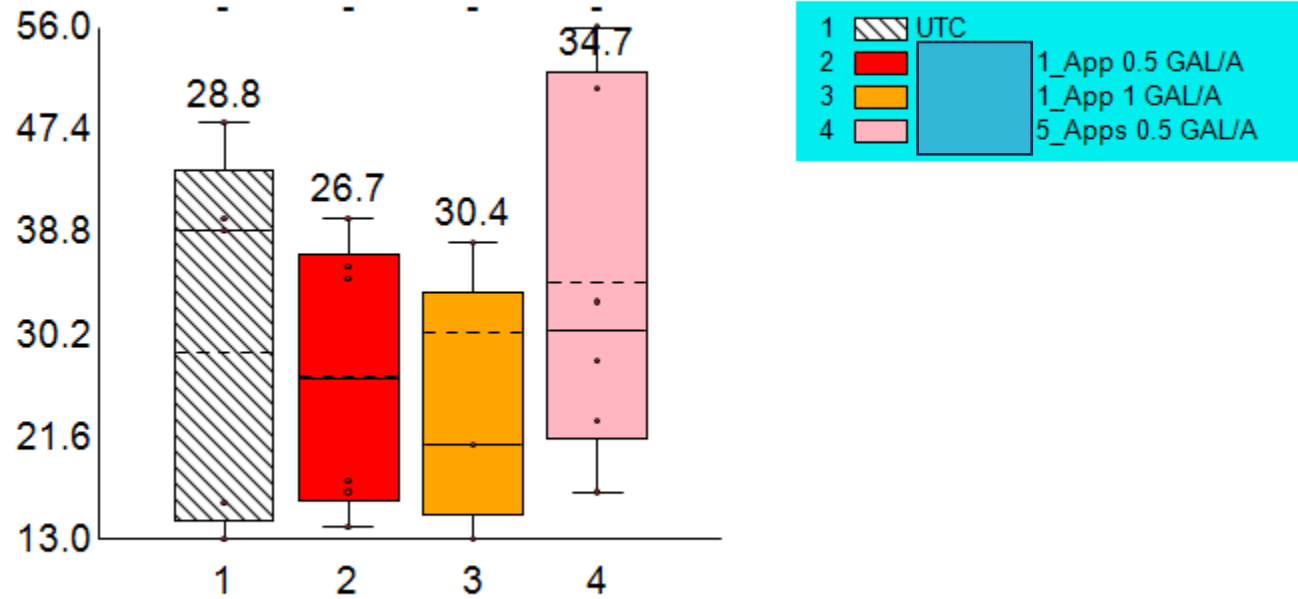


Trial ID: T3\_Cantaloupe\_2024

Second\_Har\_Sunburn

Yuma Cantaloupes. Number of Sunburned in Plot

Count

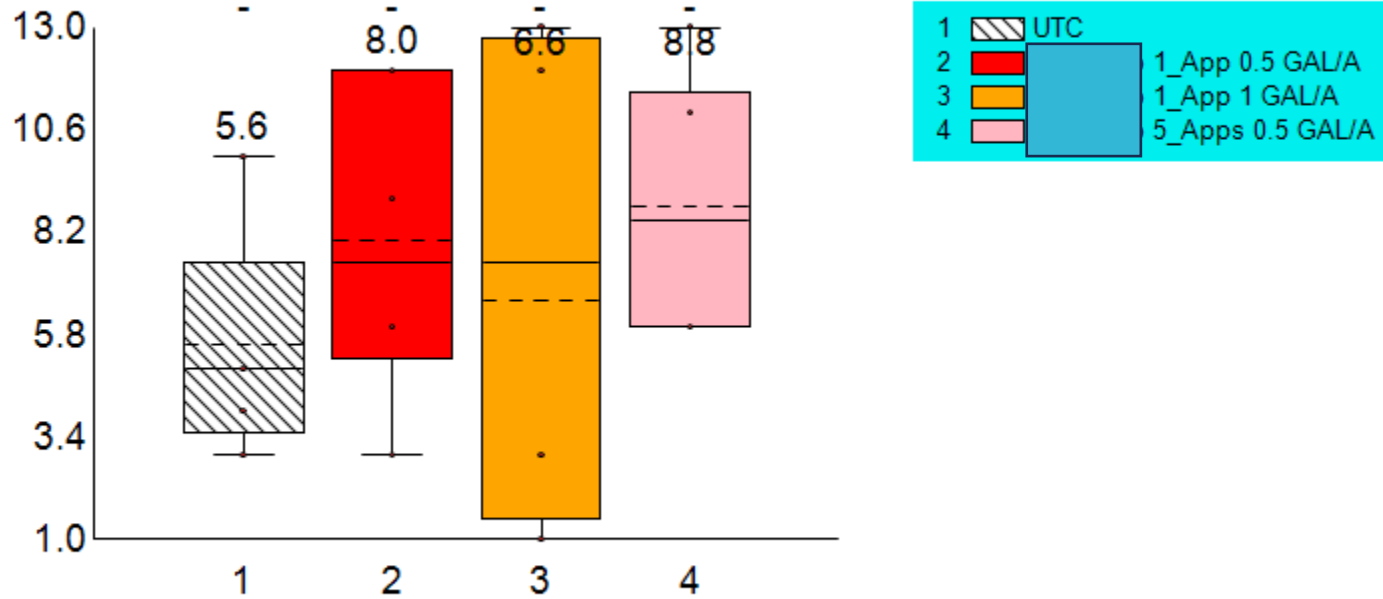


Combined\_Har\_Sunburn

Trial ID: T3\_Cantaloupe\_2024

Yuma Cantaloupes. Number of 'Keepers' in Plot

Count



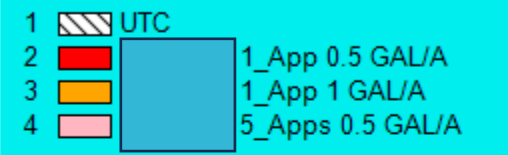
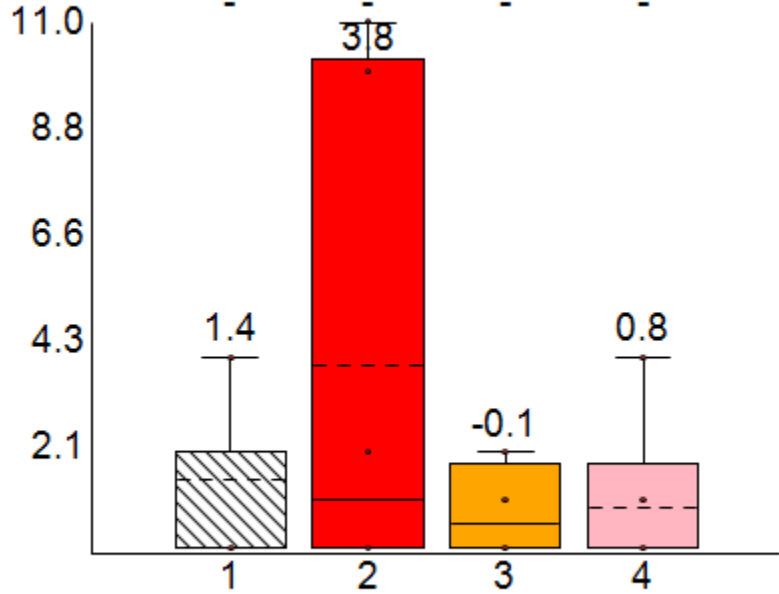
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First\_Har\_Keeper

[Redacted]

### Yuma Cantaloupes. Number of 'Keepers' in Plot

Count



Second\_Har\_Keeper

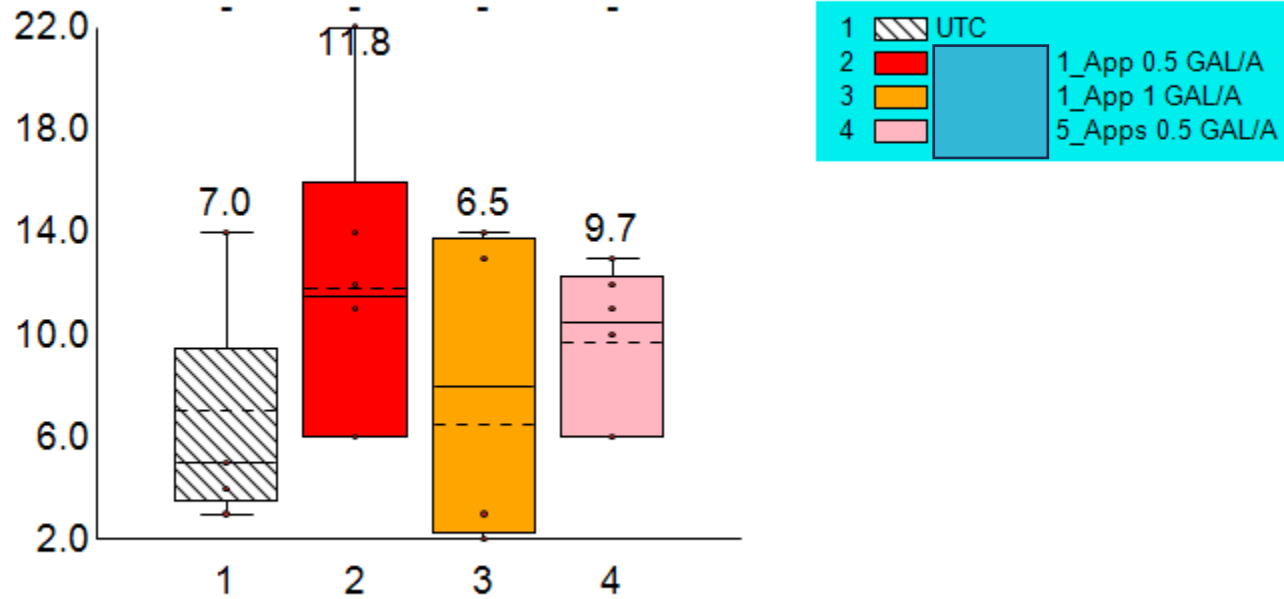
Trial ID: T3\_

[Redacted]

Cantaloupe\_2024

Yuma Cantaloupes. Number of 'Keepers' in Plot

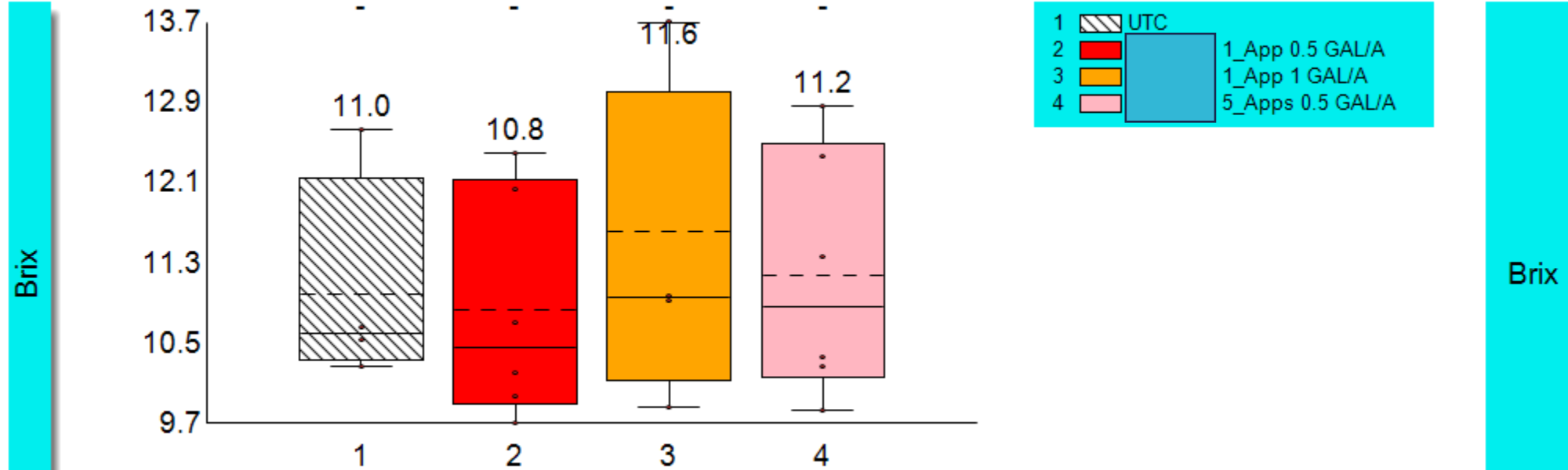
Count



Combined\_Har\_Keeper

Trial ID: T3\_Cantaloupe\_2024

Yuma Cantaloupes. Sugar of 3 Melons per Plot



Trial ID: T3\_Cantaloupe\_2024



Carton Size Grades	Circumference (IN)	
	min	max
above std	24.38	.
5	22.81	24.35
6	20.45	22.78
9	18.47	20.42
12	16.9	18.44
15	15.74	16.87
18	14.95	15.71
22	14.17	14.92
under std		14.137

<b>Trt-1 UTC</b>	<b>abv_std</b>	<b>5</b>	<b>6</b>	<b>9</b>	<b>12</b>	<b>15</b>	<b>18</b>	<b>22</b>	<b>under_std</b>	0.028926	Acres per trt
Number per Trt	0	0	8	48	68	33	22	12	82	273	Total number per trt
Cartons per Trt	NA	0.0	1.3	5.3	5.7	2.2	1.2	0.5	NA	16.3	Marketable Cartons per trt
Cartons per AC	NA	0	46	184	196	76	42	19	NA	<b>564</b>	<b>T1: Marketable Cartons per ac</b>
<b>Trt-2: 1 app low rate</b>	<b>abv_std</b>	<b>5</b>	<b>6</b>	<b>9</b>	<b>12</b>	<b>15</b>	<b>18</b>	<b>22</b>	<b>under_std</b>	0.028926	Acres per trt
Number per Trt	1	0	7	50	51	40	30	8	80	267	Total number per trt
Cartons per Trt	NA	0	1.2	5.6	4.3	2.7	1.7	0.4	NA	15.7	Marketable Cartons per trt
Cartons per AC	NA	0	40	192	147	92	58	13	NA	<b>542</b>	<b>T2: Marketable Cartons per ac</b>
<b>Trt-3: 1 app higher rate</b>	<b>abv_std</b>	<b>5</b>	<b>6</b>	<b>9</b>	<b>12</b>	<b>15</b>	<b>18</b>	<b>22</b>	<b>under_std</b>	0.028926	Acres per trt
Number per Trt	0	0	3	46	73	35	28	9	66	260	Total number per trt
Cartons per Trt	NA	0.0	0.5	5.1	6.1	2.3	1.6	0.4	NA	16.0	Marketable Cartons per trt
Cartons per AC	NA	0	17	177	210	81	54	14	NA	<b>553</b>	<b>T3: Marketable Cartons per ac</b>
<b>Trt-4: 5 apps</b>	<b>abv_std</b>	<b>5</b>	<b>6</b>	<b>9</b>	<b>12</b>	<b>15</b>	<b>18</b>	<b>22</b>	<b>under_std</b>	0.028926	Acres per trt
Number per Trt	0	1	6	33	76	43	30	9	96	294	Total number per trt
Cartons per Trt	NA	0.2	1.0	3.7	6.3	2.9	1.7	0.4	NA	16.1	Marketable Cartons per trt
Cartons per AC	NA	6.9	34.6	126.8	219.0	99.1	57.6	14.1	NA	<b>558</b>	<b>T4: Marketable Cartons per ac</b>

First Set of Plot photos

Plot 901  
T-T 4





Plot 1001  
TtT 1

Plot 1101  
T-T 2





Plot 1201  
TrT 3



Plot 1202  
TrT 2



Plot 1102  
T-T 4





Plot 1002  
TrT 3



Plot 902  
T-T 1



Plot 903  
T-T 4

Plot 1003  
T r T 2



Plot 1103  
T-T 1



Plot 1203  
T-T 3





Plot 1204  
Trt 2



Plot 1104  
T-T 4





Plot 1004  
T-T 1



Plot 904  
T-T 3

Plot 905  
T-T 2





Plot 1005  
TFT 4



Plot 1105  
T-T 3



Plot 1205  
T-T 1



Plot 1206  
TrT 3



Plot 1106  
T-T 4





Plot 1006  
TrT 2



Plot 906  
T-T 1

Second Set of Plot photos



Plot 901  
Trt 4



Plot 1001  
Trt 2

U BRANDS



Plot 1101  
Trt 2

U BRANDS



Plot 1201  
Trt 3

U BRANDS



Plot 1202  
Trt 2

U BRANDS





Plot 1102  
Trt 4

U BRANDS



Plot 1002  
Trt 3

U BRANDS



Plot 902  
Trt 1



Plot 903  
Trt 4



Plot 1003  
Tst 2



Plot 1103

Tst 1

U BRANDS



Plot 1203  
Trt 3

U BRANDS



Plot 1204  
Treat 2



Plot 1104  
T<sub>rt</sub> 4

U BRANDS





Plot 1004  
Trt 1

U BRANDS



Plot 904  
Tst 3



Plot 905  
Trt 2

U BRANDS



Plot 1005  
Trt 4



Plot 1005  
Tst 4



Plot 1105

Trt 3

U BRANDS



Plot 1205

Trt 2





Plot 1206  
Trt 3



Plot 1106  
T5+ 4



Plot 1006

Treat 2



Plot 906

Trt 1