

Yuma Fall 2025 Romaine Trial

REDOX – OsmoFlow and PeneCal

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Yuma County Cooperative Extension



THE UNIVERSITY OF ARIZONA

Cooperative Extension

Yuma County

Summary

- OsmoFlow and PeneCal evaluation on romaine when exposed to drought conditions
- Rare occasion of excessive rain on the trial, limiting effectiveness of intentional drought.
- Similar yield and quality results across treatments
- First Application: 10/1
- Wet Date: 10/2
- Harvest: 12/26 (86 DAP)

Treatments

- 1. Full water Grower Standard
- 2. Reduced water Grower Standard
- 3. Reduced water OsmoFlow (1 qt/ac)
- 4. Reduced water PeneCal (1 qt/ac)
- 5 Reduced water with OsmoFlow and PeneCal (1 qt/ac each)

Conventional Fertilization Plan

- 200# 11-52-0 MAP at preplant
- 12 GPA UAN 32
 - 10/21 (20 DAP)
 - 11/17 (47 DAP)
 - 12/9 (69 DAP)

Production Application Dates

- First Application: 10/1 (-1 DAP)
- Second Application: 10/9 (8 DAP)
- Third Application: 10/21 (20 DAP)
- Fourth Application: 11/17 (47 DAP)

Pesticide

Date	Pesticide	Rate	Type	Method
9/30	Verimark	13.5 oz/ac	Preplant insecticide	Shank
10/2	Prefar	6.0 qt/ac	Preemergent herbicide	Sprinkler
10/20	Avaunt Evo	8 oz/ac	Insecticide	Spray
10/20	Assail	6 oz/ac	Insecticide	Spray
12/17	Oroindis	8 oz/ac	Fungicide	Spray
12/17	NuFilmP	6 oz/ac	Adjuvant	Spray

Irrigation

Irrigation Date	Type	Full Water Irrigation Hours	Full Water Acre IN	Reduced Water Irrigation Hours	Reduced Water Acre IN
10/1	Drip	2	0.372	2	0.372
10/2	Sprinkler	10	1	10	1
10/3	Sprinkler	10	1	10	1
10/4	Sprinkler	9	0.9	9	0.9
10/5	Sprinkler	8	0.8	8	0.8
10/8	Sprinkler	6	0.6	6	0.6
10/9	Drip	2	0.372	2	0.372
10/10	Rain	.	0.35	.	0.35
10/15	Drip	2	0.372	2	0.372
10/21	Drip	6	1.116	6	1.116
11/3	Drip	3	0.558		
11/11	Drip	7	1.302	4	0.744

Sprinkler rate: 0.1 IN/HR
Drip rate: 0.186 Acre IN/HR

Total Water Applied
Full Irrigation: 15.36 IN
Reduced Irrigation: 11.64 IN

Irrigation

Sprinkler rate: 0.1 IN/HR
Drip rate: 0.186 Acre IN/HR

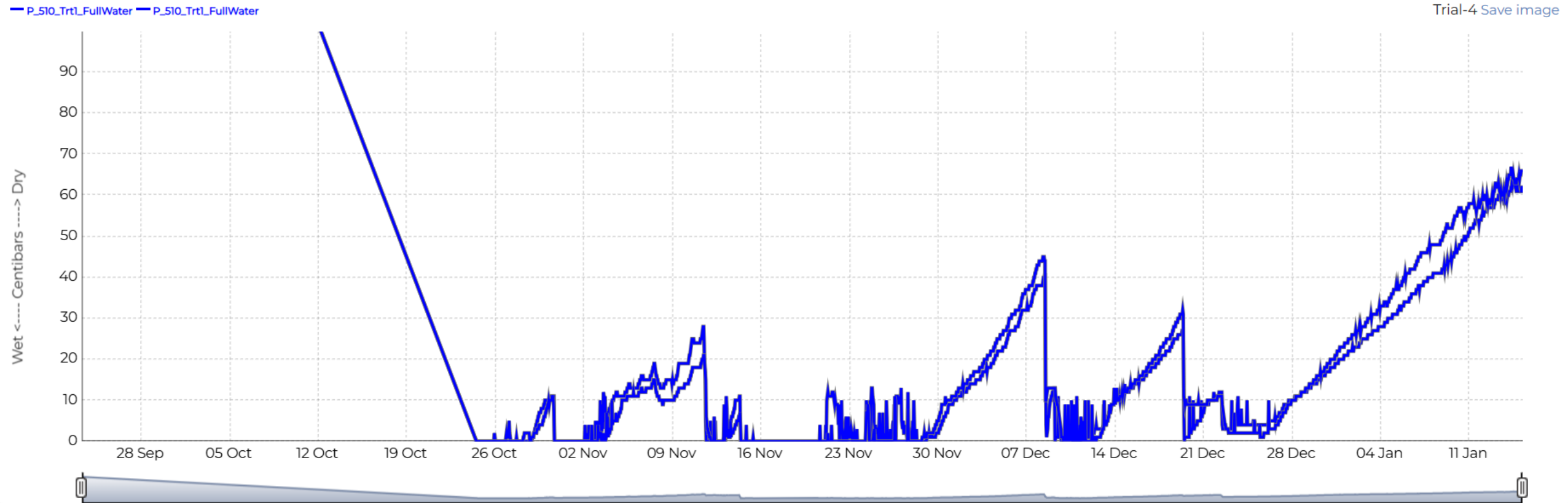
Total Water Applied
Full Irrigation: 15.36 IN
Reduced Irrigation: 11.64 IN

Irrigation Date	Type	Full Irrigation Hours	Full Irrigation Acre IN	Reduced Irrigation Hours	Reduced Irrigation Acre IN
11/15	Rain		0.4		0.4
11/17	Rain		0.01		0.01
11/17	Drip	4	0.744	4	0.744
11/18	Rain		0.11		0.11
11/19	Rain		0.09		0.09
11/20	Drip	4	0.744		
11/21	Rain		0.83		0.83
11/22	Rain		0.17		0.17
11/23	Rain		0.01		0.01
12/8	Drip	4	0.744	4	0.744
12/9	Drip	6	1.116		
12/20	Drip	4	0.744		
12/22	Drip	4	0.744	4	0.744
12/23	Rain		0.03		0.03
12/24	Rain		0.04		0.04
12/25	Rain		0.09		0.09
Total			15.36		11.64

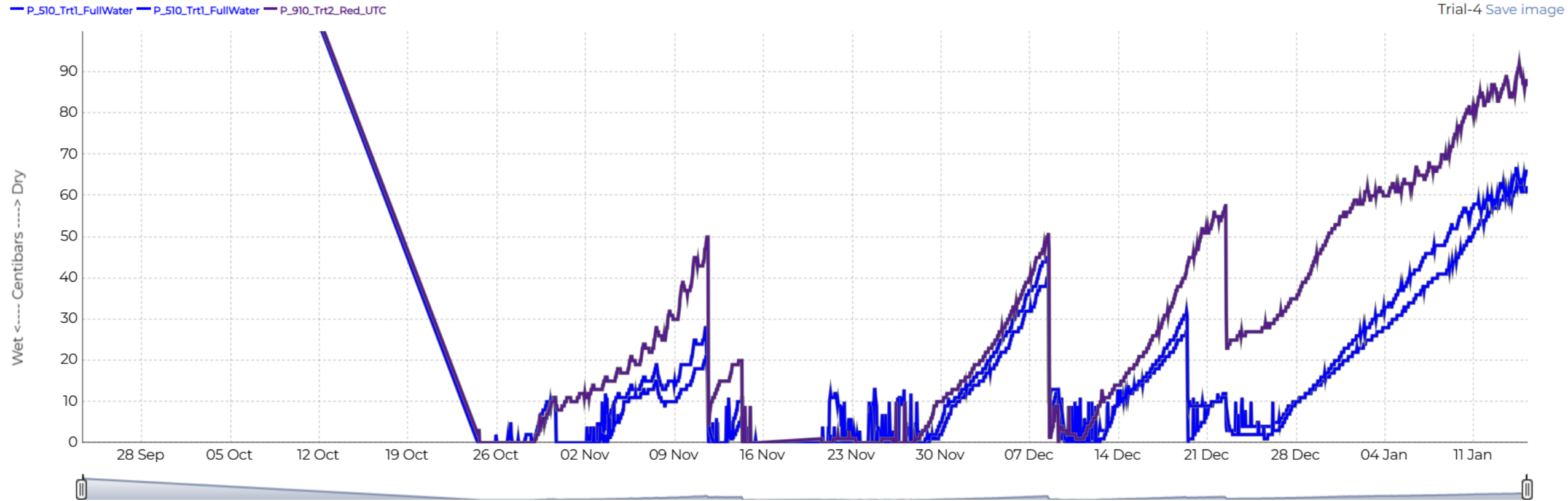
Watermark IC-10

Continuously Monitored Moisture Probes

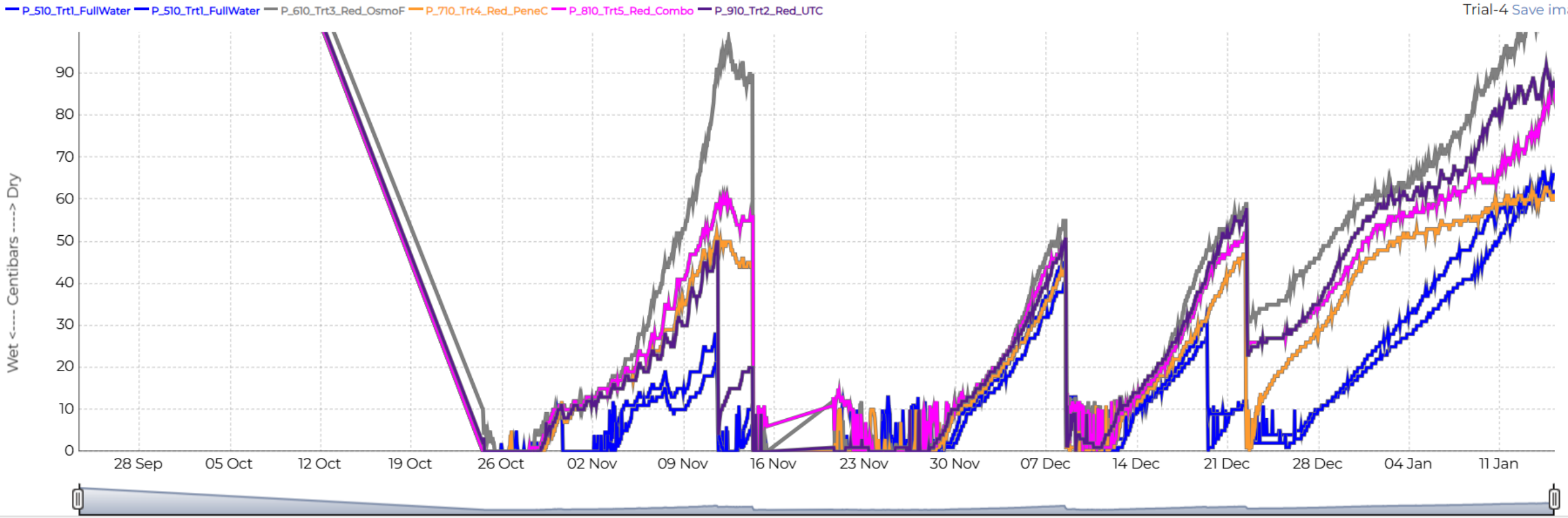
Moisture Probes (Full Water UTC Only)



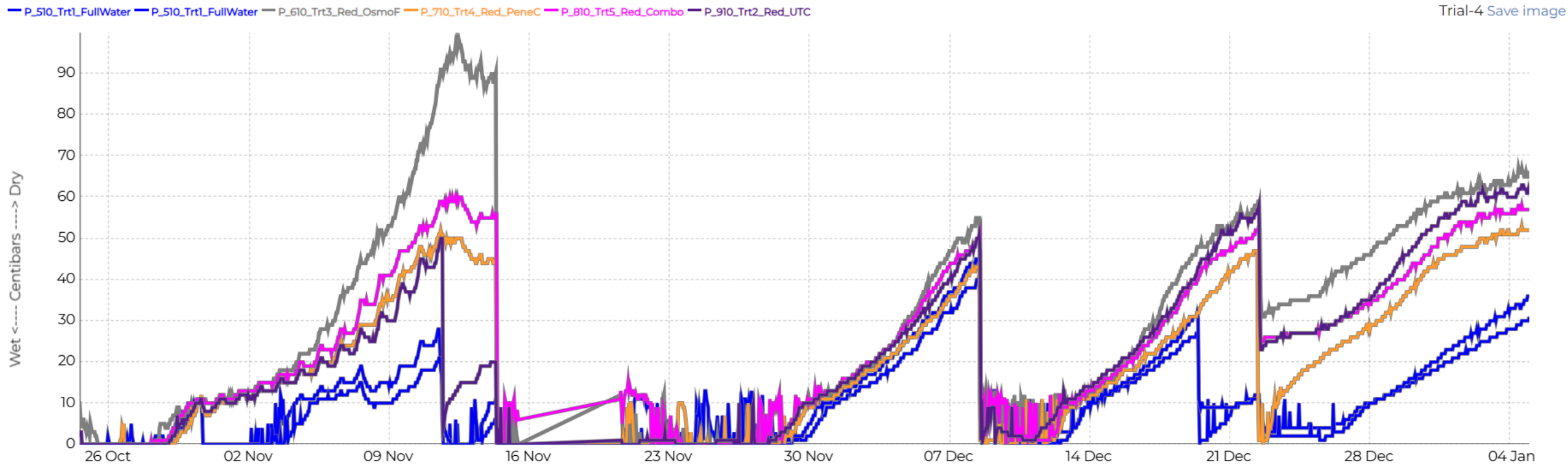
Moisture Probes (Full and Reduced Water UTC)



Moisture Probes (All Treatments Together)



Moisture Probes (All Treatments)



Harvest

- 12/26/25
- Harvest a 10 foot section of each plot
- Each plant weighed for total above ground biomass
- Hearts were trimmed from the biomass and weighed individually
- Walkby percentage was calculated by counting the plants that did not make a marketable heart (lower values = more harvestable plants per plot)
- Heart circumference and length was recorded for each trimmed head





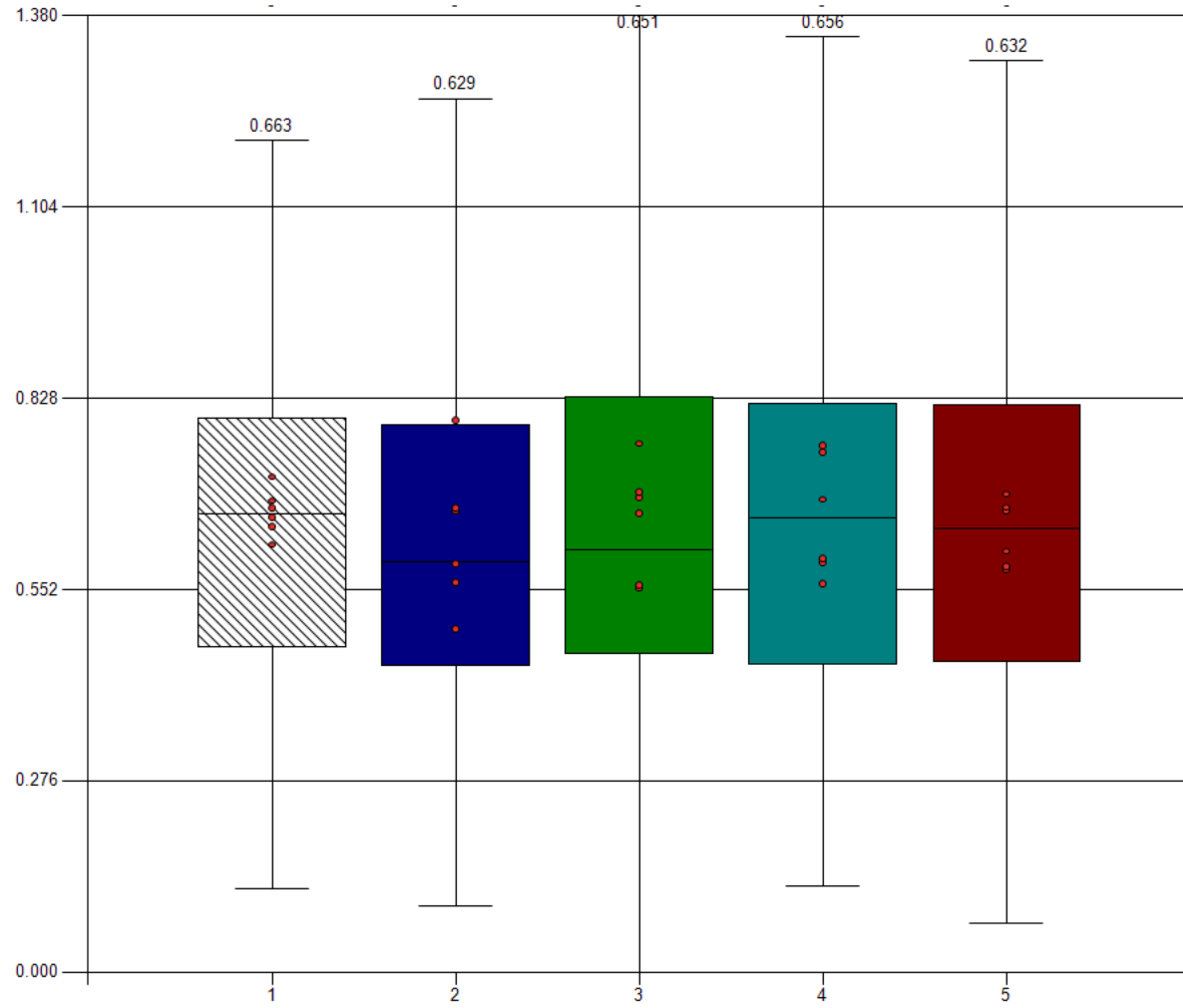




LIFETIME

Yuma Romaine Trial Harvest Data

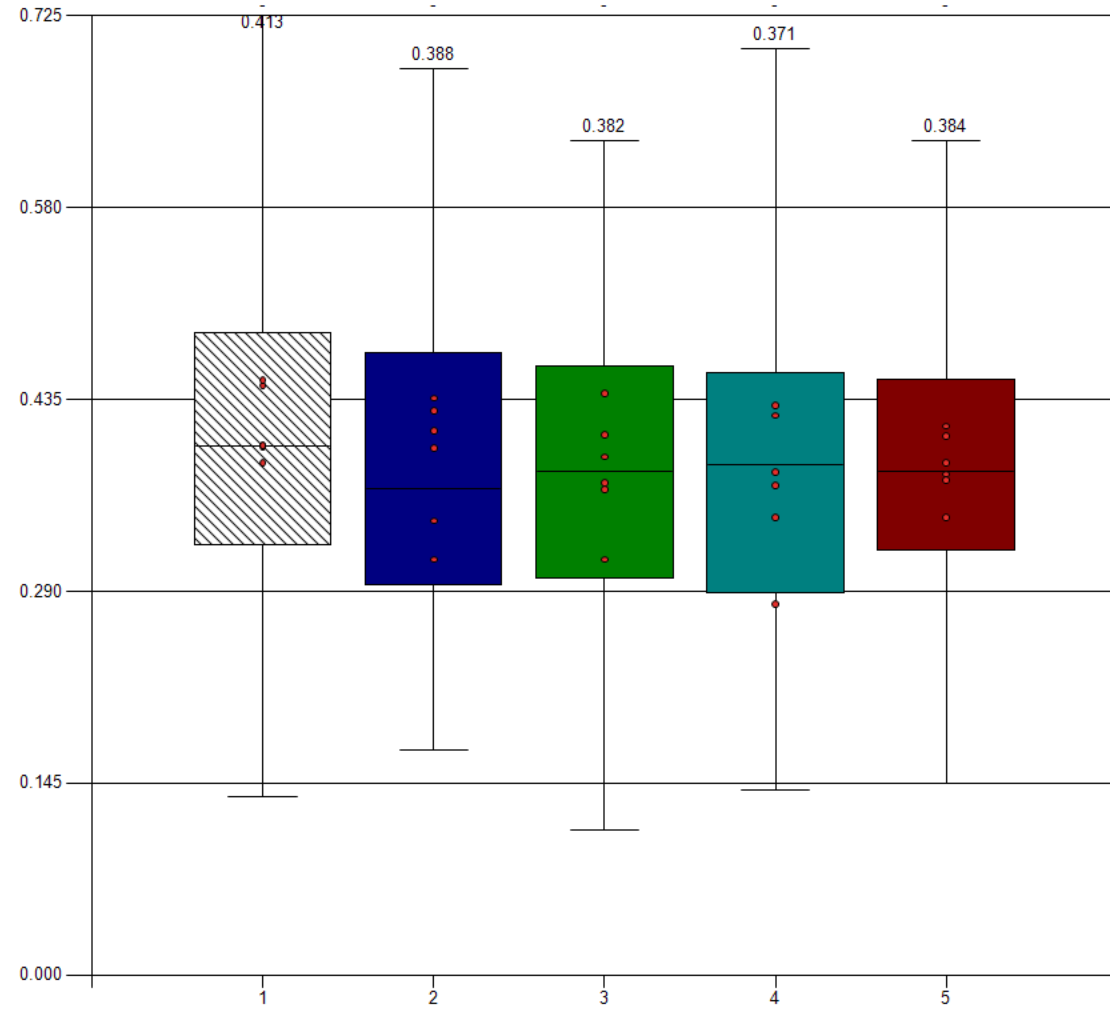
Above Ground Biomass (KG per Plant)



- 1 UTC Full Water
- 2 UTC Reduced Water
- 3 OsmoFlow Reduced Water 1 QT/A
- 4 PeneCal Reduced Water 1 QT/A
- 5 OsmoFlow Reduced Water 1 QT/A; PeneCal Reduced Water 1 QT/A

Yuma Romaine Trial Harvest Data

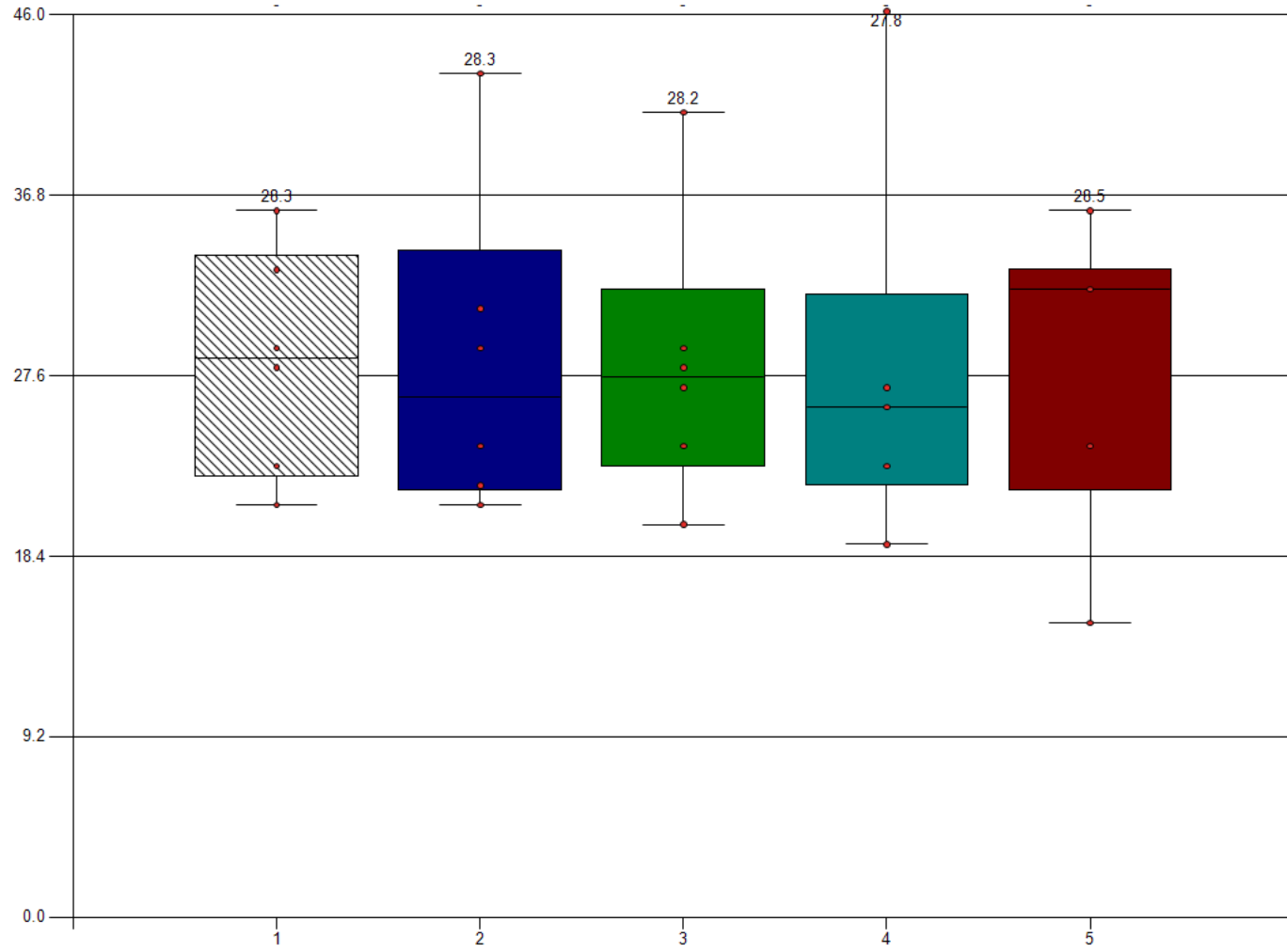
Trimmed Heart Weights (KG per Trimmed Head)



- 1 UTC Full Water
- 2 UTC Reduced Water
- 3 OsmoFlow Reduced Water 1 QT/A
- 4 PeneCal Reduced Water 1 QT/A
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Yuma Romaine Trial Harvest Data

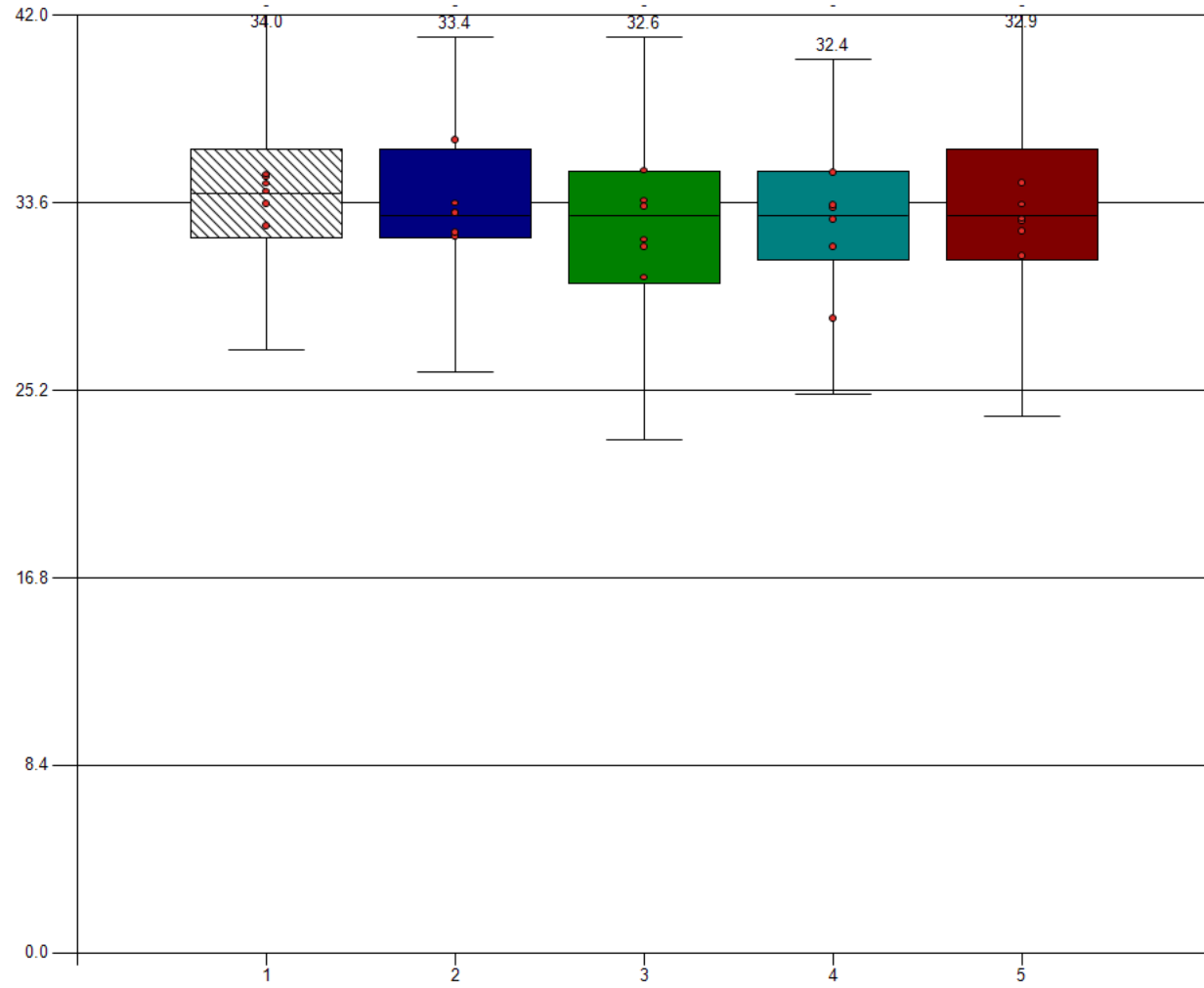
% Percent Walkby



- 1 UTC Full Water
- 2 UTC Reduced Water
- 3 OsmoFlow Reduced Water 1 QT/A
- 4 PeneCal Reduced Water 1 QT/A
- 5 OsmoFlow Reduced Water 1 QT/A; PeneCal Reduced Water 1 QT/A

Yuma Romaine Trial Harvest Data

Trimmed Head Circumference (cm)



- 1 UTC Full Water
- 2 UTC Reduced Water
- 3 OsmoFlow Reduced Water 1 QT/A
- 4 PeneCal Reduced Water 1 QT/A
- 5 OsmoFlow Reduced Water 1 QT/A; PeneCal Reduced Water 1 QT/A

Plot Photos



507
Trt-5







807
Trt-1





508
Trt-4





708
Trt-5



808

Trt-2





509
Trt-2







809
Trt-3



909
Trt-5



510

Trt-1



G10
Trt-3



710
Trt-4







511
Trt-3



011
Trt-5





811
Trt-4



911
Tvt-1



512
Trt-2



612
Trt-1



712
Trt-5



