

IOT – CONNECTED WEATHER STATIONS

Case Studies of Current Applications

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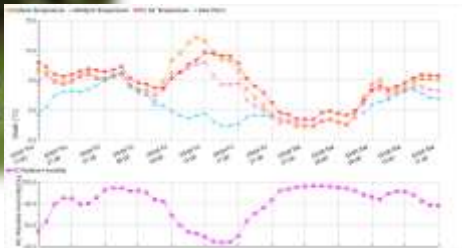
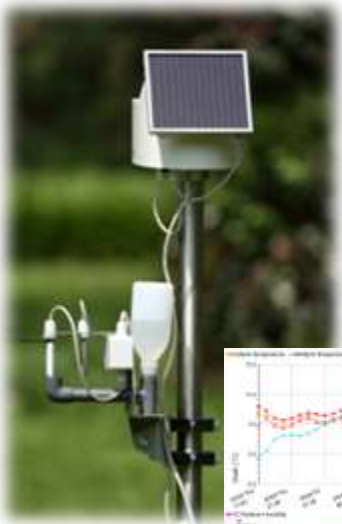
Sr. Associate – Context Network

IoT – Weather Stations

Keeping it Simple

- Connected weather sensors not new in the industry
 - Frost Alerts
 - Pest Modeling
 - Irrigation Scheduling
- Making it ubiquitous is new – lower system cost
 - Connectivity – More Options (SigFox, LoRaWAN, Cat M1 Cellular)
 - Computing – Power and Storage, handheld
 - Sensors – Accuracy and Reliability

Frost Alerts



Connected Temperature

- Set threshold for a temperature setting
- When temperature is reached, message is sent alerting of frost possibility
- Operators manage frost prevention methods
- Mainly used in high value crops
 - Orchards
 - Vineyards

Recent Advancements

- Tying the alert directly to controller

Weather Monitoring



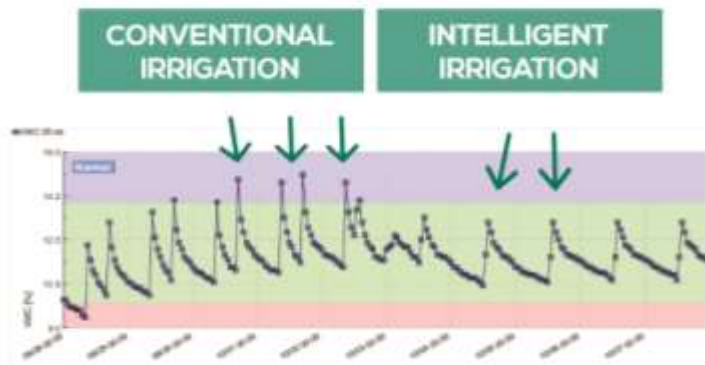
Connected Weather

- Measure temperature, barometric pressure, humidity, dew point, rainfall, wind speed and gusts, solar radiation, leaf wetness, soil moisture, soil temperature
- Weather information is sent to the cloud
 - Site specific information
 - Smoothed surface
- Mainly used to:
 - Better Allocate resources
 - Enhance operational efficiencies.

Recent Advancements

- Ground truthing forecasting models for improved accuracy

Irrigation Scheduling



Connected Irrigation

- Devices monitor the soil, the plant, the weather and also the plant irrigation
- Values combined with a high-precision microclimatic weather forecast
- Mainly used to:
 - Save Water
 - Save Energy
 - Save Fertilizer
 - Provide alerts

Recent Advancements

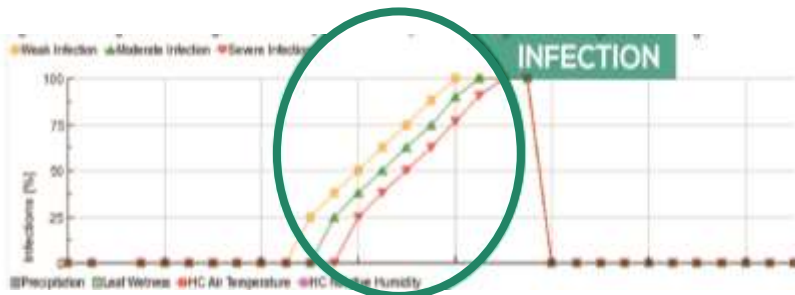
- Tying information directly to irrigation and fertigation controller

Pest Modeling



Connected Models

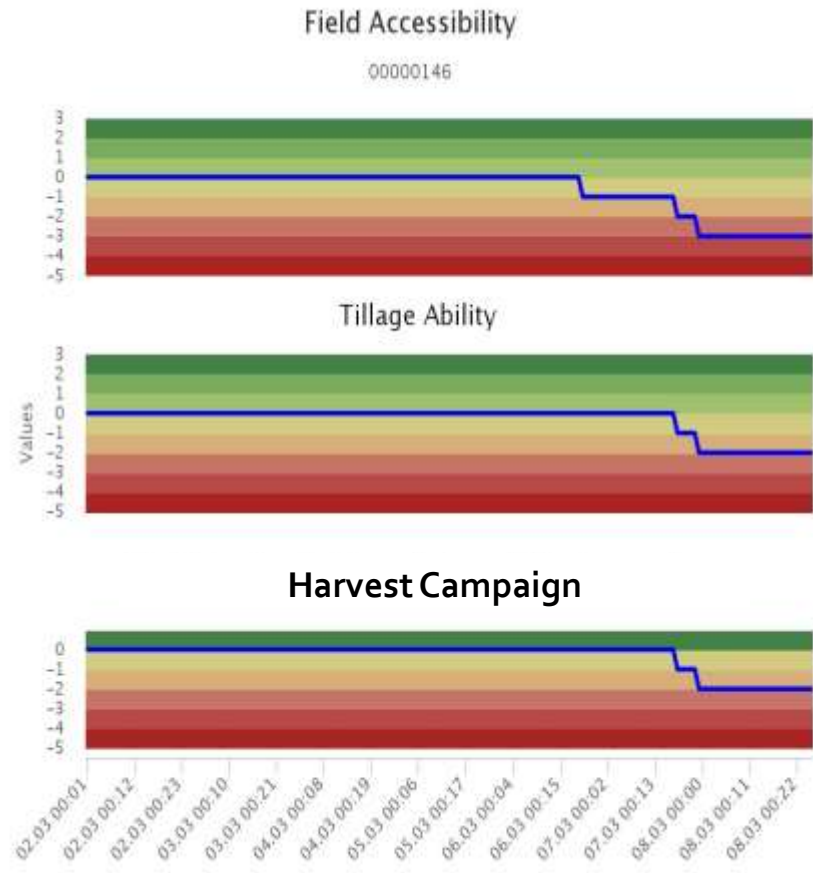
- Devices monitor the soil, the plant, the weather
- A mathematical description of interactions among the environment, the host plant and the variables related to the pathogen that can lead to the development of the disease
- Mainly used to:
 - Predict the impact or severity of the disease and the development of inoculum.
 - Provide the best information possible to make a conscious decision concerning pest mitigation



Recent Advancements

- Increased number of disease and insect models for larger variety of crops.

Work Management Modeling



Trafficability Models

- Farm operation are depending on the soil water content.
 - A field over water capacitance or already getting muddy cannot be accessed with heavy machines.
 - A field that is too wet or too dry it can not be tilled.
 - A muddy field is stopping the use of crop harvesters.
- Mainly used to:
 - Predict the trafficability or workability of different fields.
 - Provide the best information possible to make a conscious decision on farm operations

Connected Farmsites



Connected Farmsites

- Devices monitor the soil, the plant, the weather
- Devices to monitor equipment
- Devices to gather field data
- Mainly used to:
 - Increase field efficiency
 - Improve operational control
 - Provide better management

Recent Advancements

- Tighter integration of weather data and machine management

IoT – connected Weather Stations

Thank You

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