



Effects of Plastic Mulch Color and Number of Drip Irrigation Lines on Incidence of *Macrophomina* Root Rot

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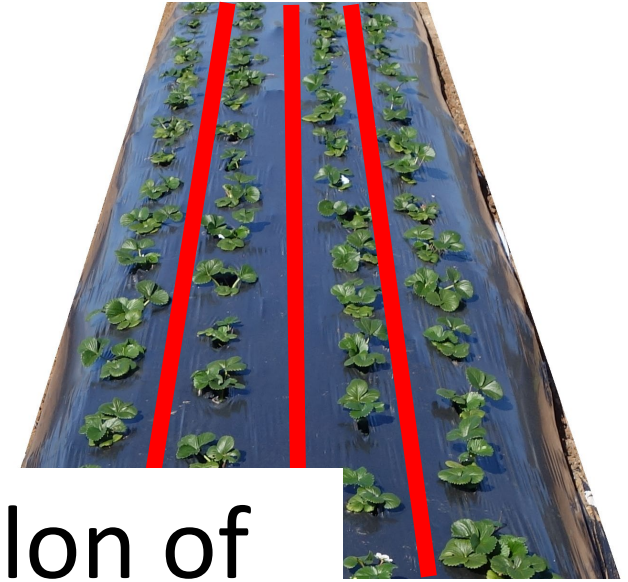
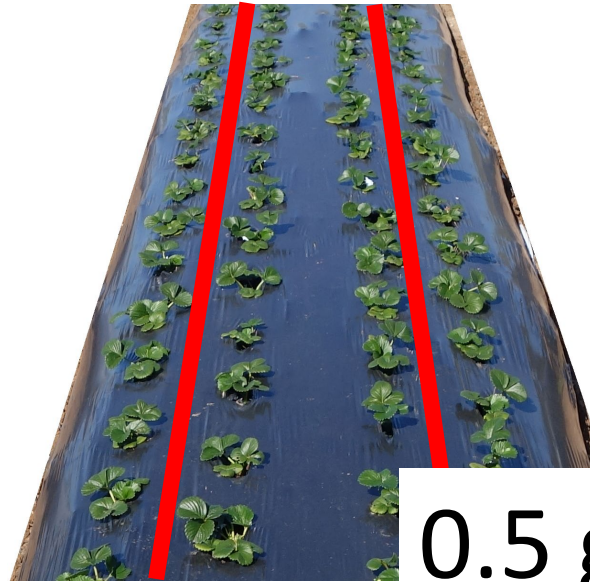
Objective

- Determine how bed temperature and distribution uniformity influences plant mortality caused by *Macrophomina* crown rot
- Measurements
 - Plant mortality
 - Soil moisture, temperature, and salinity
 - Fruit yield

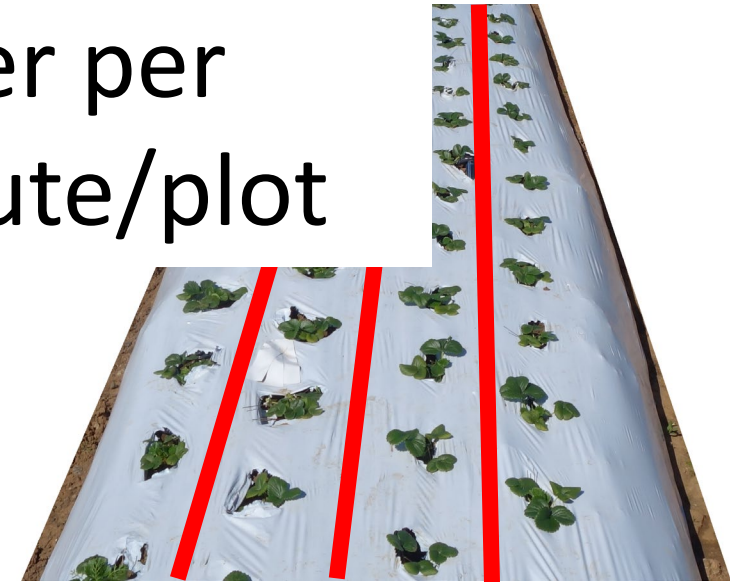
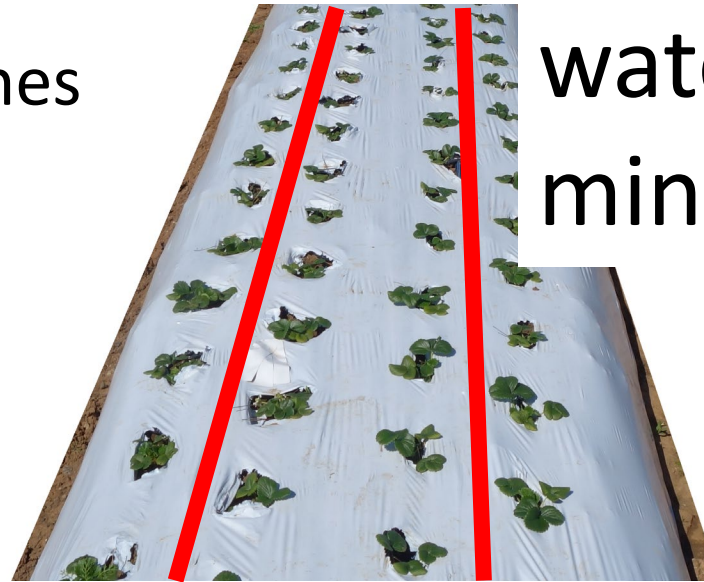


Treatments

- Black plastic with 2 drip lines
- Black plastic with 3 drip lines
- White plastic with 2 drip lines
- White plastic with 3 drip lines

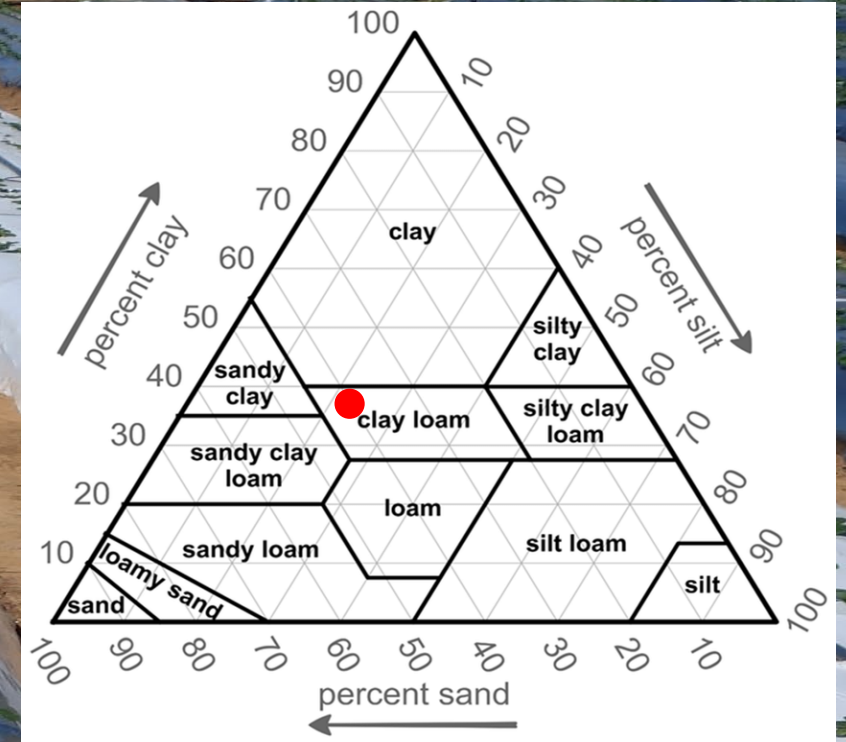


0.5 gallon of
water per
minute/plot



Design

- Soil type: clay loam
- 64 in. beds (1.6 m)
- 4 lines of plants per bed spaced at 15.5 in. (39.5 cm)
- Susceptible cultivar: Sweet Ann
- Seventh consecutive year of strawberry production in an infested field



Feb, 2023

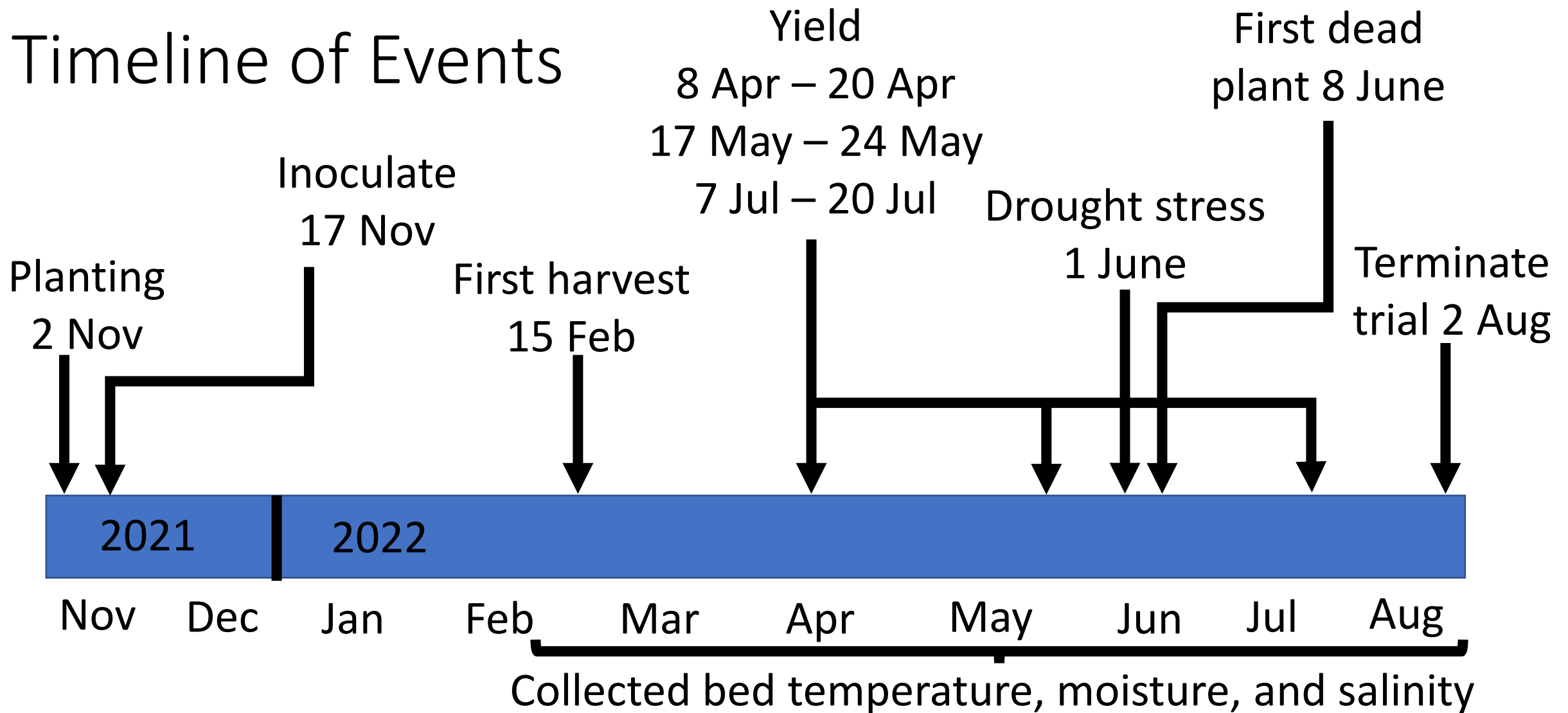
Design

- Split plot
 - Main: plastic color
 - Subplot: drip lines
- 50 ft plots
- Replicated 4 times
- 6 ft buffer between plots
- Inoculated 15 days after planting



4/30/2022

Timeline of Events



Mortality

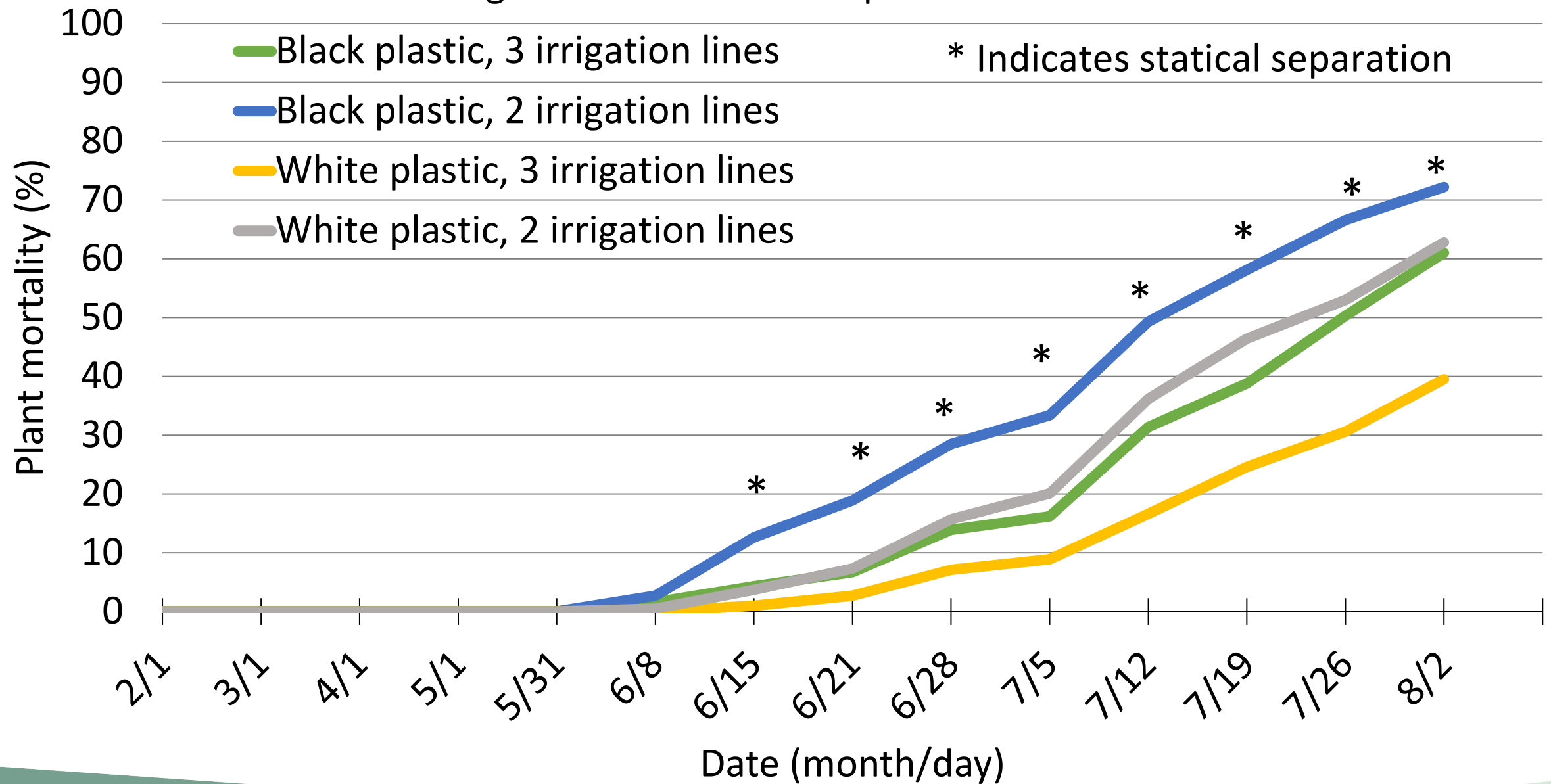


Alive

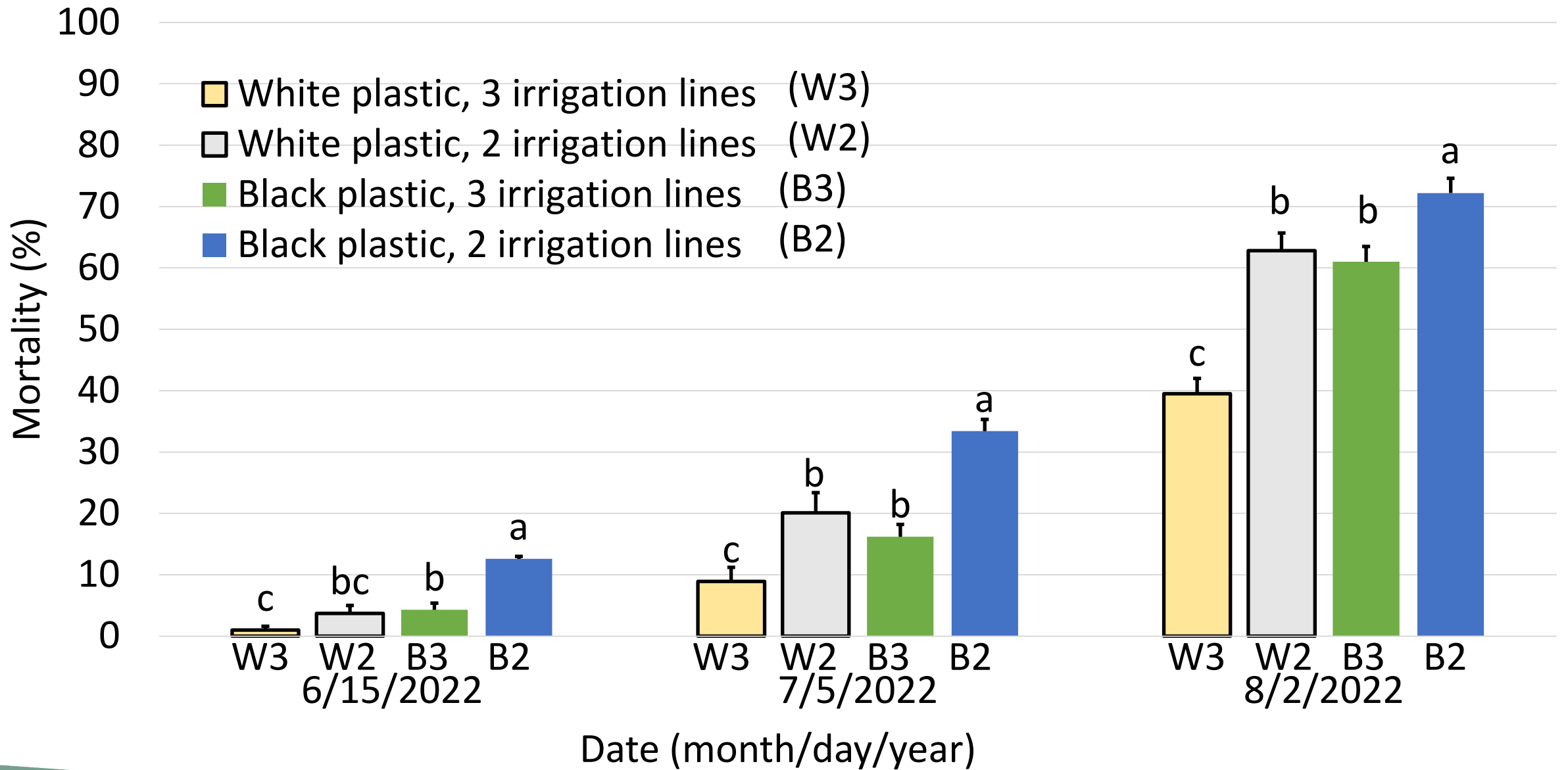


Dead

Average incidence of Macrophomina root rot



Incidence of Macrophomina root rot





2 lines

3 lines

February

3 lines

2 lines

2 lines

3 lines

April

3 lines

3 lines

2 lines

3 lines

July

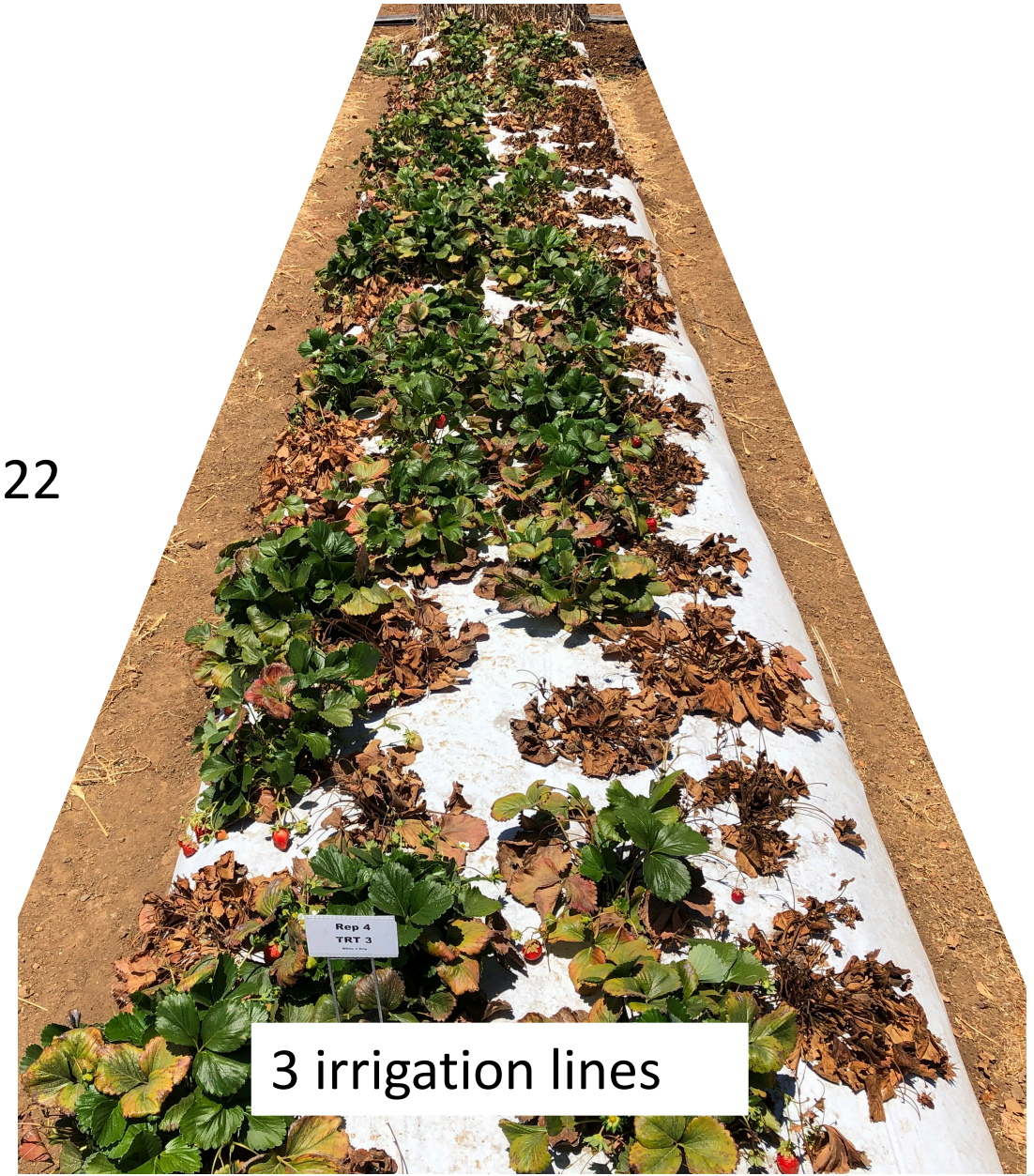
3 lines

2 lines



2 irrigation lines

2 August, 2022

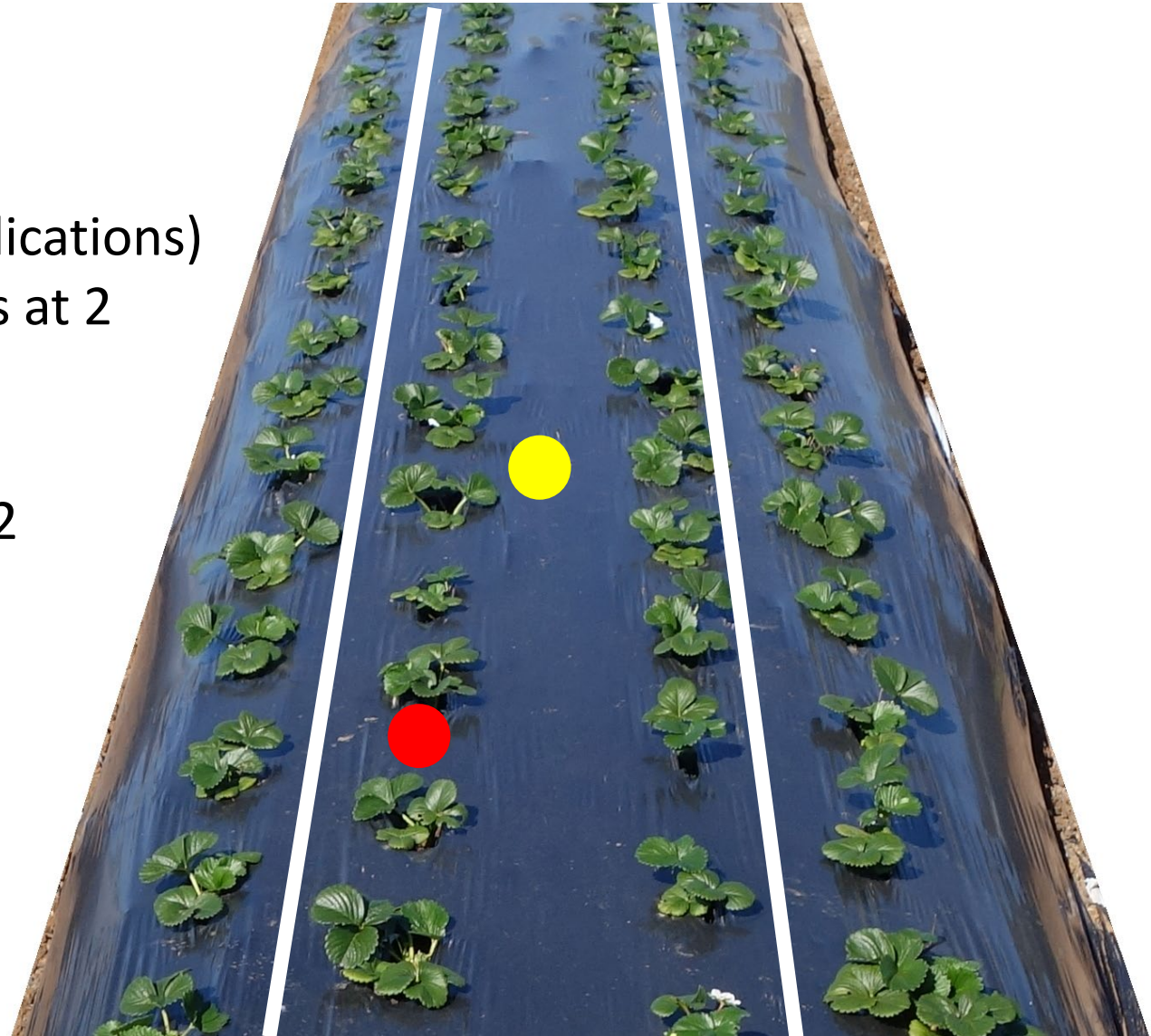


3 irrigation lines

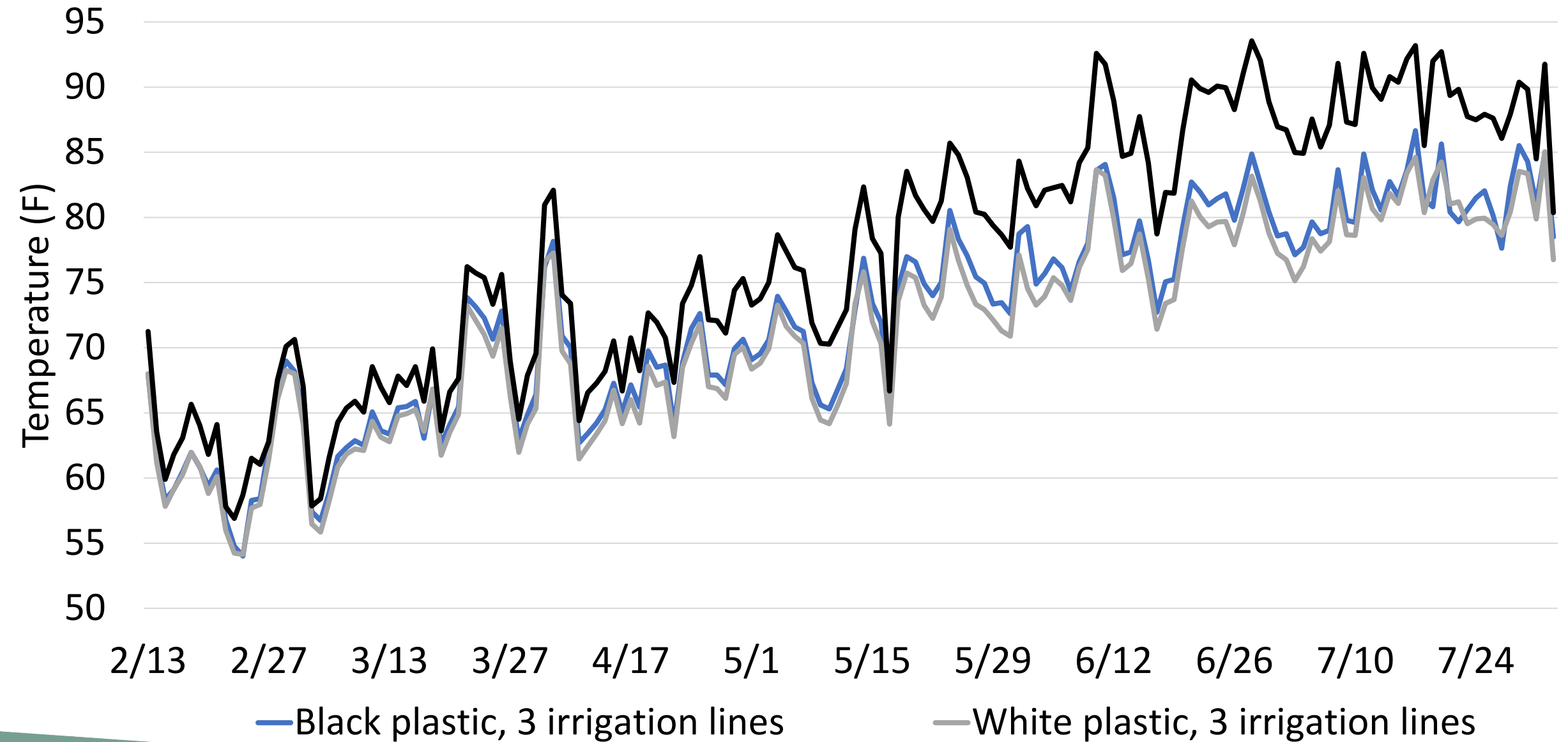


Soil Probes

- Location of probes (4 replications)
-placed in between plants at 2 inches
- Location of probe in treatment “black plastic, 2 irrigation lines”
-Black plastic, 2 irrigation lines middle



Daily max bed temperature at 2 inch depth



—Black plastic, 3 irrigation lines

—White plastic, 3 irrigation lines

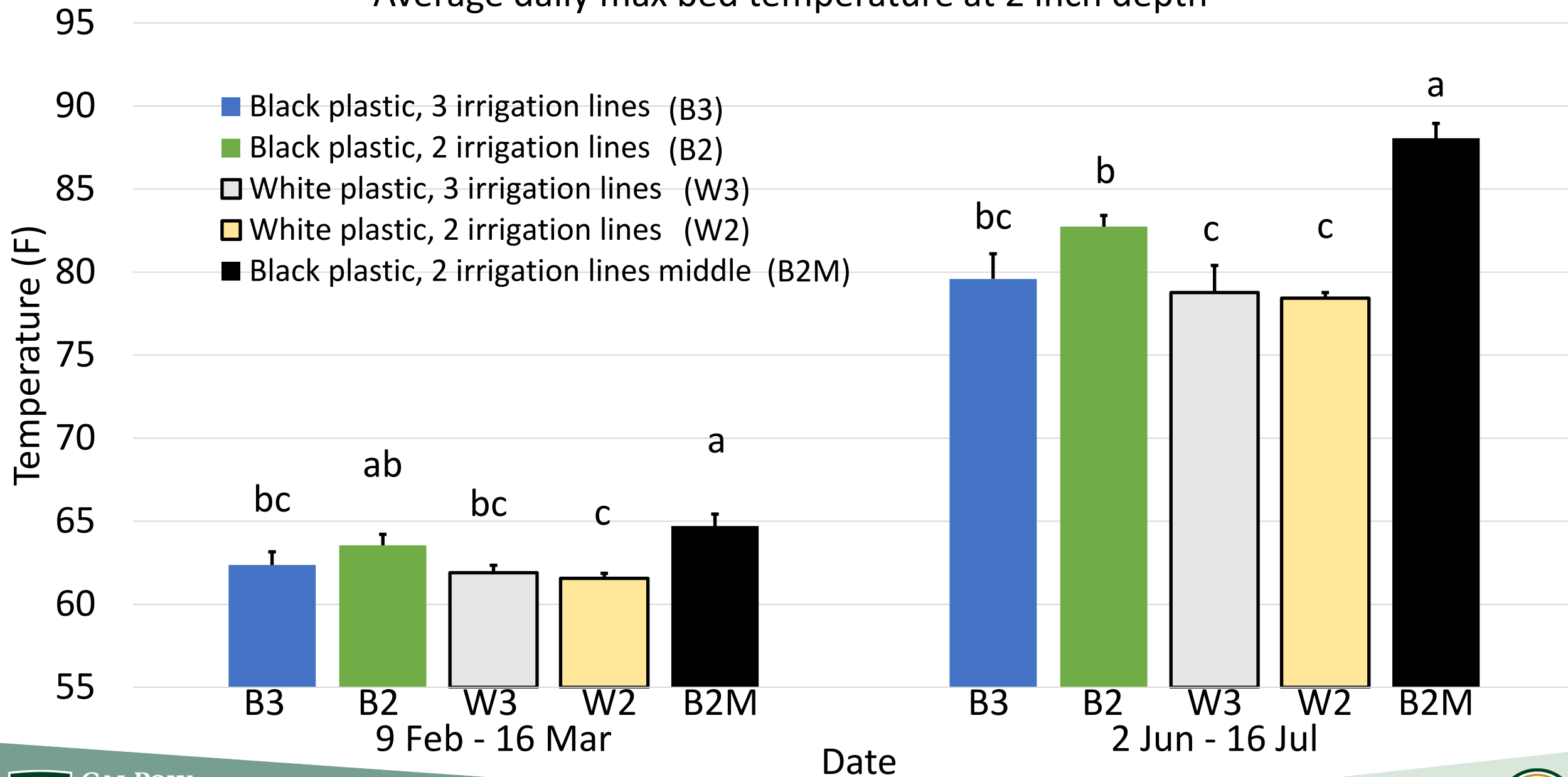
—Black plastic, 2 irrigation lines middle



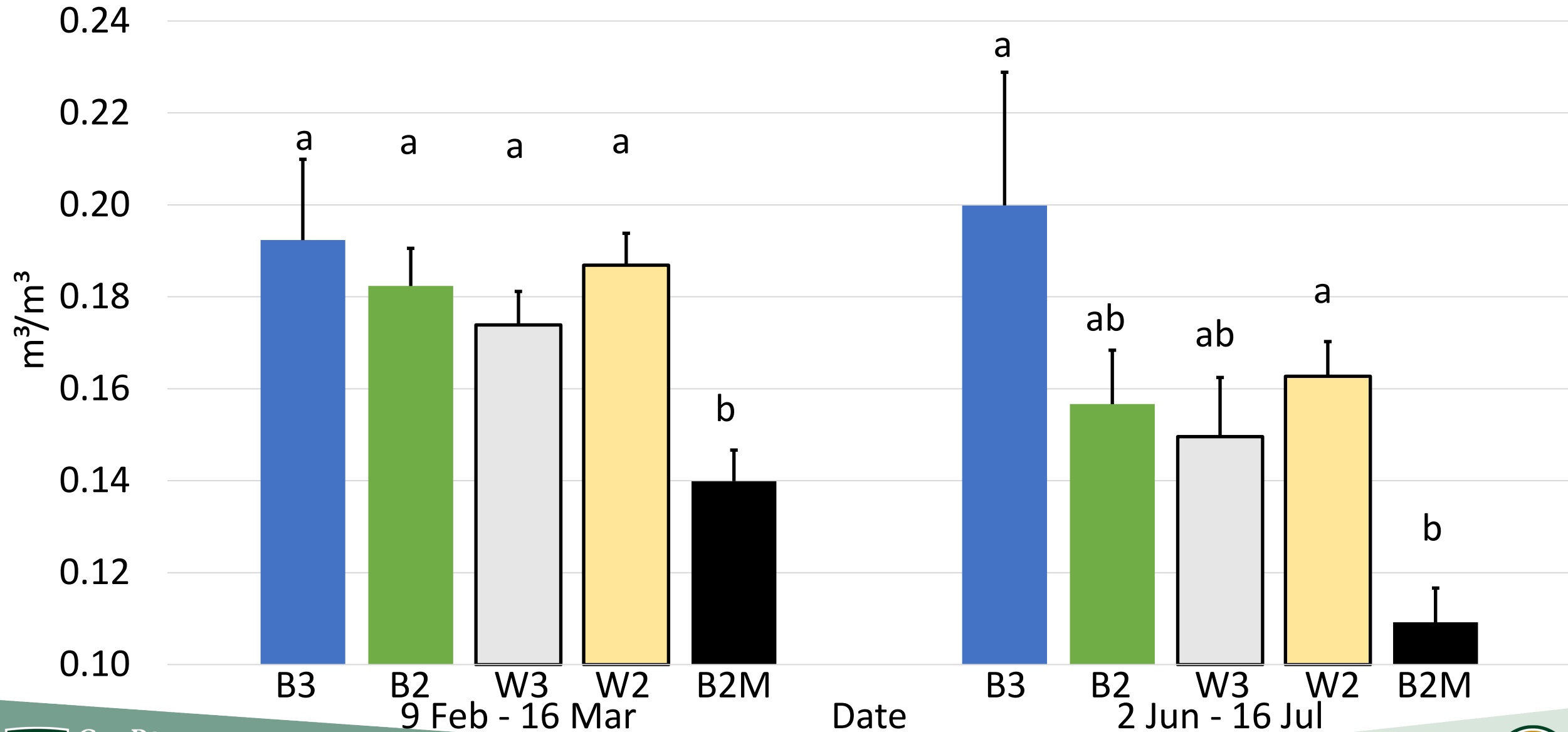
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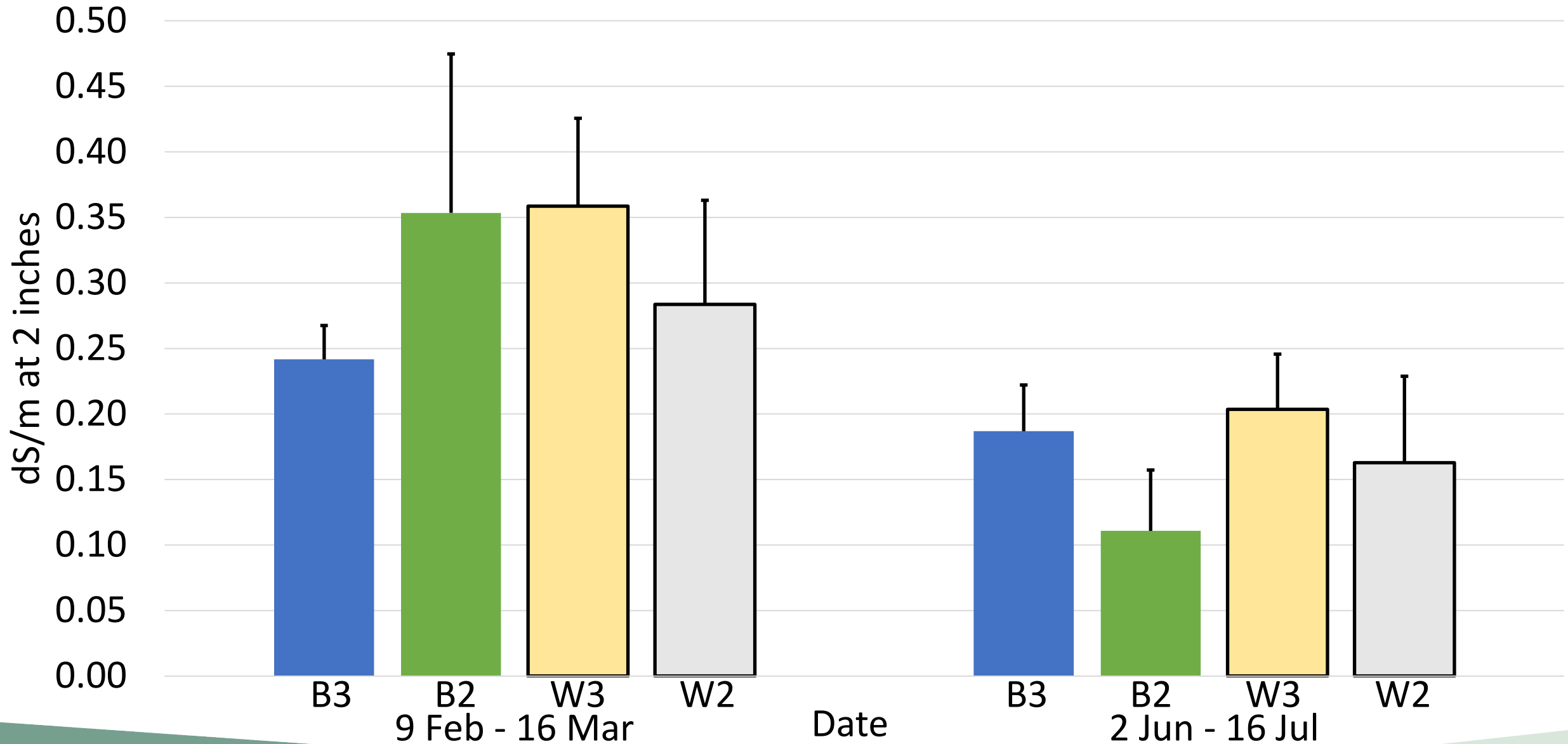
Average daily max bed temperature at 2 inch depth



Daily average soil moisture at 3 pm at 2 inch depth



Average soil salinity (EC) at 2 inch depth

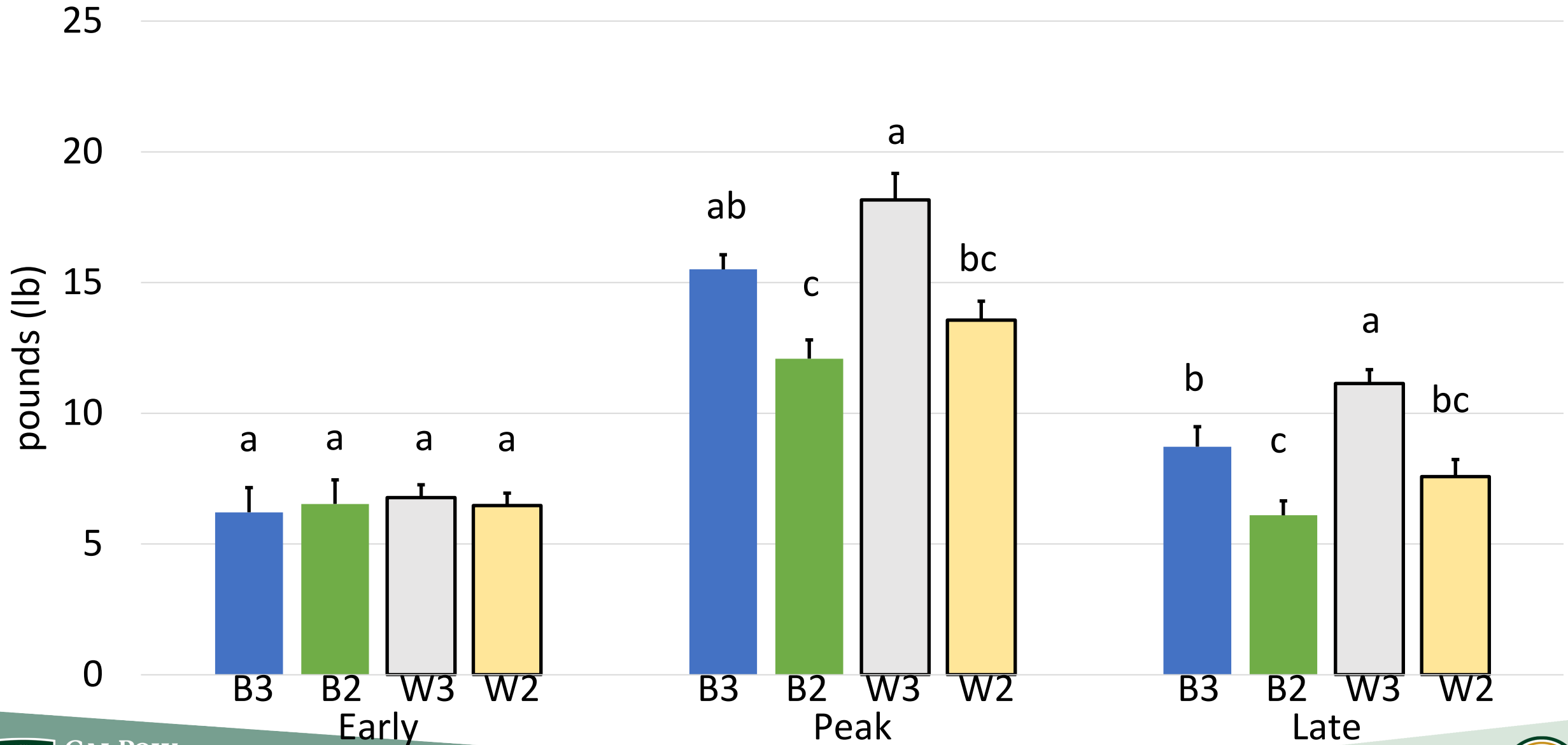


Yield

- Early harvest (Early)
 - 8 Apr – 20 Apr
- Peak harvest (Peak)
 - 17 May – 24 May
- Late harvest (Late)
 - 7 Jul – 20 Jul



Average weight of marketable fruit



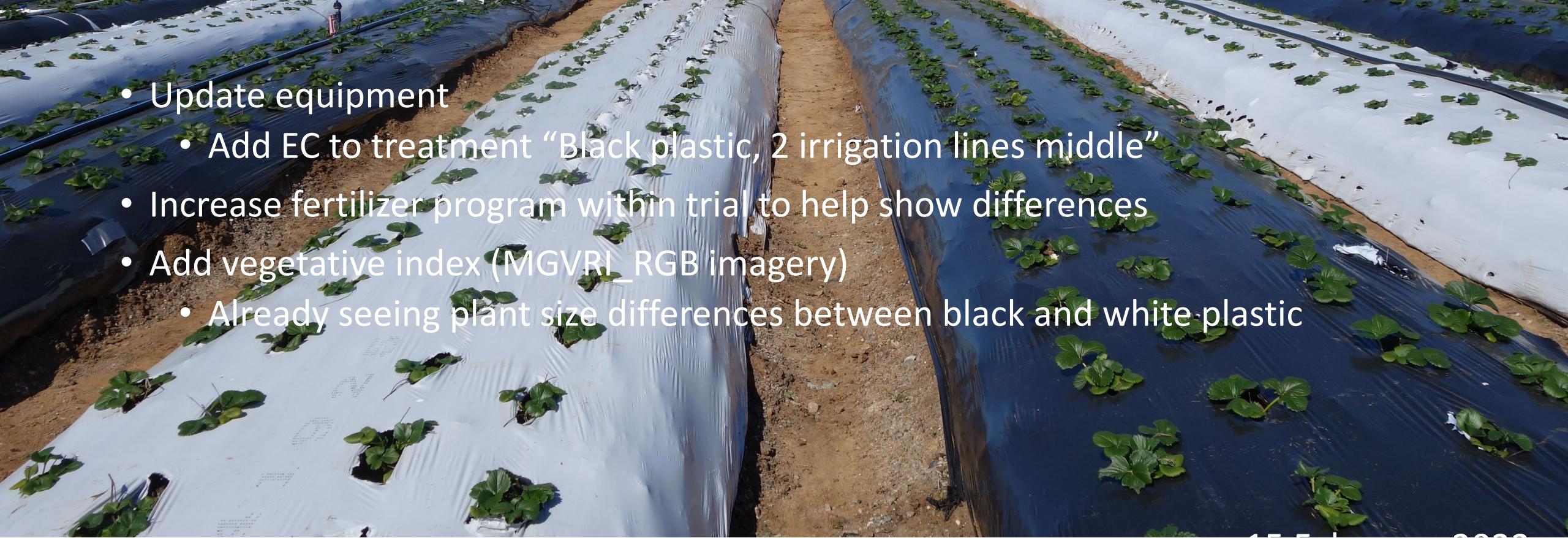
Take home message

- Macrophomina crown rot mortality is influenced by plastic color and number of drip irrigation lines
- First look into how Macrophomina crown rot is influenced by stress
- Repeating trial in 2023 to confirm results



Year 2 plus improvements

- Update equipment
 - Add EC to treatment “Black plastic, 2 irrigation lines middle”
- Increase fertilizer program within trial to help show differences
- Add vegetative index (MGVRI_RGB imagery)
 - Already seeing plant size differences between black and white plastic





Acknowledgments and Funding

USDA SCRI, led by Steve Knapp at UCD