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Capturing Spatial Variability in Maize and Soybean using Stationary Sensor Nodes



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BACKGROUND

- Irrigation in agriculture maximizes crop yield and improves food security globally
- Irrigation scheduling is strongly based on the ability to accurately estimate the appropriate amount and timing of water application
- The timing of the irrigation can best be informed through the crop canopy stress, and the amount of irrigation is informed through soil moisture depletion

RESEARCH OBJECTIVES

- Developing upper (non-water stressed) and lower (non-transpiring) baselines for irrigated and non-irrigated maize and soybean
- Investigating the relationship between the canopy stress and the soil moisture stress

APPROACH



Fig. 1 (a)

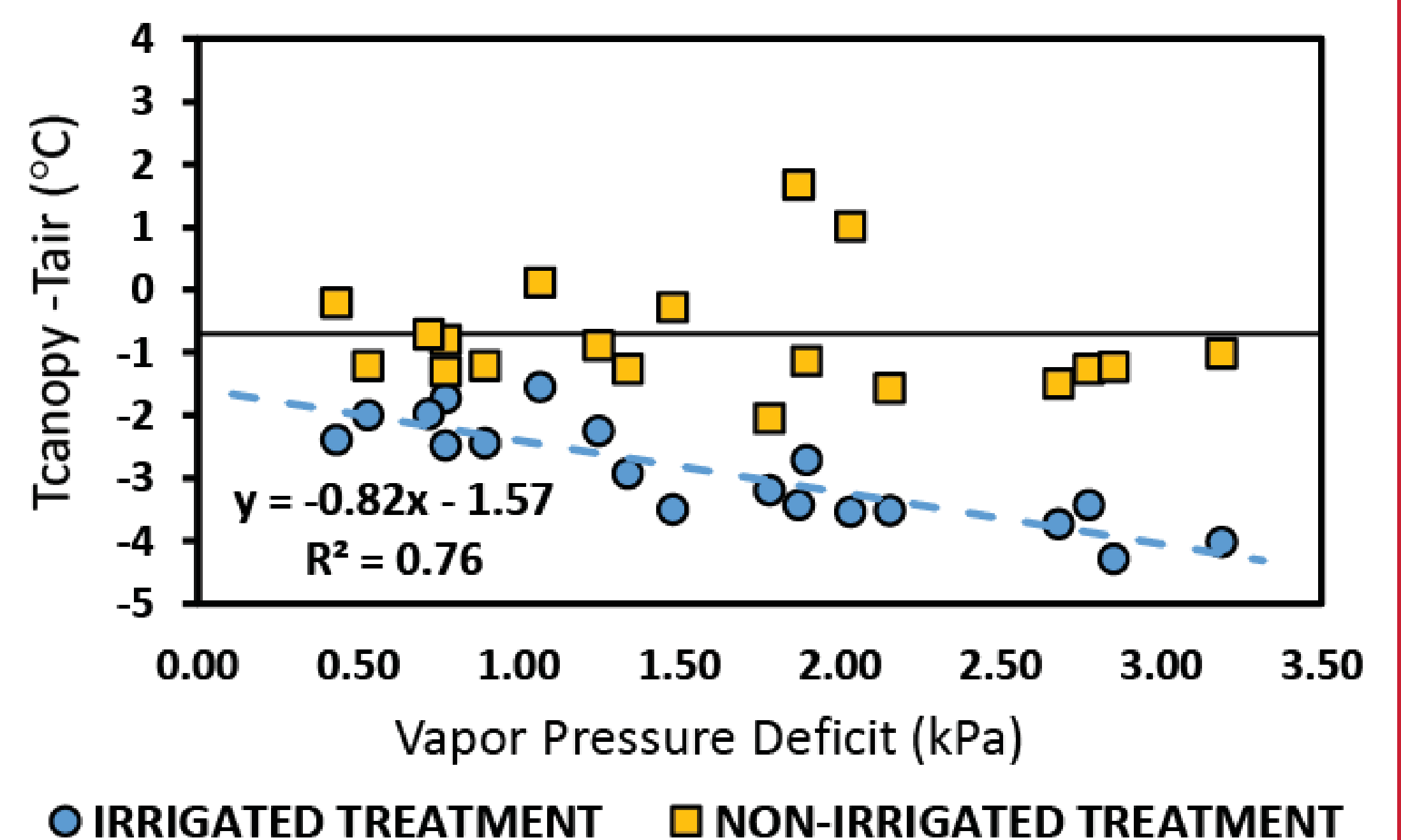


Fig. 1 (b)

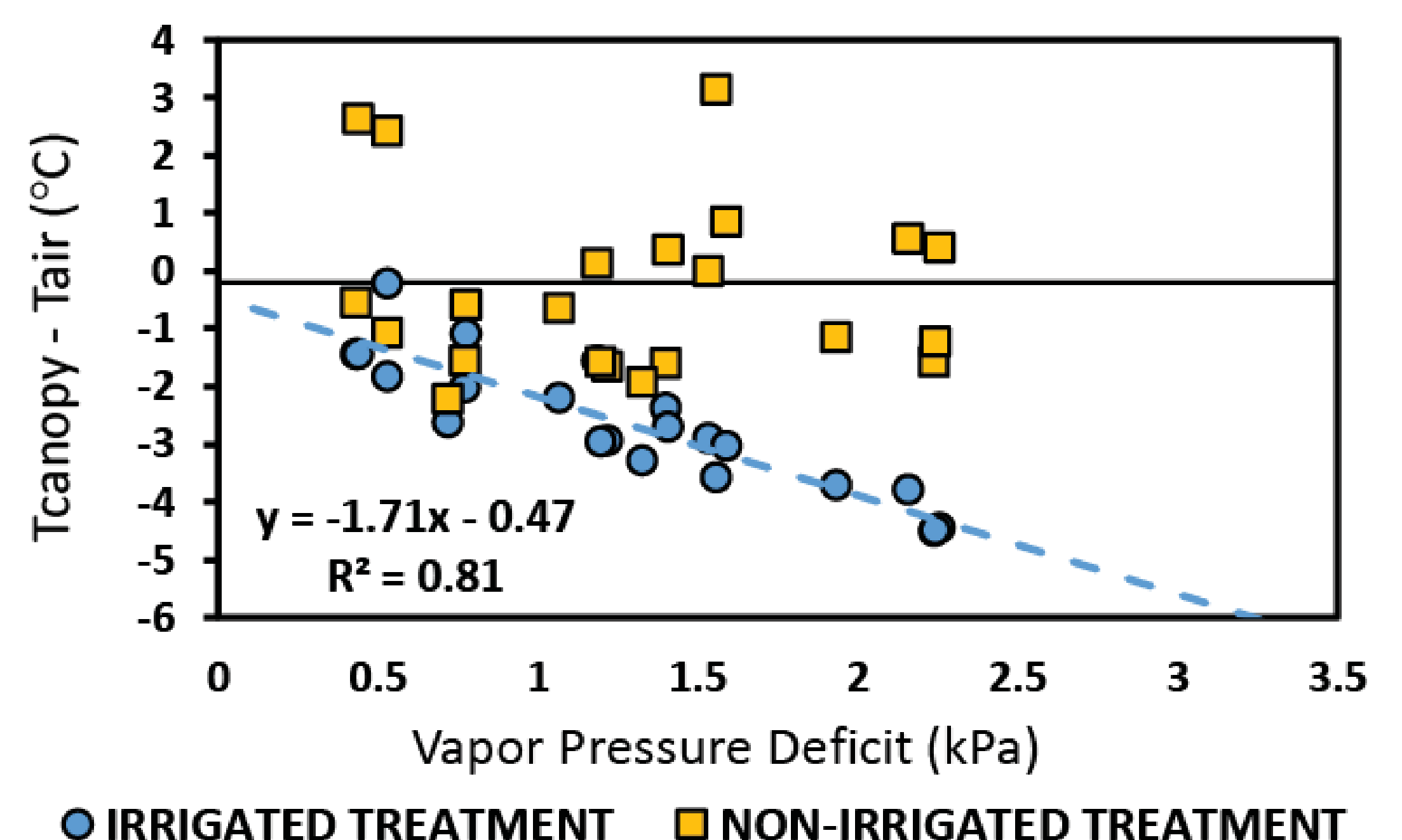
- Installation of GS-1 soil moisture sensors in the field during the beginning of the growing season.
- Stationary sensor node recording temperature and surface reflectance parameters over maize during full canopy cover

RESULTS

UPPER AND LOWER LIMITS FOR dT (MAIZE)



UPPER AND LOWER LIMITS FOR dT (SOYBEAN)



CONCLUSIONS

The canopy temperature stress and soil moisture depletion had **stronger** correlation for **non-irrigated** treatments in **soybean** than maize

RECOMMENDATIONS

Relationship between crop canopy stress and soil moisture depletion is an indicator of irrigation requirement

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