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GEORGIA

Innovative Strategies to
Increase Water and Nitrogen Use Efficiency in Maize



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Introduction



Future corn production relies on the maximization of inputs

Potential solutions:

- › User-friendly technologies for irrigation
- › Split N application through fertigation

This study aims to test simple innovative practices to increase the efficiency of the inputs.

Materials and Methods

9 Treatments: 3 irrigation scheduling x 3 fertilization strategies

Traditional (T)
(Calendar method)

Sensor
(UGA SSA system - tensiometers)

App
(SmartIrrigation Corn App)

Traditional (T)
336 kg/ha – only one side-dress

F1 (Fertigation)
280 kg/ha – split application

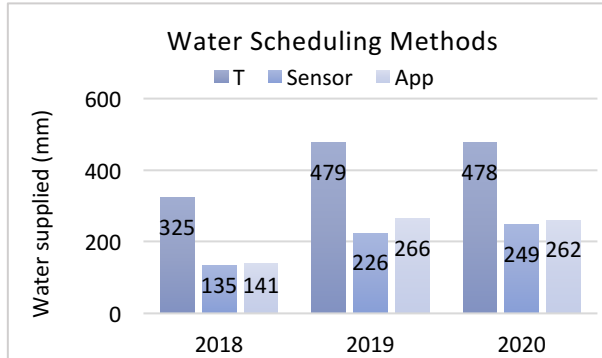
F2, Fmodel, F3
2018, 2019, 2020
336, 315, 280 kg/ha
split application, lower rates

2018 / 2019 / 2020
Maize / Cotton / Peanuts
Peanuts / Maize / Cotton
Cotton / Peanuts / Maize
Lateral with variable rate irrigation controls

Data
Collection

Weather and irrigation records
Aboveground Biomass (kg ha⁻¹)
Aboveground N Content (%)
Yield (kg ha⁻¹)

Results

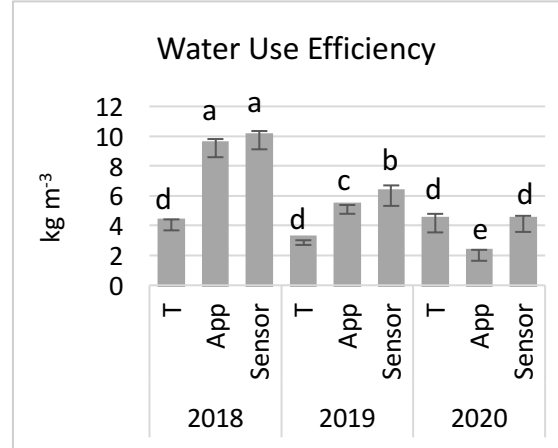


Innovative irrigation systems (Sensor & App) overall led to saving water

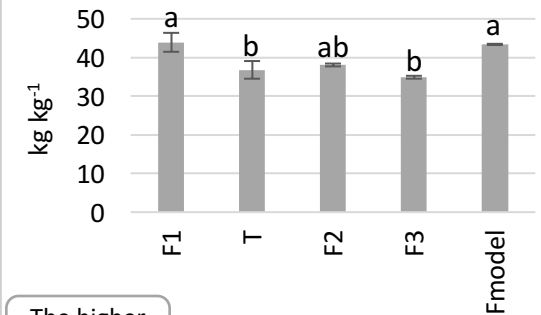
Steady yield among treatments



Average 12.3 Mg ha⁻¹



Nitrogen Use Efficiency



The higher the better



Conclusions

- › User-friendly low-cost systems can increase the efficiency of irrigation water
- › Split side-dress N application did not increase yield
- › Low rate of split N application maintained high yield while increasing efficiency

Acknowledgments: USDA-NIFA and the dual-degree program in Sustainable - University of Padova and University of Georgia (USA)