Updates on Irrigation Strategies

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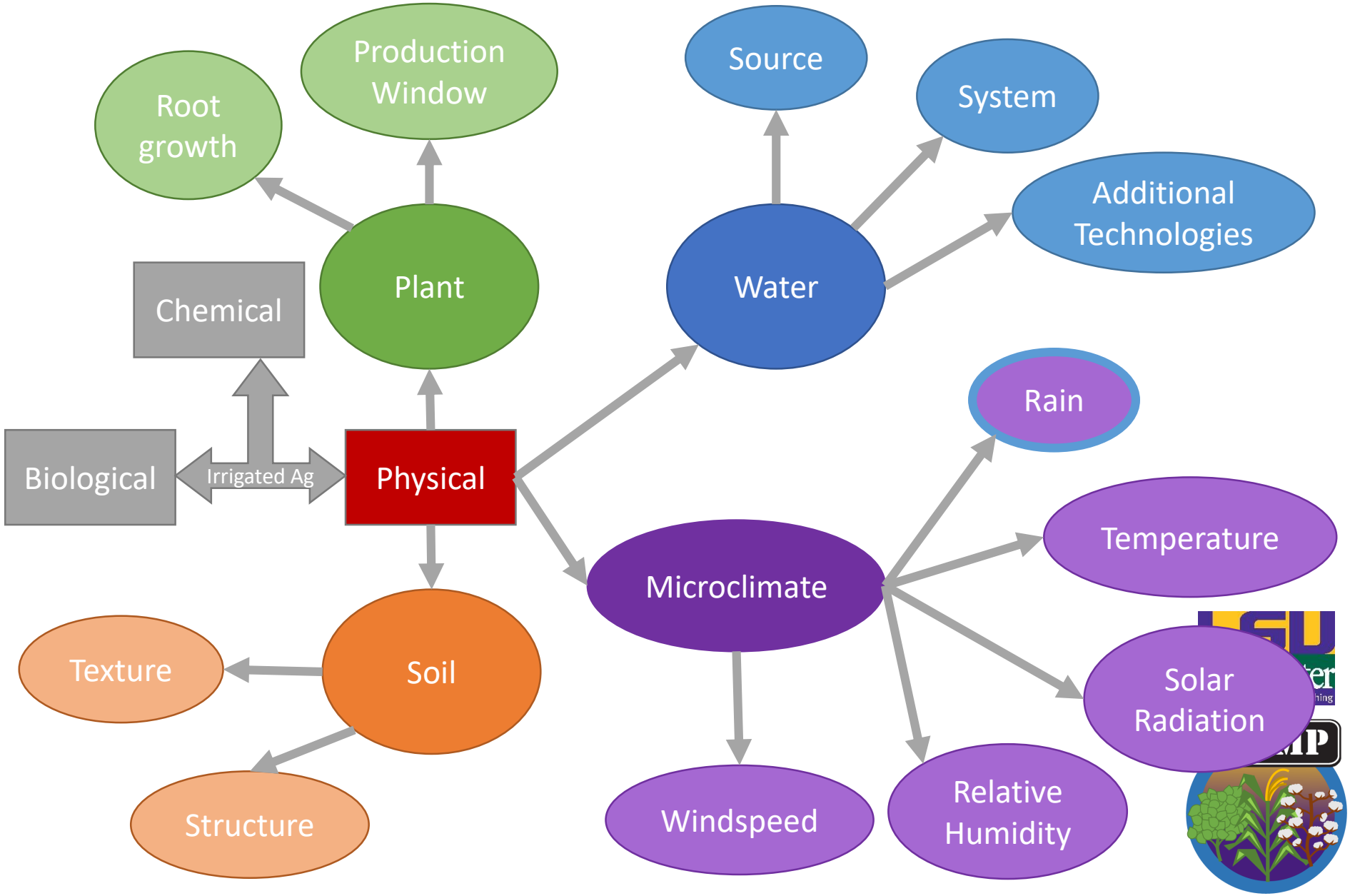
Factors Affecting Irrigation



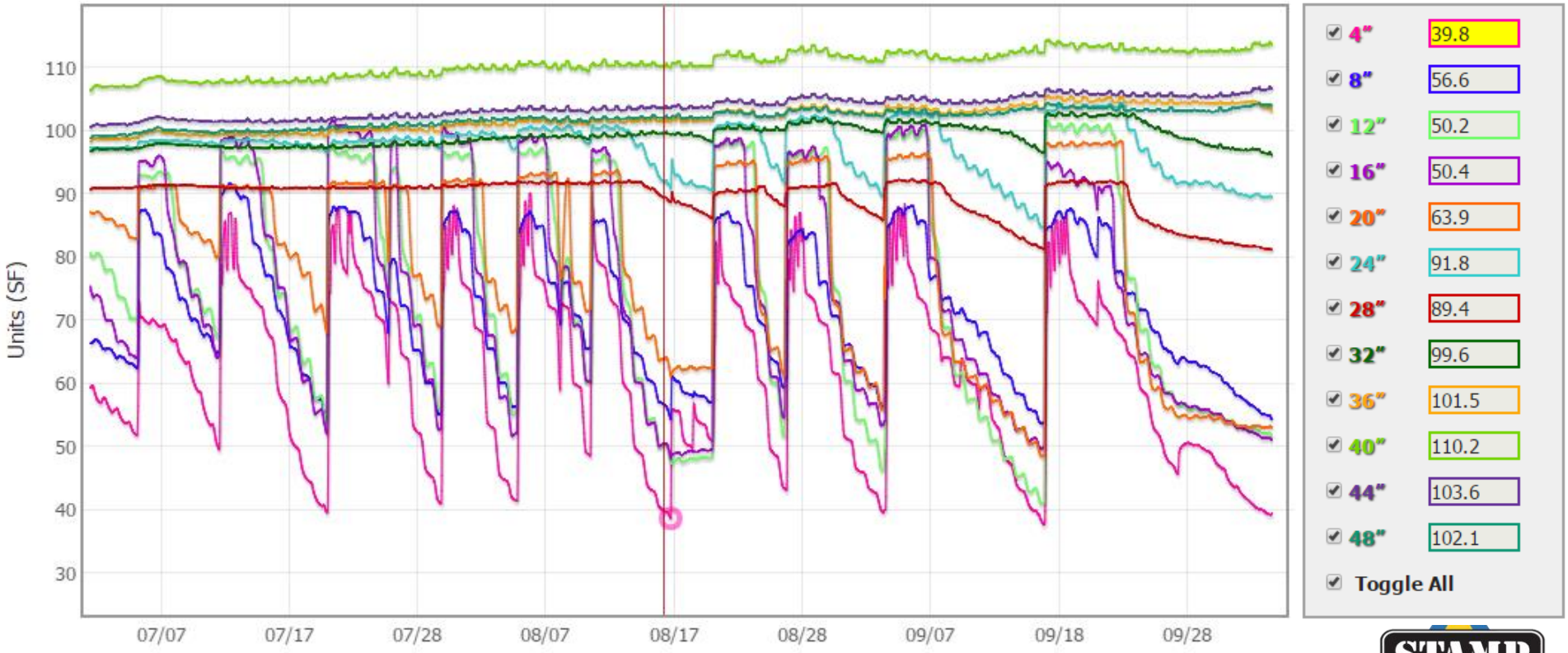
Introduction

- Part 1 – Characterization of 2018 irrigation season

- Part 2 – Research Update
  - Rain delay study

Part 1

- Example of soil moisture from a normal to wet year (2015)
  - Farmer applied 18.25 inches of irrigation



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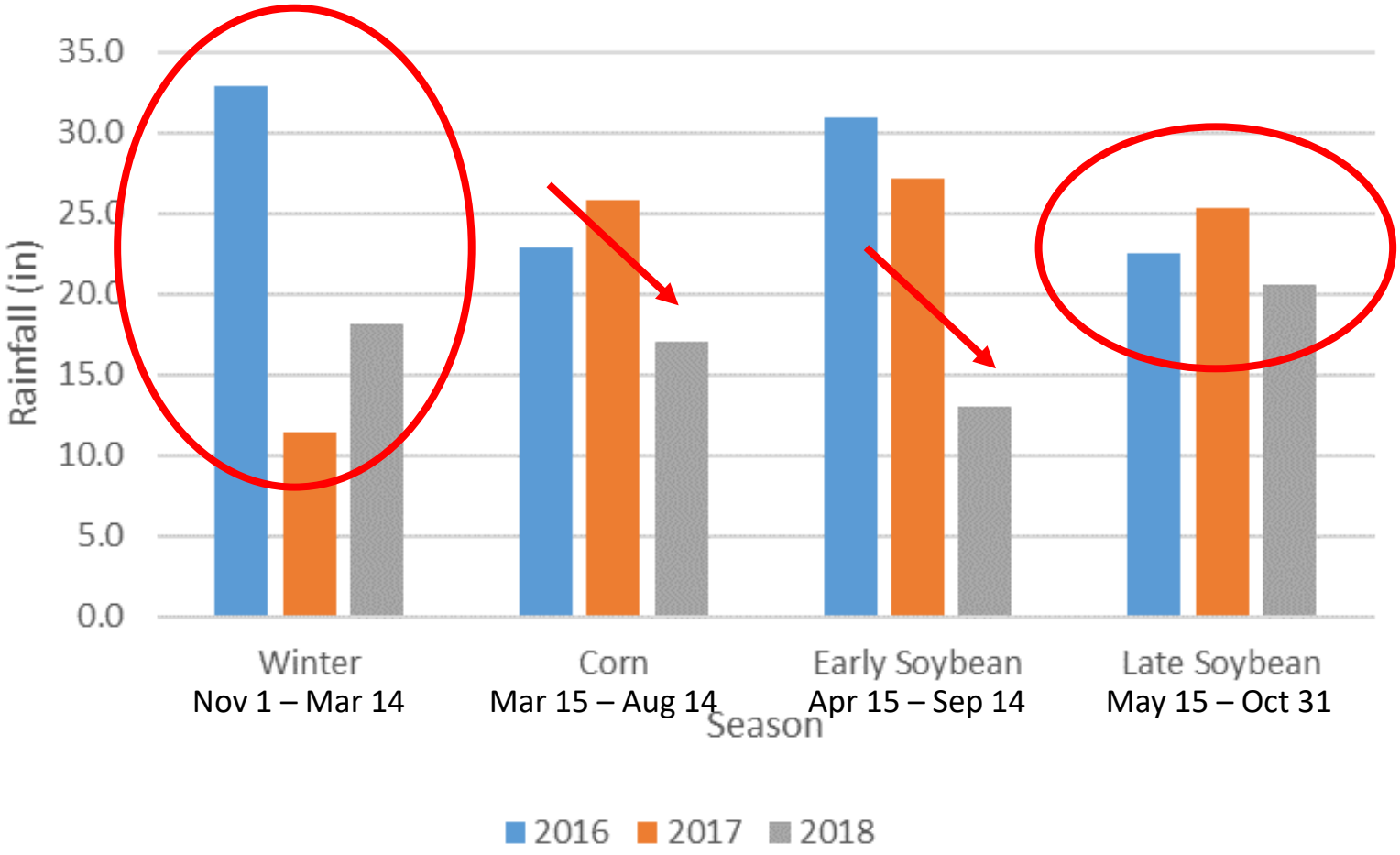
Part 1

- Example of soil moisture from a dry year (2018)

Part 1

- Rainfall summary from Bossier Parish



Part 1

- Crop water needs (no rainfall, but cloudy ET)

Irrigation Required (inches)	2016	2017	2018
Corn	12	12	12
Early Soybean	18	18	21
Late Soybean	18	18	15

- Crop water needs (rainfall considered, 38%-63% effective)

Irrigation Required (inches)	2016	2017	2018
Corn	6	3	9
Early Soybean	6	3	13
Late Soybean	6	6	9

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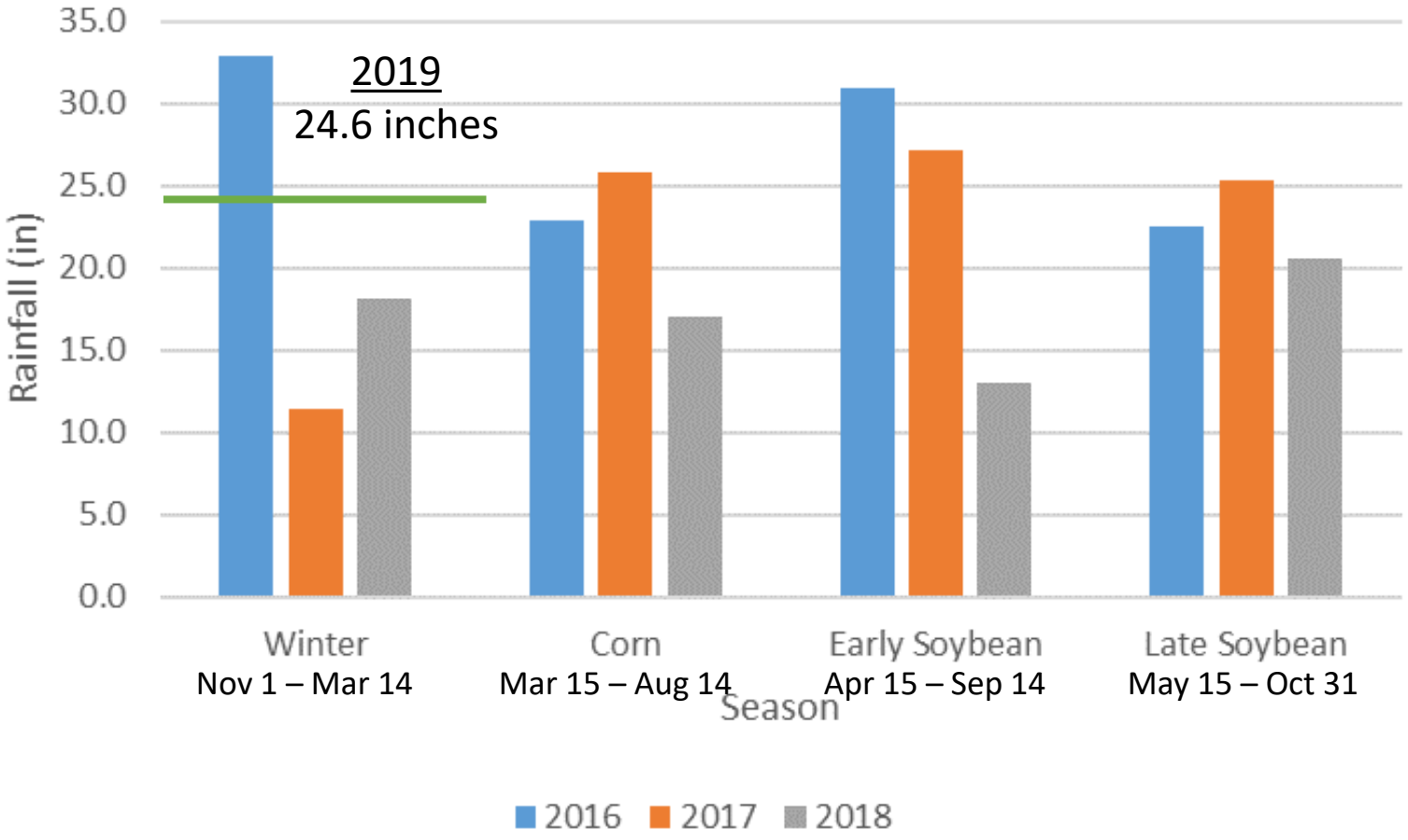
Part 1

- Rainfall summary from Bossier Parish



Part 2

- Rain Delay Project

  According to an ideal irrigation schedule,

  - Treatment 1 – Irrigate on-time
  - Treatment 2 – Delay 2 days
  - Treatment 3 – Delay 4 days

  in hopes of capturing more rainfall.

Part 2

- Project Design

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Part 2

- Sensor Installation

GS-1 Volumetric Water Content Sensor

<u>Depth of each sensor</u>

4 inches

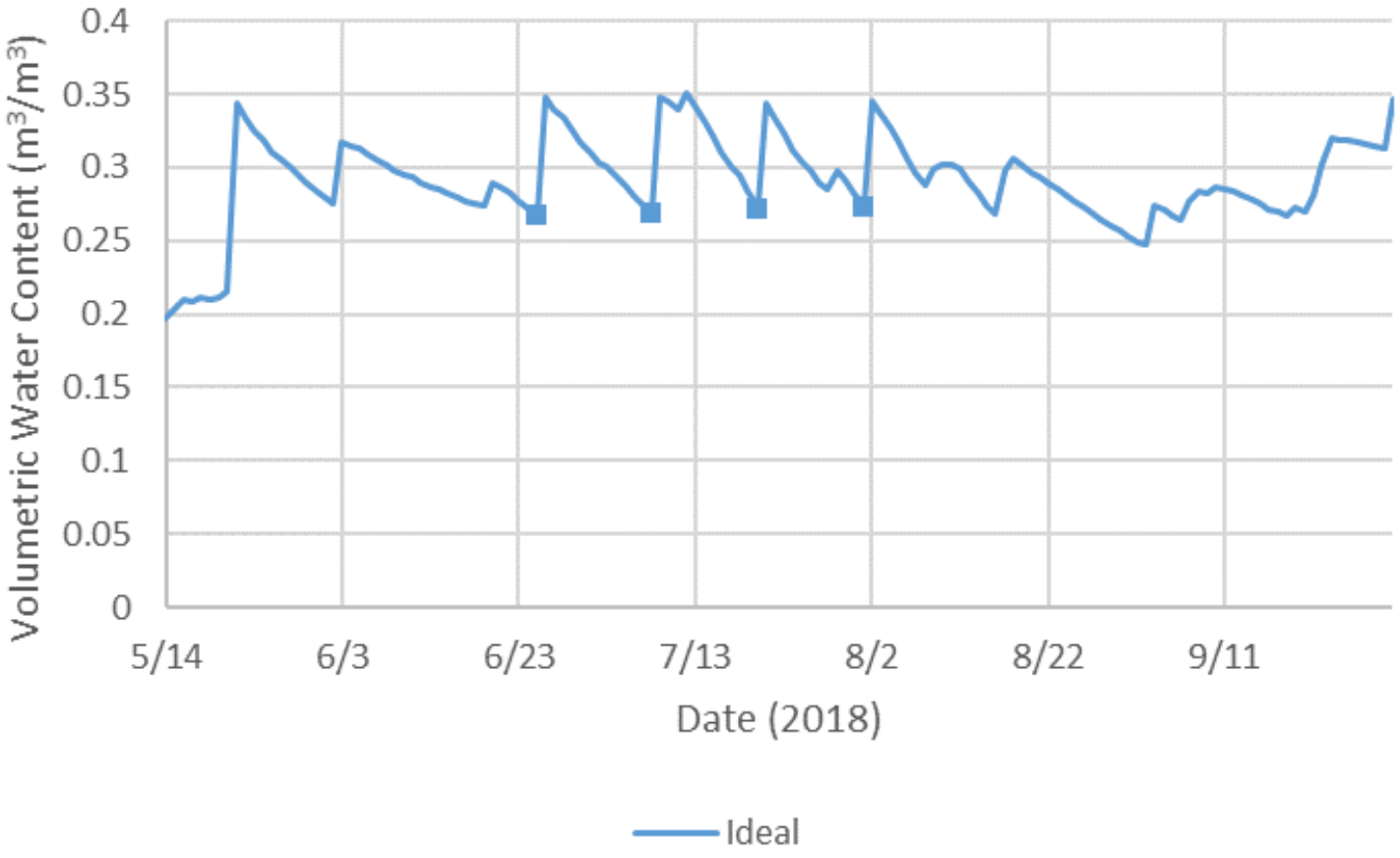
14 inches

24 inches

34 inches

Part 2

- Simulated soil moisture using soil water balance
  - 4 irrigation events
  - 9.2 inches of water (1.9 – 2.5 inches per event)



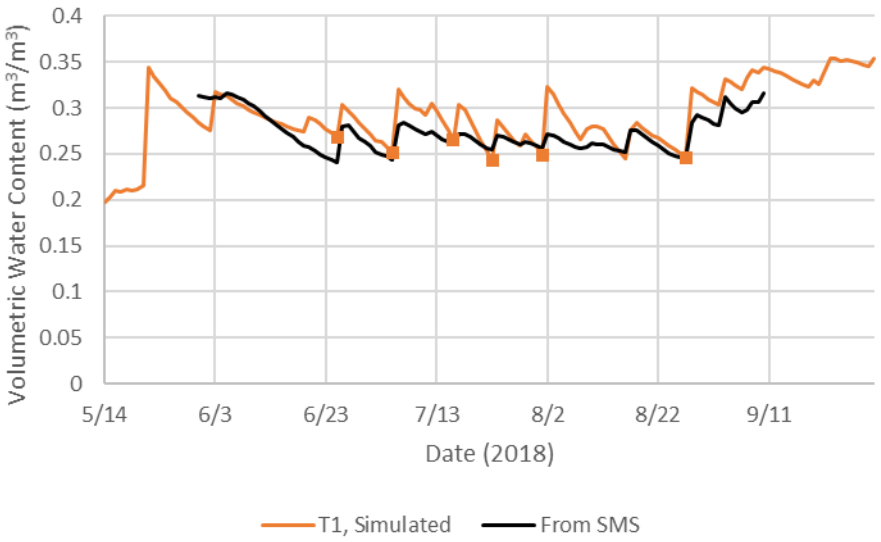
Part 2

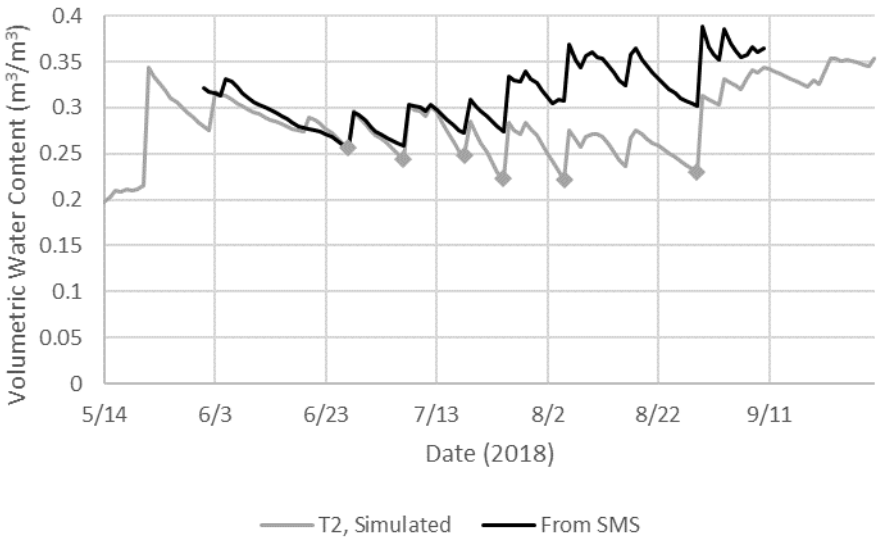
- Treatment Comparison
  - Note: Required cycle/soak on irrigation days

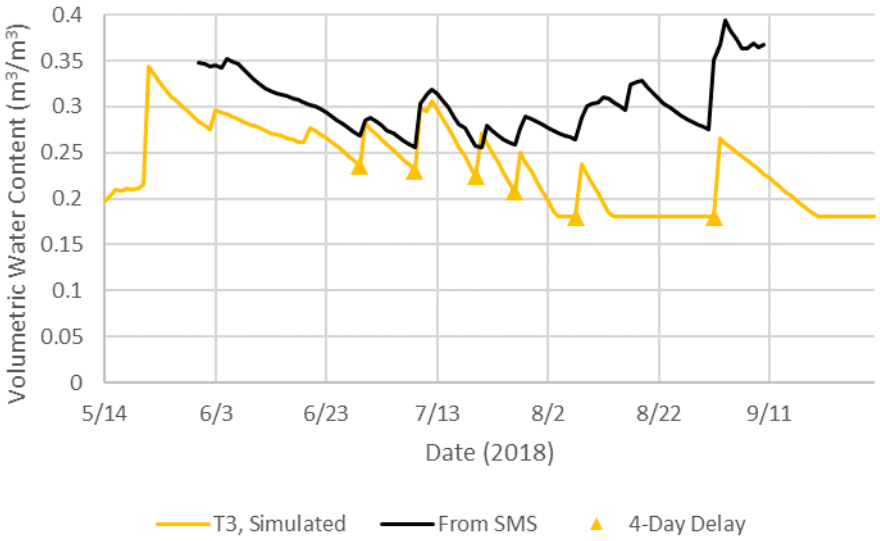
	Simulation	T1	T2	T3	Non-Irrigated
Total Irrigation (in)	9.2	10.9	10.9	11.3	0
Irrigation Per Event (in)	2.29	1.81	1.81	1.88	0
Yield (bu/ac)	---	44	50	52	27.9
Efficiency	100	82	82	77	---

Part 2

- T1 – T3, Actual vs. Simulated soil moisture

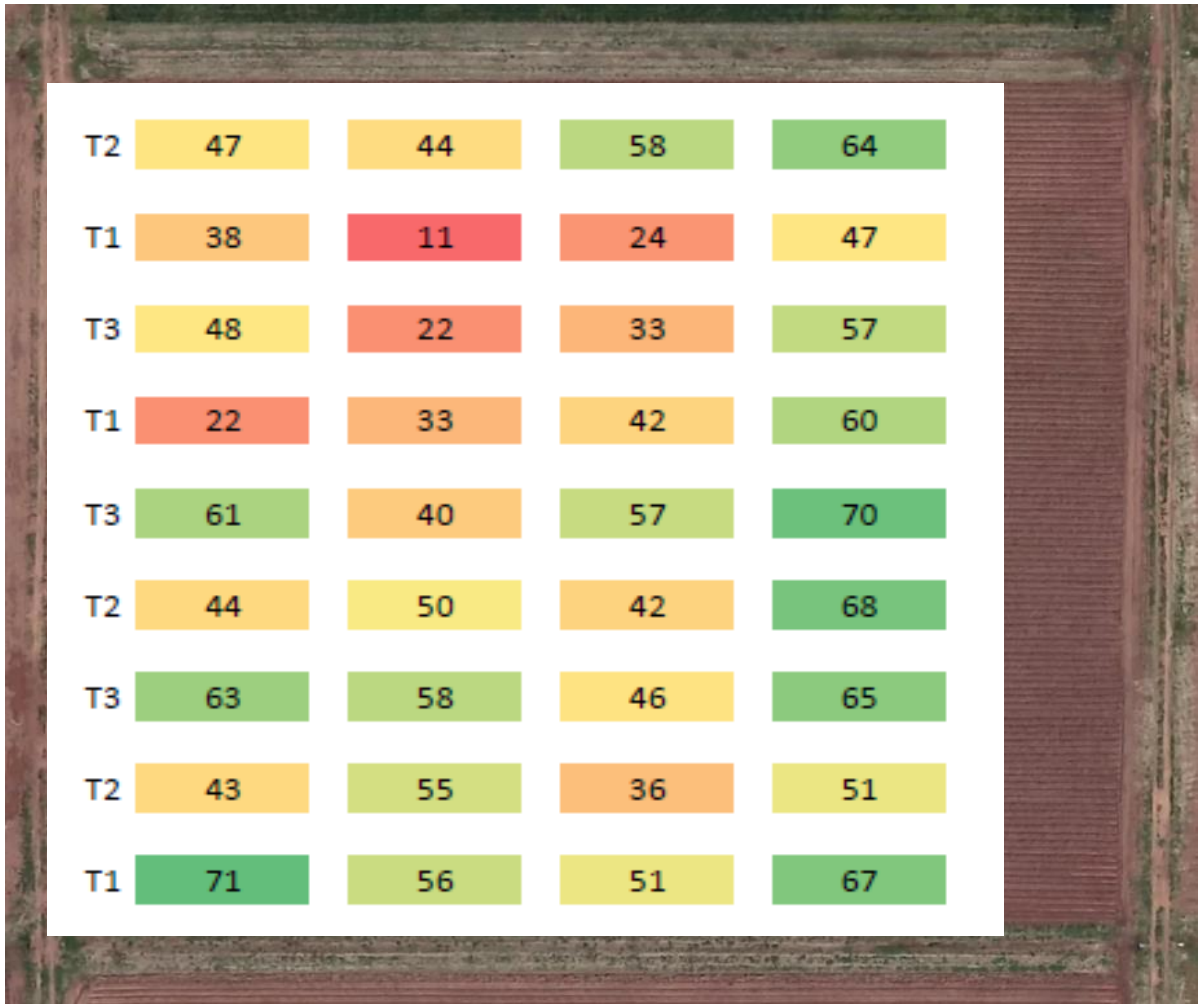






Part 2

- Possible interactions affecting results
  - Change in soil type, not reflected in simulation
  - Unidentified disease



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Part 2

- Possible interactions affecting results
  - Change in soil type, not reflected in simulation
  - Unidentified disease
  - Dicamba interactions

Conclusion

- Updates on irrigation strategies?
  - Soil water holding capacity and infiltration rates change based on moisture status
    - Also temperature?
    - Soil health should be considered
  - Surging irrigation was necessary to have the most effective irrigations
    - 2-4 surges per irrigation day
    - Determined using flow meter, soil moisture sensor
  - Utilize the tools available!
    - Computerized hole selection
    - Flow rate
    - Soil moisture sensor
    - Surge valves

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Thank you!

Questions?

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