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Soil Moisture Management and Variability in Cranberry Beds

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Measurements were collected from the State Bog. Soil tension information improves understanding of ideal water conditions for cranberry production. A better understanding of soil volumetric water content (VWC) variation will assist in making crucial management decisions. In this study two methods of measurement were used to gain a cohesive picture of soil water content. From this information a time wise change is moisture levels was observed and periodic maps of soil water variation were created.

Objective
To examine two soil water measurement strategies to gain insight into water management for cranberries and to quantify variations in soil moisture over temporal and geographical scales.

Materials & Methods
- Measurements were collected from the State Bog in E. Wareham and surrounding growers.
- Soil VWC was measured using a wireless Irrolis Sense tensiometer (Hortau, Inc., Quebec) and a FieldScout TDR 300 Soil Moisture Meter with 8.5cm rods (Spectrum Technologies, Inc., UK).
- Wireless tensiometers were embedded in several bog locations, transmitting data at 15 minute intervals. The TDR 300, with GPS attachment, provided immediate Soil VWC levels paired with geographical information for mapping. Over summer 2017 regular maps were recorded and created.

Results & Discussion
- Soil tension information improves understanding of ideal water conditions for peak production. Season long recordings indicate that water needs vary widely over time and between locations, and that fruit yield is sensitive to soil water content. These findings support the idea that the 25-mm rule is not always best, and that remote sensing technology and as-needed watering have the potential to improve yields and minimize fruit rot losses from overwatering.
- Tension is demonstrated to be an accurate method of determining soil water content, and one which can be controlled and monitored remotely.
- Mapping using the TDR 300 has shown the variability of soil WVC within a bog. A visual indication of generally wet, dry, and intermediate locations allows for ideal placement of tensiometer technology to allow for accurate soil water monitoring and management.

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