

PAC UPDATE DUAL-USE SOLAR



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SITE DEPLOYMENT AND MAINTENANCE





Finalized the stand design, okayed by an Onset engineer. Irely Knox built many of the stands and helped with early spring field installation. Luke Joseph helped with late spring installation and summer monitoring.





On October 11th, presented to 70 webinar attendees on our use-case for sensor monitoring. Since, received one inquiry for more info and one inquiry for collaboration.





FLOODING IN THE CONNECTICUT RIVER, 2023

(BRIDGET PEERY / THE REPUBLICAN / MASSLIVE)

No flooding at research sites, but pervasive rain impacted crops and data collection



SITE UPDATE: GRAFTON



GRAFTON BUTTERNUT

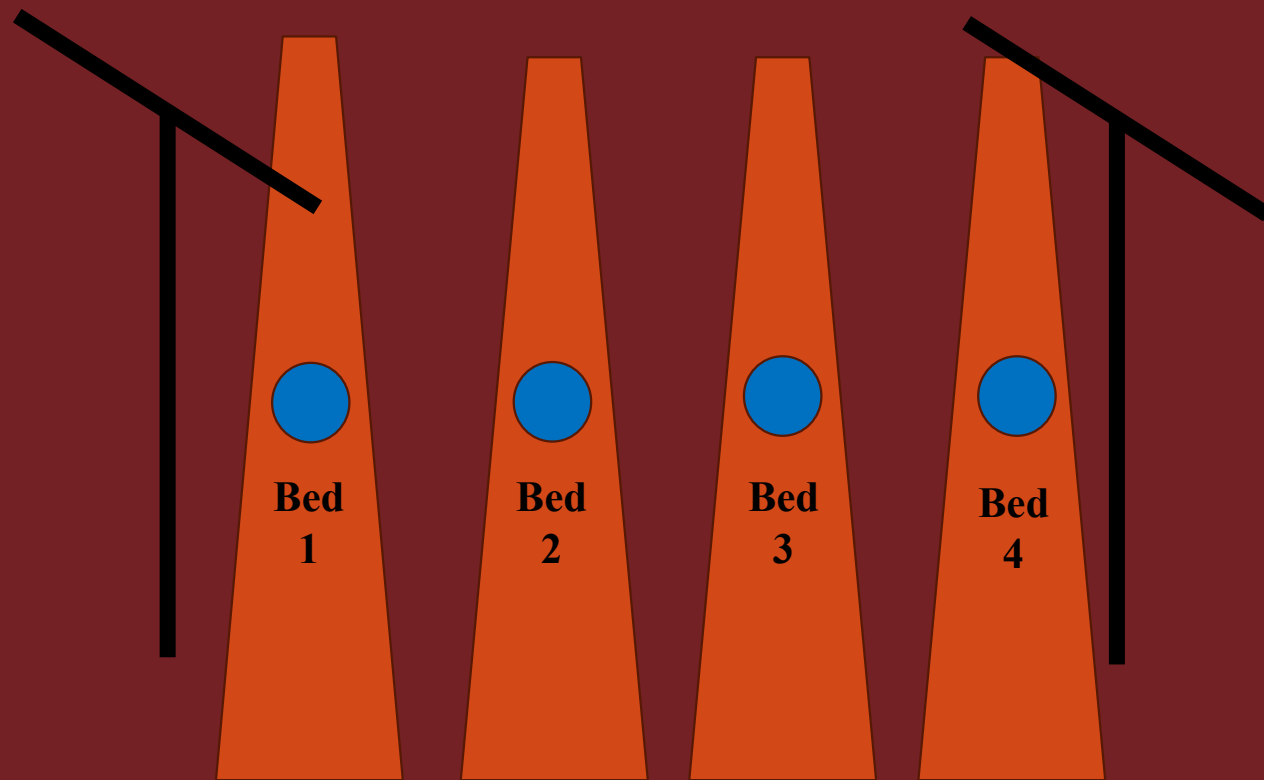
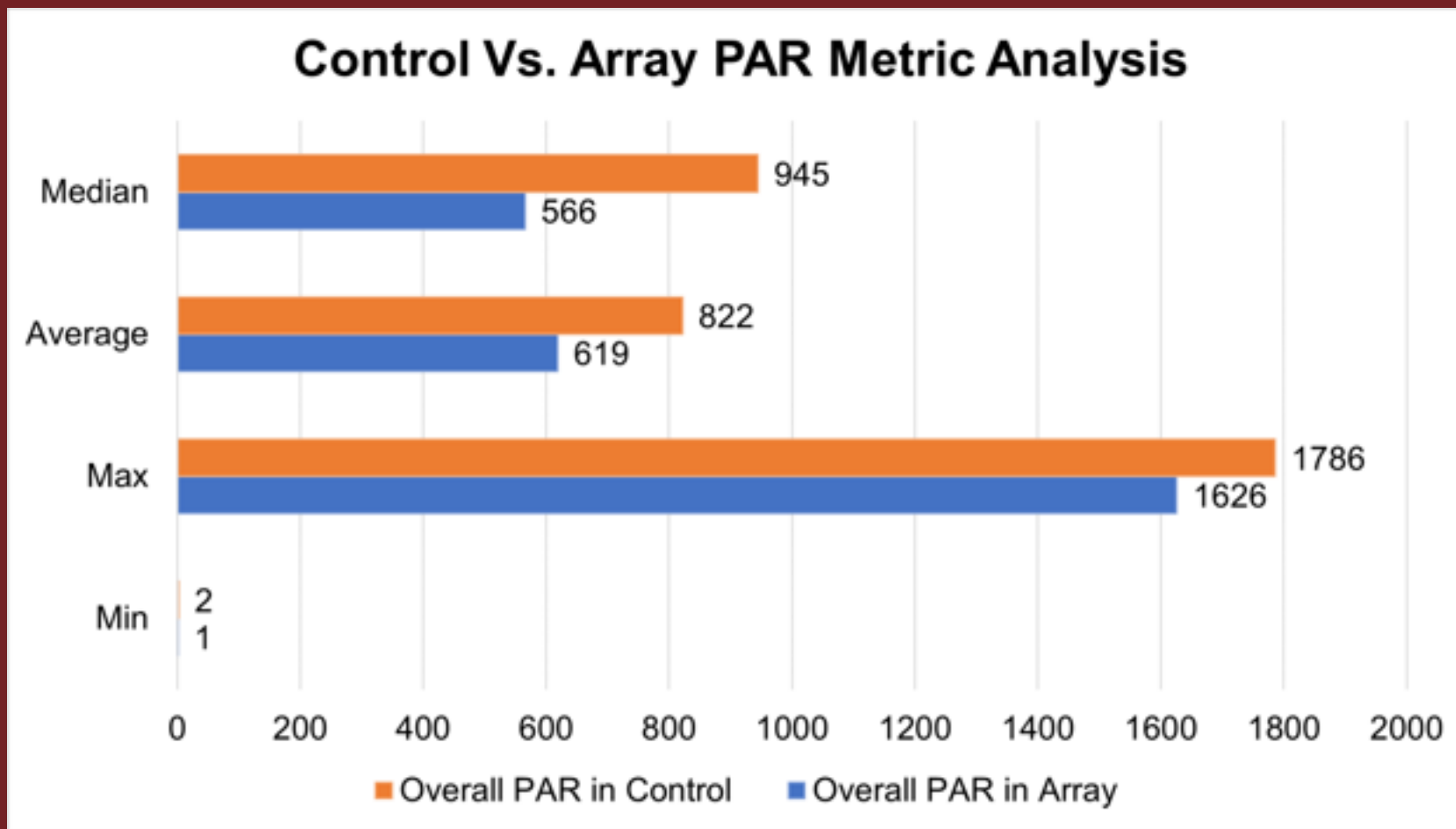




Figure made by
Luke Joseph

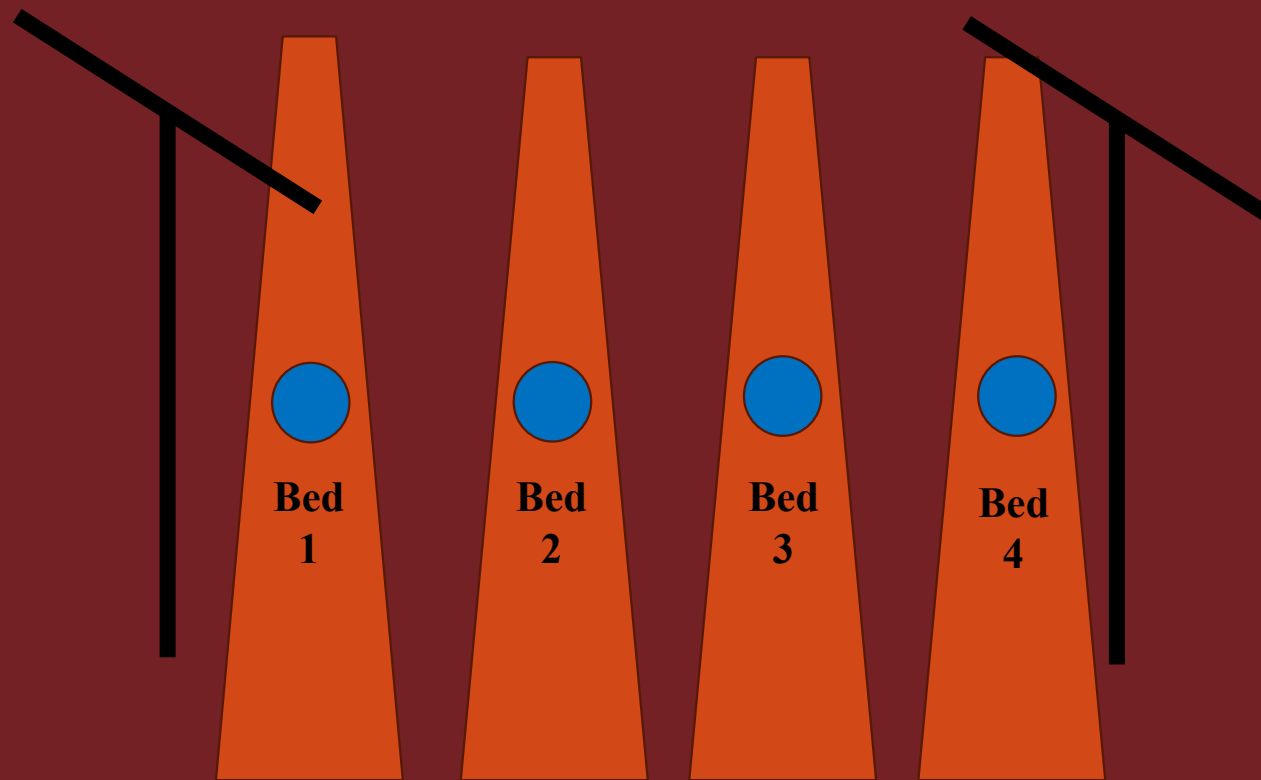
GRAFTON BUTTERNUT



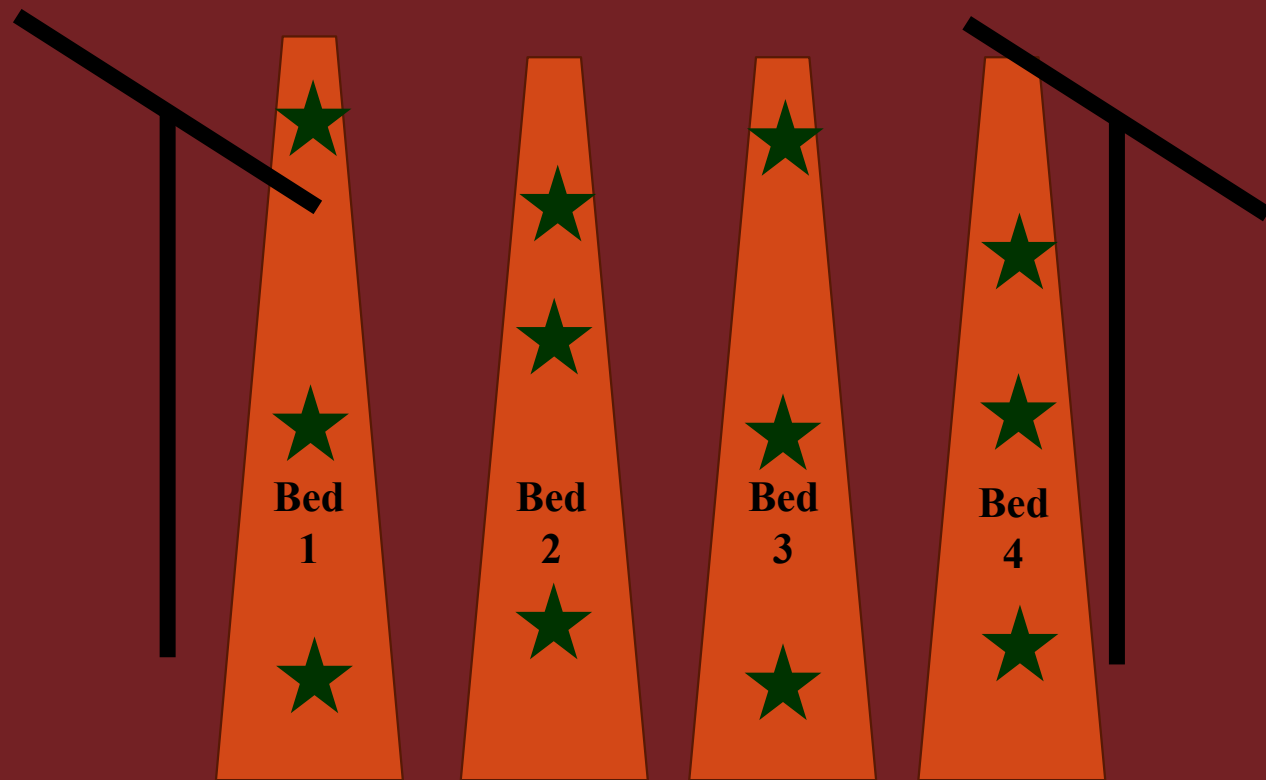
Looked at >40k data points to make these graphs, 3 weeks of PAR data from one site (biweekly observation – 6 week time span)



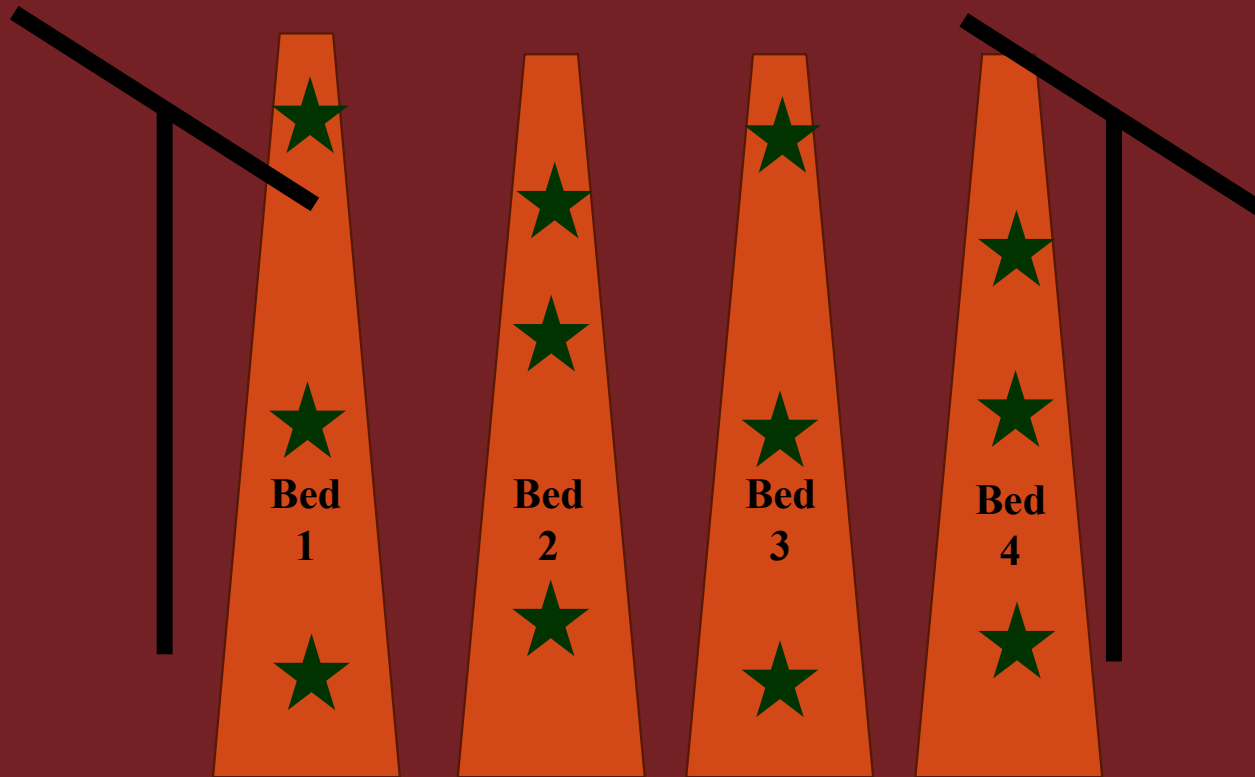
GRAFTON BUTTERNUT



GRAFTON BUTTERNUT

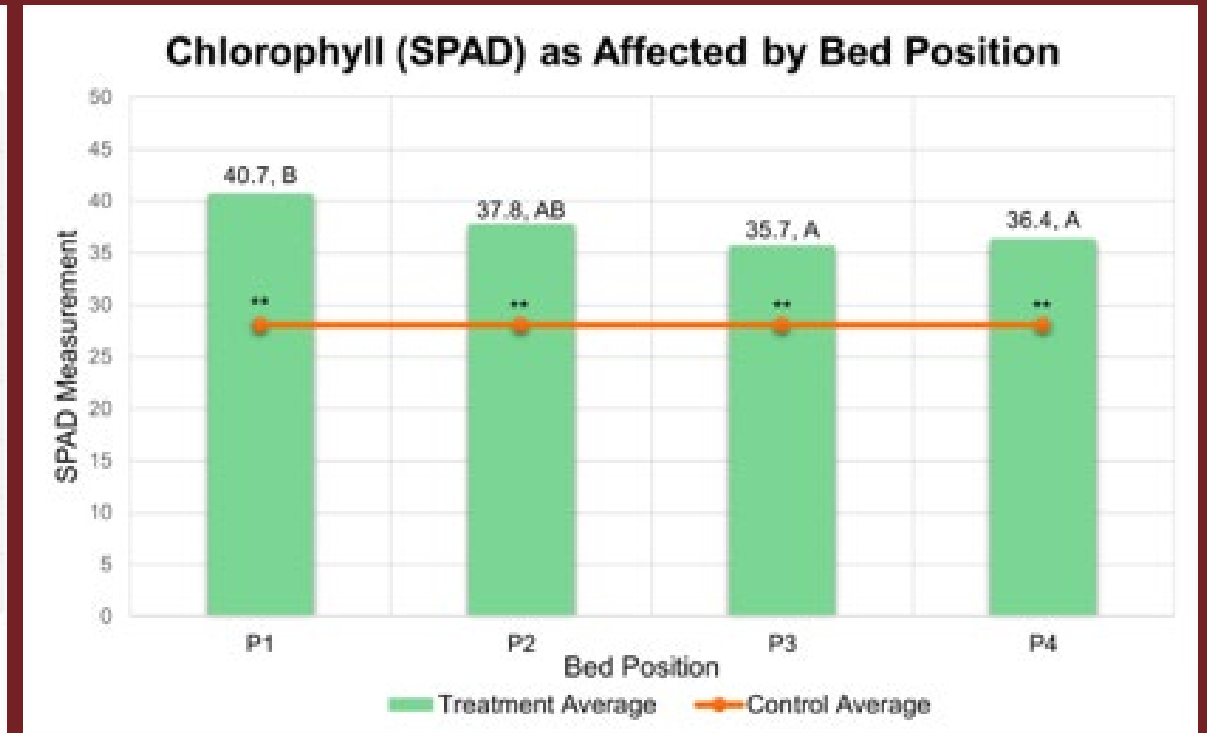
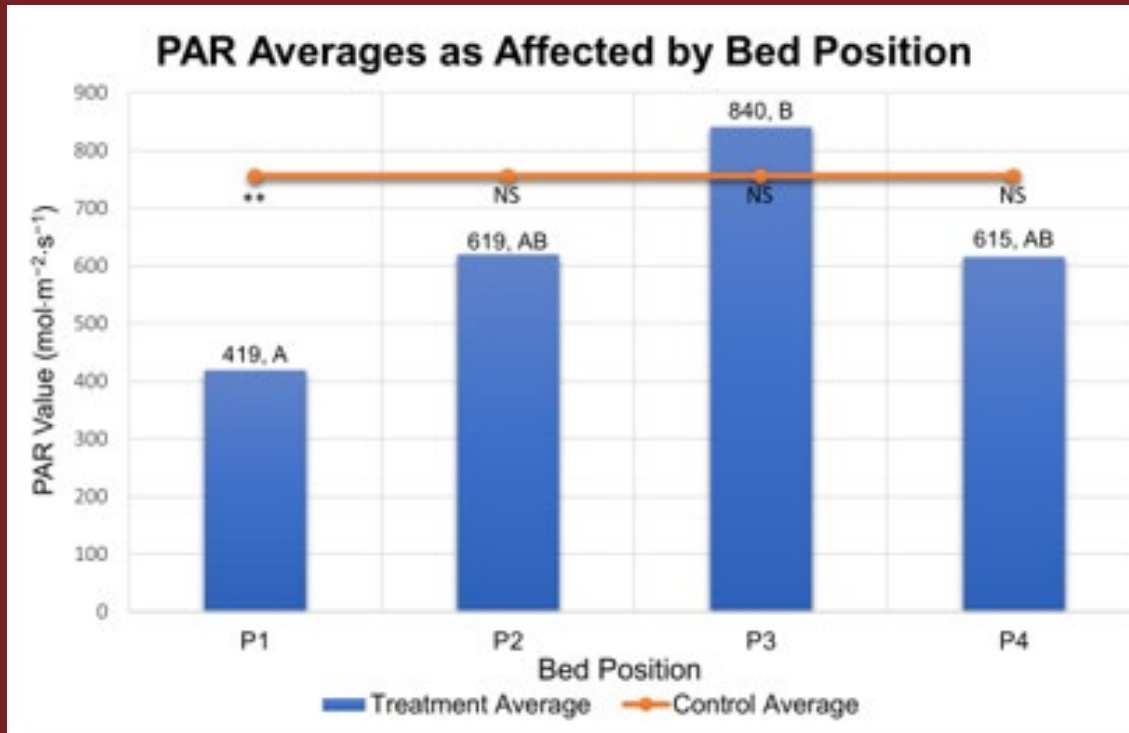


GRAFTON BUTTERNUT



GRAFTON BUTTERNUT

Figure made by
Luke Joseph
(right). Data
representation
influenced by
work of Alexa
Smychkovich
(left).

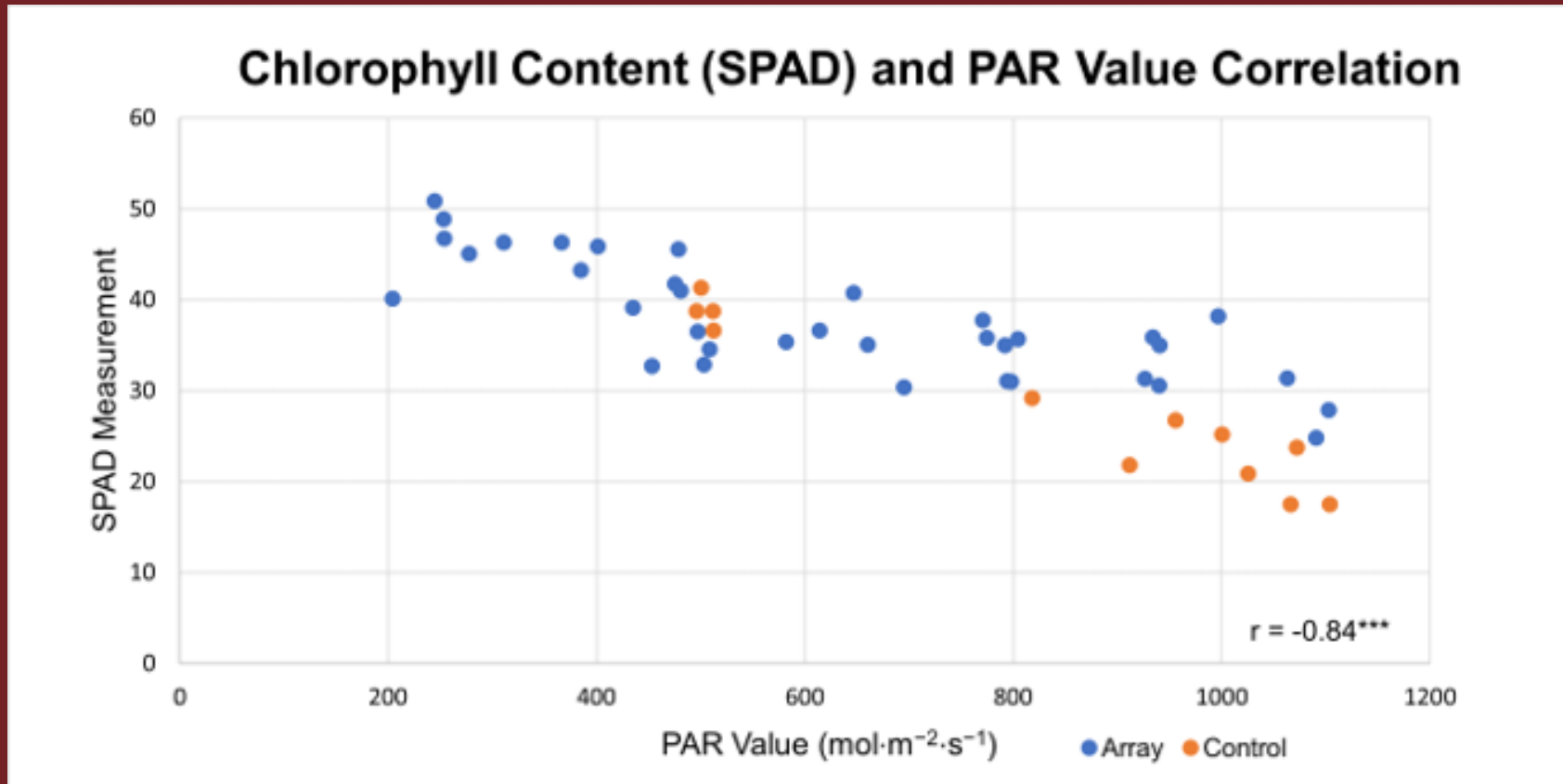


Looked at >40k data points to make these graphs, 3 weeks of PAR data from one site (biweekly observation – 6 week time span).

GRAFTON BUTTERNUT



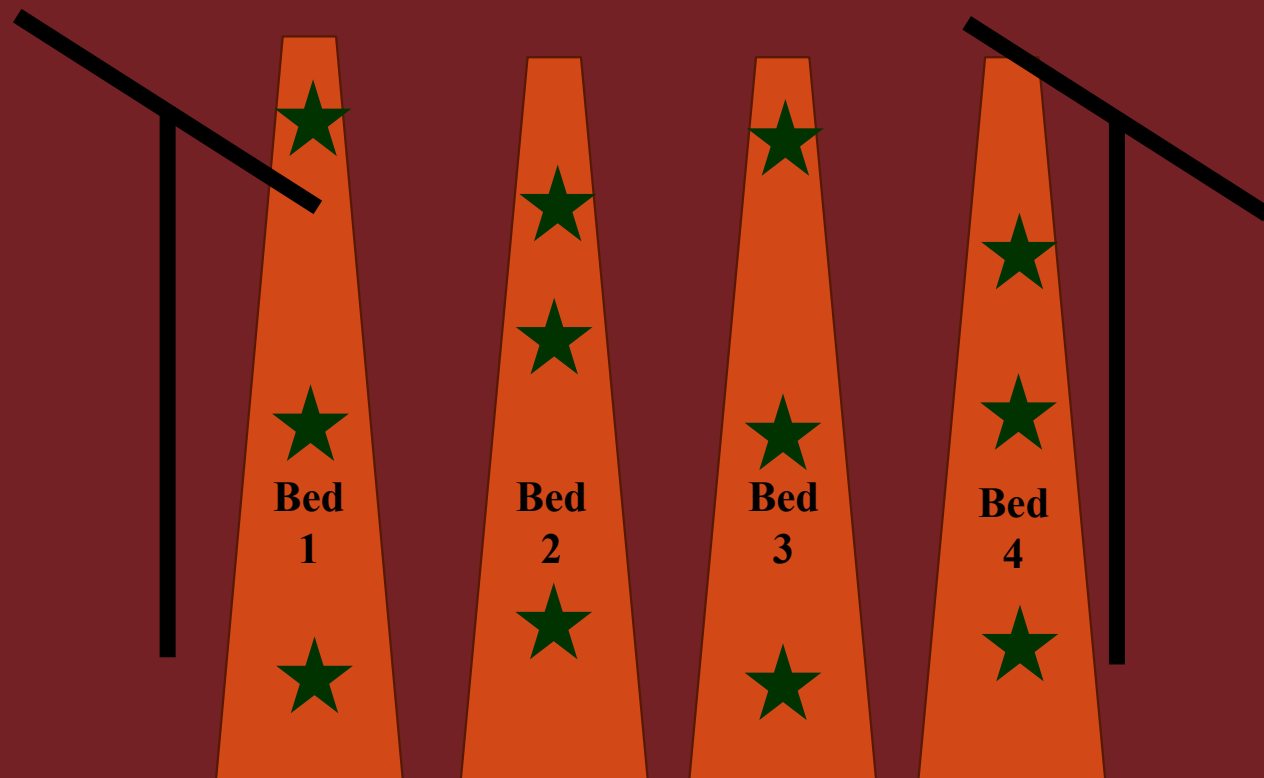
Figure made by
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GRAFTON BUTTERNUT



GRAFTON BUTTERNUT

- Control plants not useable for yield

*Plants looked good early in season,
but:*

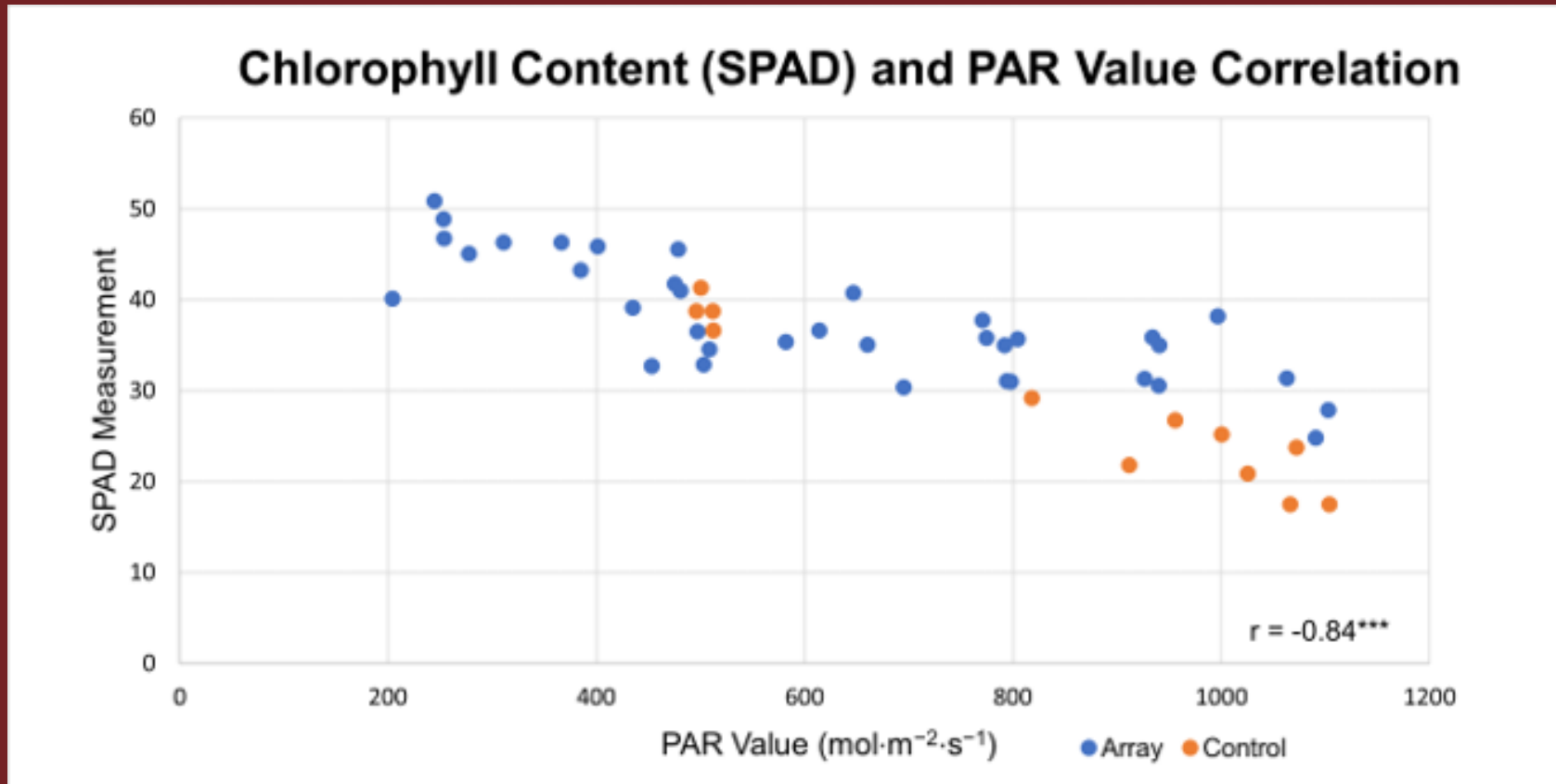
- 1. Small area*
- 2. Late season weed pressure*
- 3. Possibly reduced fertilizer
application in spring compared
to array*



GRAFTON BUTTERNUT



Figure made by
Luke Joseph



PAR and chlorophyll results piqued our interest; began collecting SPAD data in Hadley. *More on that from Mamata.*



GRAFTON SEASON UPDATE - LETTUCE

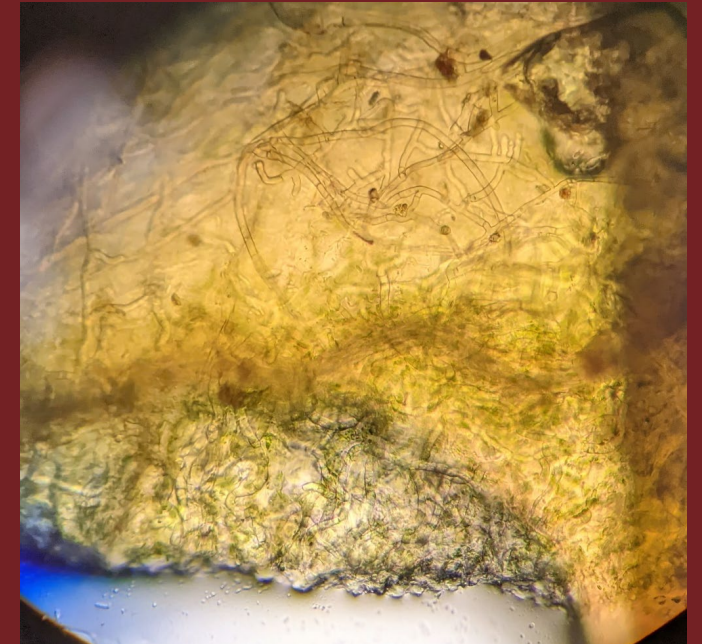


420 plants assessed for marketability and grade. No significant difference between the array and the control.

GRAFTON SEASON UPDATE - LETTUCE



Delayed harvest and bottom rot disease progression (*Rhizoctonia* pictured below) lead to total crop loss. Data collection represents “what could have been” rather than “what was”.



SITE UPDATE: MONSON



SITE UPDATE: MONSON

- We collected hay samples and removed sensors in the first week of July
- A series of events, including rain and a broken tractor, lead to haying delays.
- Control sensors were reinstalled in mid-August, array sensors were reinstalled in late-August.
- The array and the control were treated differently.
- Reframing the questions to investigate microclimate conditions in the 6 weeks prior to first cut and second cut (occurring now).

Experimental challenge, or window into perceptions about managing hay in an array?



A photograph of a broccoli field with rows of plants. In the foreground, several black irrigation sensors are placed in the soil next to the plants. A semi-transparent text box is overlaid in the center of the image.

NEW LOCATION: BROCCOLI IN HADLEY



ARRAY



- Stands are set up in transects to capture the positional variation in the arrays.
- Stands are set up with the same spacing in the control.
 - This enables us to differentiate the variation due to the array from the normal, special variation in a field.
 - Potential for T-tests to compare array to control
 - Designed to allow for a full ANOVA (3 reps, acknowledging the lack of blocks).



CONTROL



- Stands are set up in transects to capture the positional variation in the arrays.
- Stands are set up with the same spacing in the control.
 - This enables us to differentiate the variation due to the array from the normal, special variation in a field.
- Potential for T-tests to compare array to control
- Designed to allow for a full ANOVA (3 reps, acknowledging the lack of blocks).



PLANS FOR FALL

- Mamata on-boarding
- Monson removed on 10/20/23
- Grafton will be removed in November
- Hadley will be removed for broccoli harvest (soon).