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2019 Update Mtg: Using Drones to Infer Soil Moisture from Imagery

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Using Drones to Infer Soil Moisture from Drone Imagery

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Why?

- Controlled soil moisture is critical to crop production
- Time and energy efficient
State Bog

15 minute flight for entire area vs 1 hr per section
Soil Water Content is Highly Variable

Volumetric Water Content Maps Collected 6/27/18 and 7/12/18
Surface Temperature is Variable

Zenmuse XT thermal image collected 6/26/18
In-Lab Proof of Concept
Water Content & Temperature
Soil Water Content (Percent) Measured by EC-5 Probe

Soil Temperature (C) Measured by 107 Probe
Soil Tensiometers & TDR 300
IR Thermal Imaging
IR Thermal Images:
Continuation: Growth Chamber & Field Experiments

- Refine lab research under controlled temperature settings
- Combine Zenmuse Drone flights with surface measurements of tension, temperature, and volumetric water content
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