Figure 3: Seasonal Weather Patterns and Environmental Variables Daily Precipitation and Irrigation Events Daily Ar Temperature Range Daily Solar Radiation Daily Wind Speed Daily Vapor Pressure Deficit (VPD)

1000

800

600

400

200

30

28

26

18

16

400

300

200

100

0

5.0

4.5

4.0

3.5

2.5

2.0

1.5

1.0

2.25

2.00

1.75

1.50

1.25

1.00

0.75

0.50

0.25

2024-07-01

2024-07-08

2024-07-15

2024-07-22

2024-08-01

2024-08-08

2024-08-15

2024-08-22

2024-09-01

VPD (kPa)

Wind Speed (m/s)

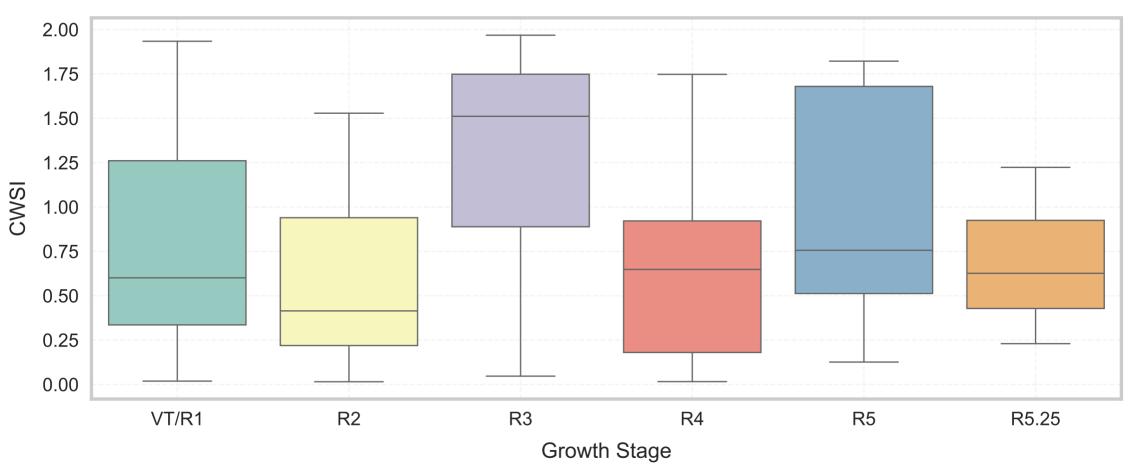
 $(W/m^2)$ 

Solar Radiation (

Temperature (°C)

Amount (mm)

### **CWSI Distribution by Growth Stage (Corn)**



# **CWSI Distribution by Growth Stage (Soybeans)**

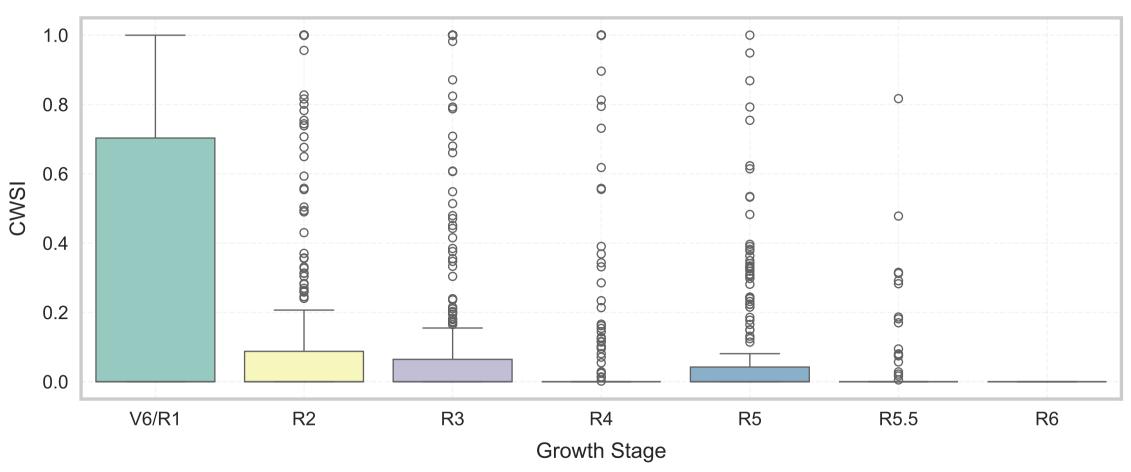


Figure 5: Soil Moisture Monitoring and SWSI Calculation Soil Moisture at Different Depths Over Time

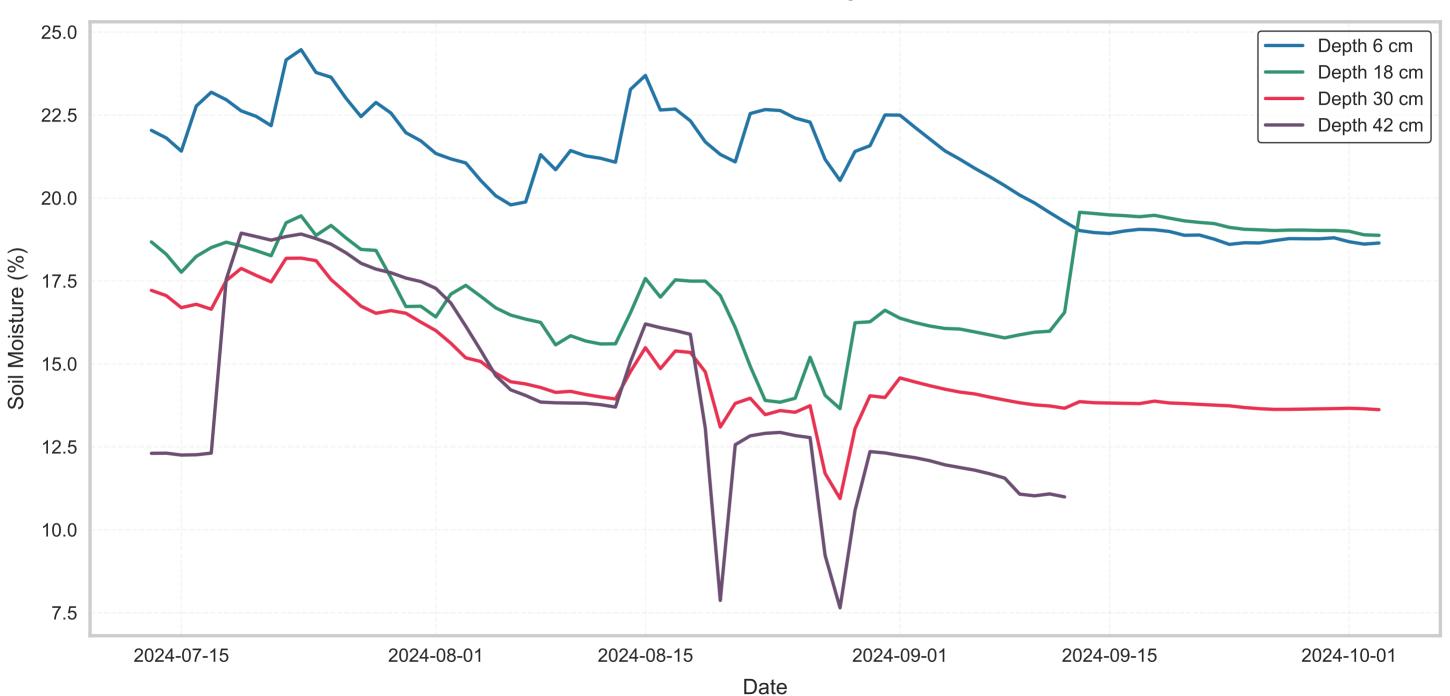
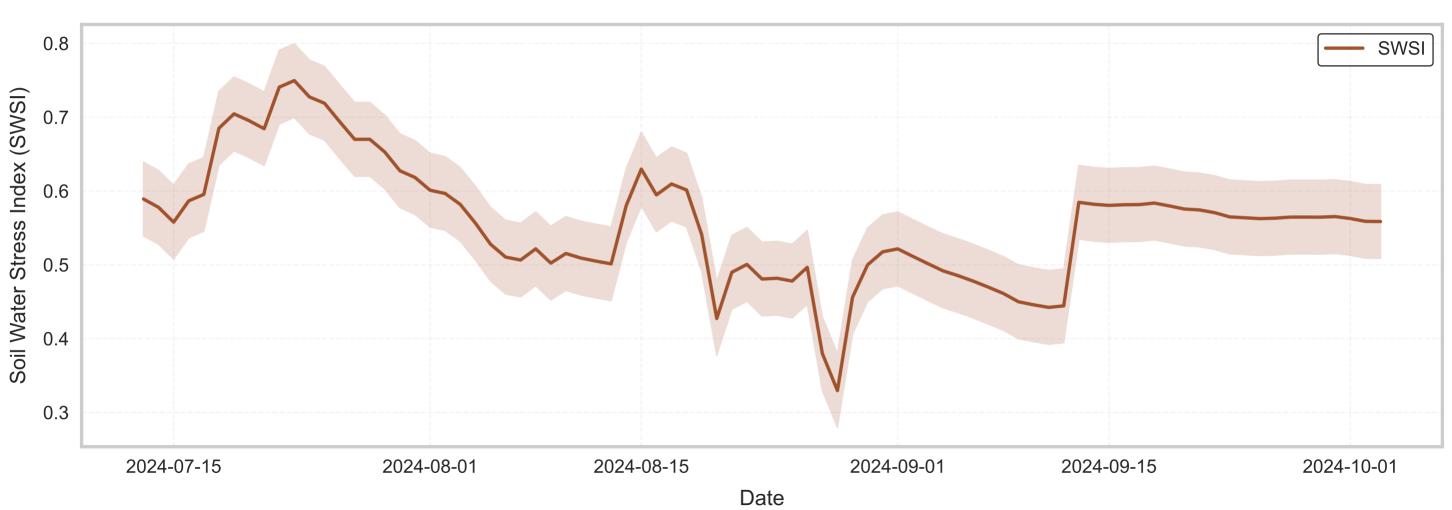
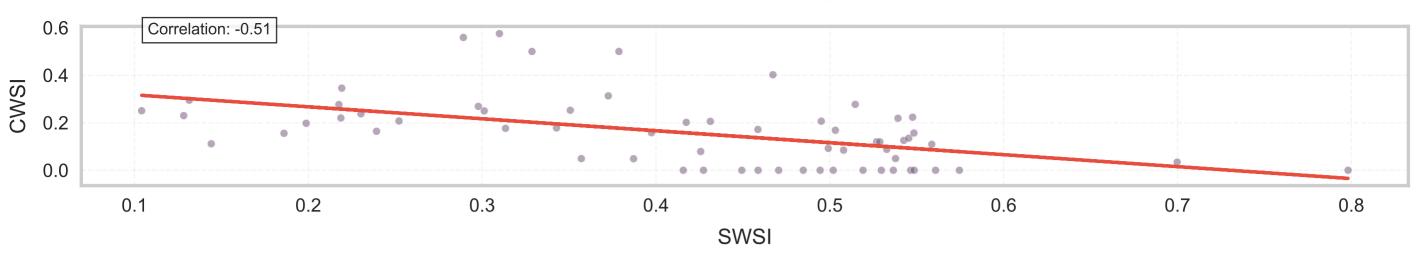


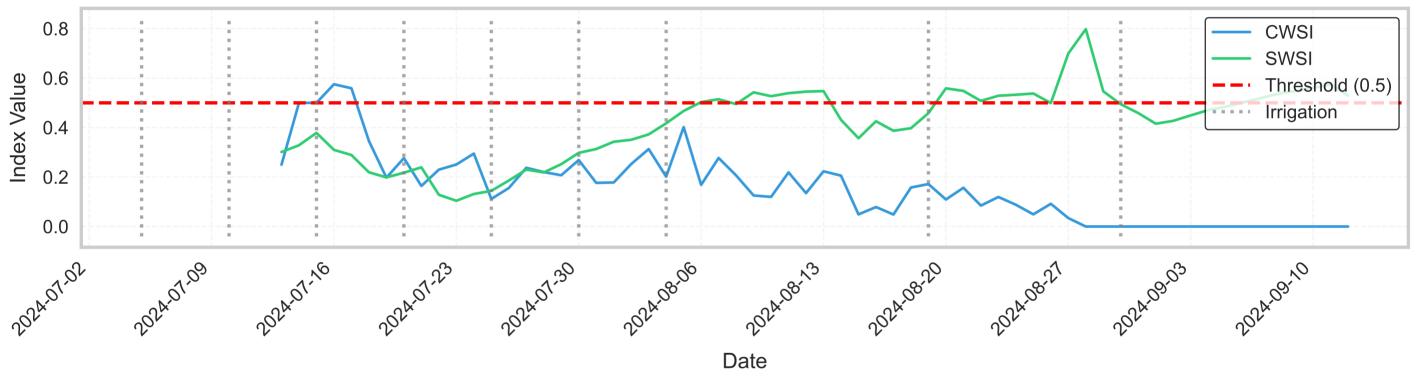
Figure 5: Soil Moisture Monitoring and SWSI Calculation
Soil Water Stress Index Over Time



### **Correlation between SWSI and CWSI**



#### **CWSI and SWSI Over Time**



# **Index Values on Irrigation Days**

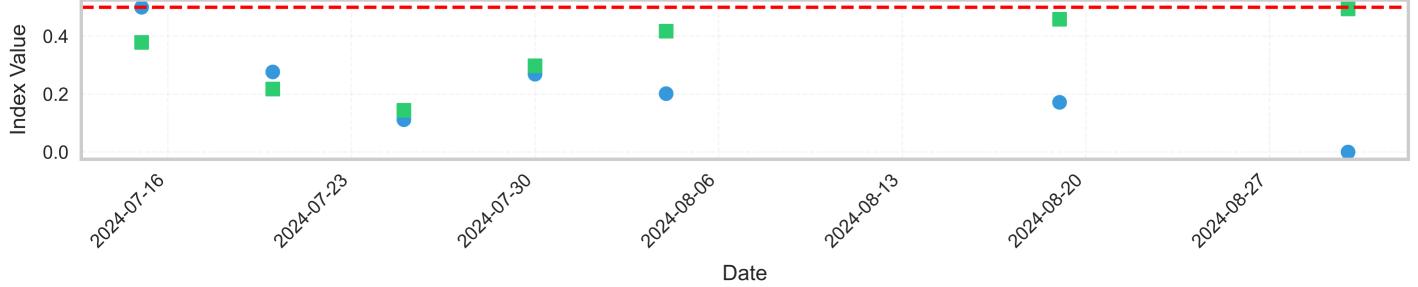


Figure 7: System Response Analysis



Figure 8: Monthly Stress Index Distributions
Monthly Stress Index Distributions Across Treatments

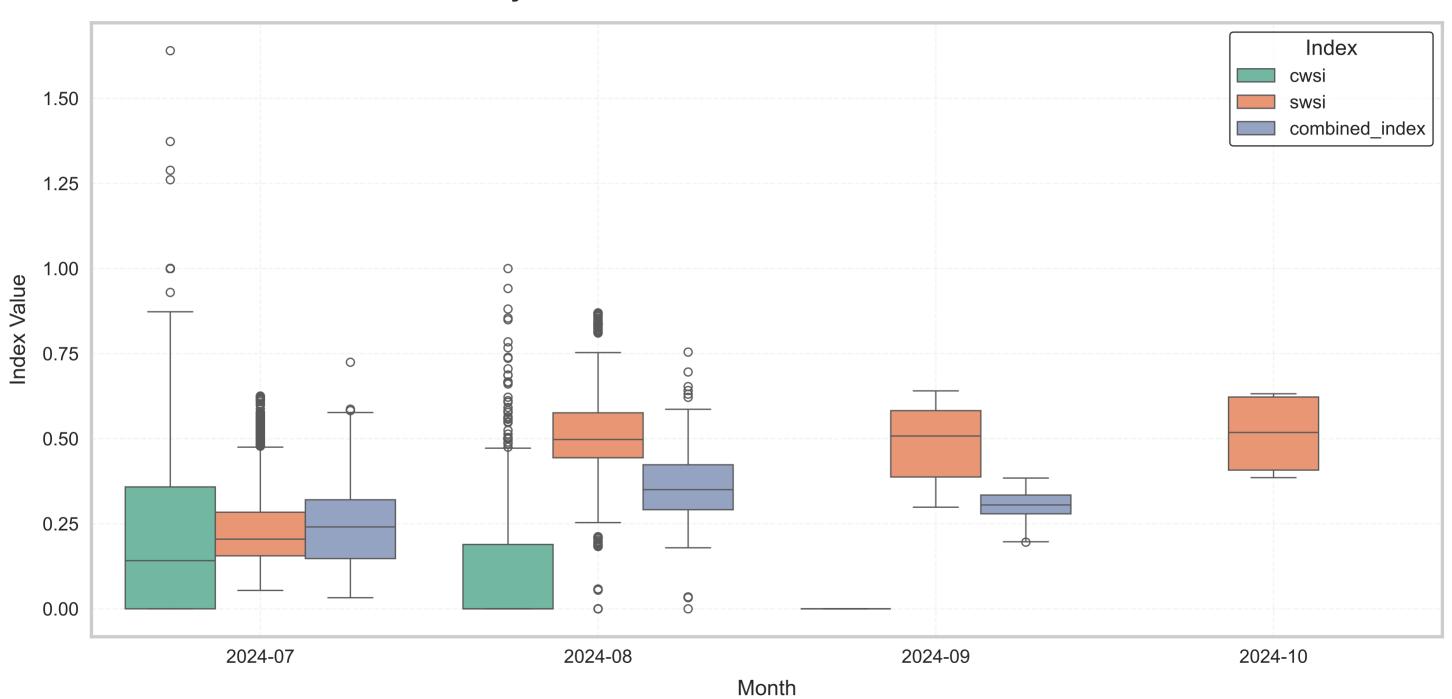


Figure 9: Irrigation Application Patterns
Daily Irrigation Amounts by Treatment

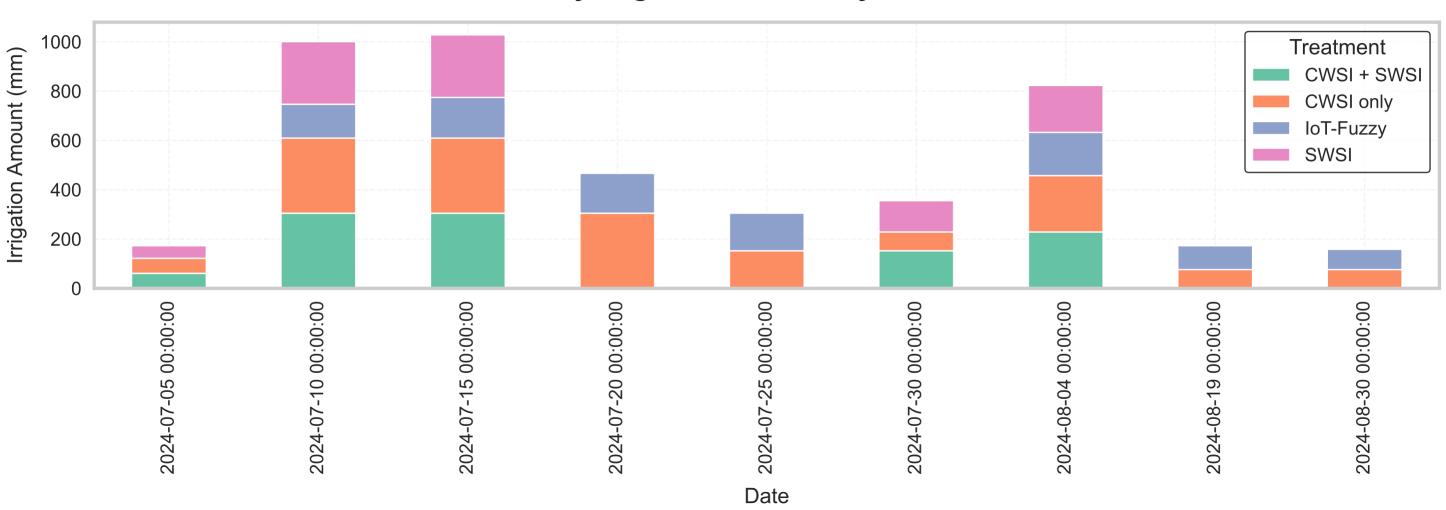


Figure 9: Irrigation Application Patterns
Cumulative Irrigation Amounts by Treatment

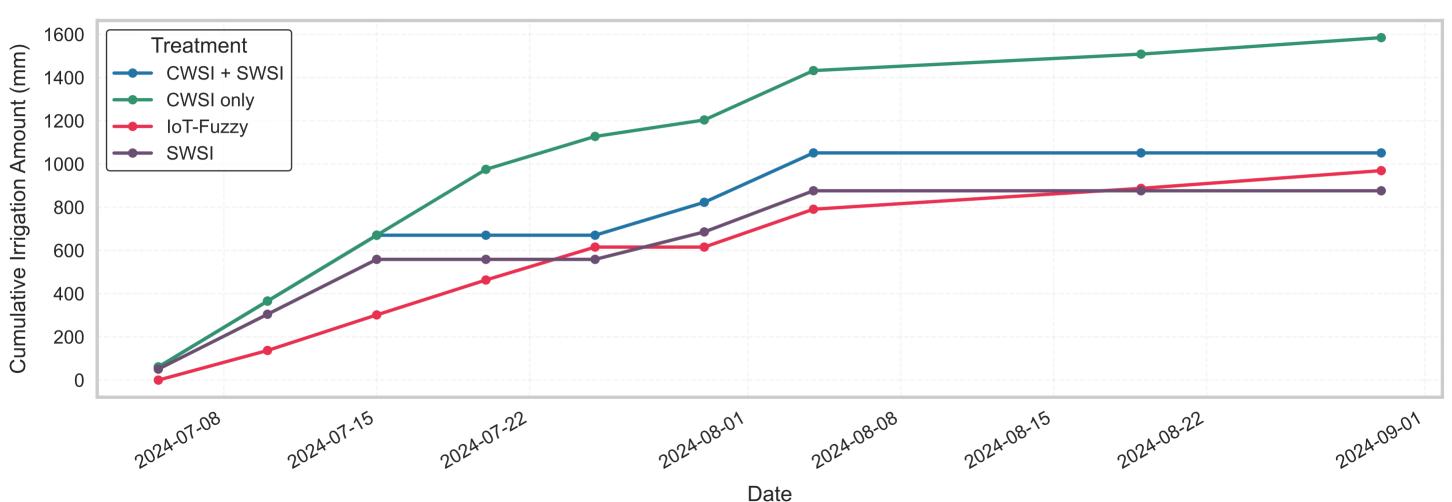


Figure 10: Yield Distribution Analysis
Yield Distribution by Treatment

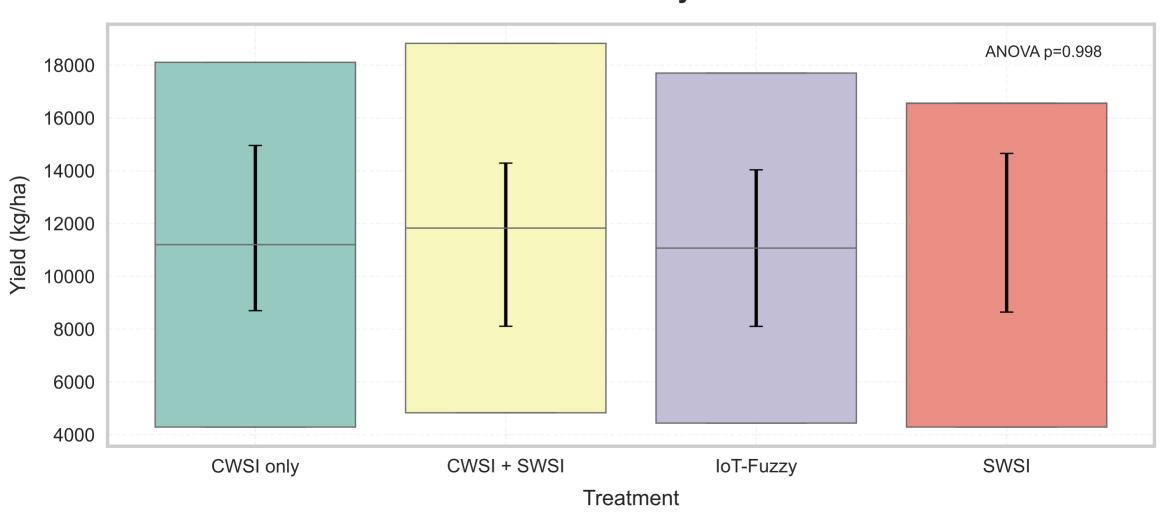


Figure 10: Yield Distribution Analysis Individual Plot Yields by Treatment and Crop Type

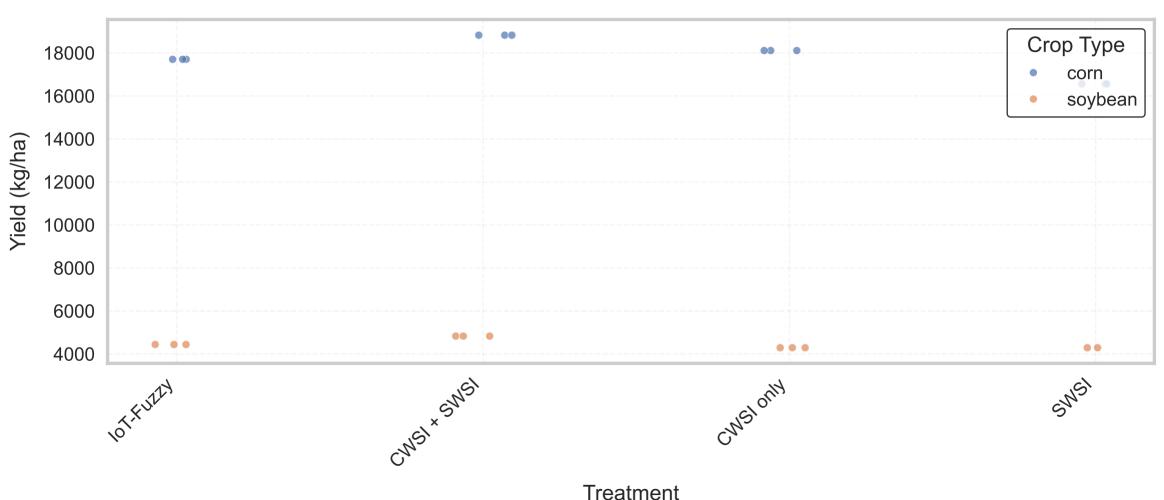


Figure 11: Water Use Efficiency Metrics IWUE by Treatment

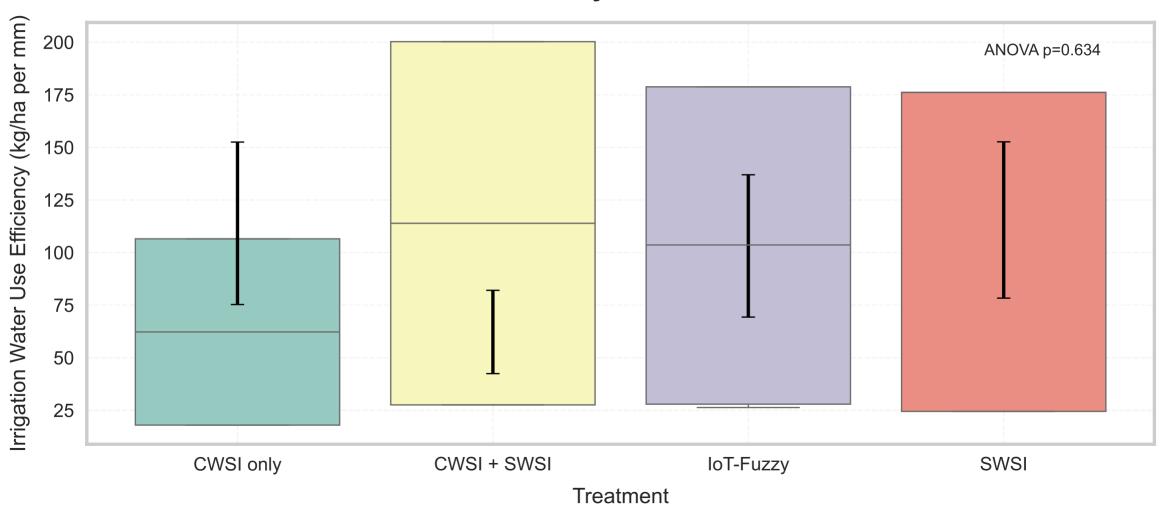


Figure 11: Water Use Efficiency Metrics
CWUE by Treatment

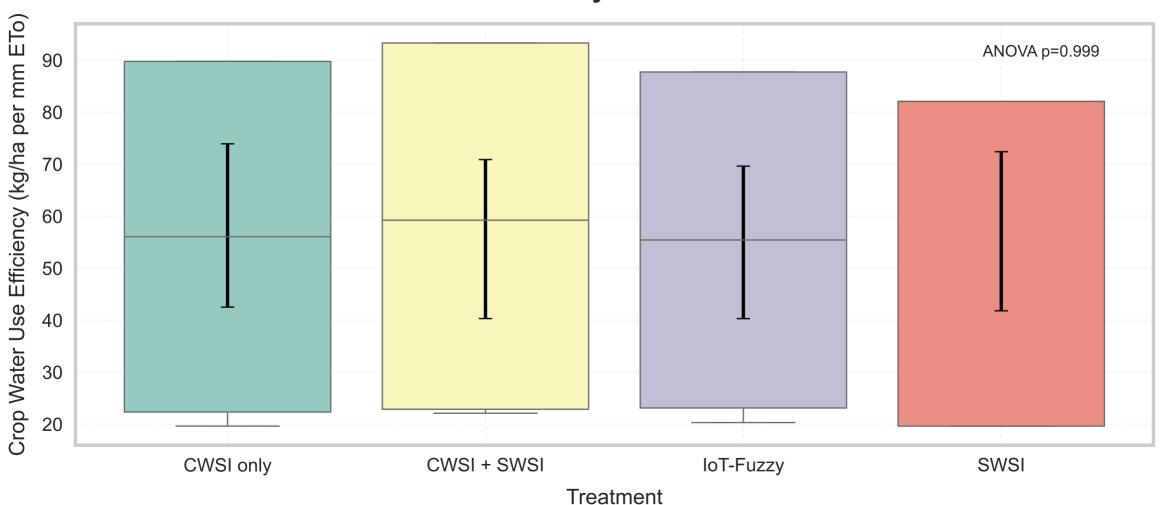


Figure 11: Water Use Efficiency Metrics
Relationship between Applied Water and Yield by Treatment

