

# Leaf Wetness

Dielectric Sensor



**I**NNOVATIVE and easy-to-use, the new Dielectric Leaf Wetness Sensor enables accurate and affordable leaf wetness monitoring. Many fungal and bacterial diseases affect plants only when moisture is present on the leaf surface. The Leaf Wetness Sensor determines the presence and duration of wetness on a leaf's surface, enabling researchers and producers to forecast disease and protect plant canopies.

## How It Works

The Leaf Wetness Sensor approximates the thermal mass and radiative properties of leaves to closely mimic the wetness state of a real leaf. The way it works is simple: if the canopy is wet, the sensor is wet; if the canopy is dry, the sensor is dry. The Leaf Wetness Sensor measures the dielectric constant of the top of the sensor. The dielectric constants of water (80) and ice (5) are higher than air (1), so the sensor can determine the presence or absence of wetness using this method. Measurements can be logged at user-defined intervals to determine the duration of wetness on the canopy.

## Sensor Benefits

Because the Leaf Wetness Sensor measures the dielectric constant, moisture does not need to bridge electrical traces for the sensor to detect moisture; the presence of water or ice anywhere on the sensor surface will be detected. Unlike common resistance-based sensors, it requires no painting or user calibration, and it can detect ice presence. The low power requirement and long battery life (2+ years with Em50 Datalogger) enable effective long-term leaf wetness monitoring. ■



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# Dielectric Leaf Wetness Sensor

- **Forecast plant disease**
- **Modeling for blight**
- **Canopy treatment scheduling**
- **Imitates characteristics of a real leaf**
- **Requires no painting or user calibration**
- **Can detect ice on the "leaf" surface**
- **Low power**
- **High resolution**

## Leaf Wetness Sensor Specifications

**Measurement time** 10 ms

**Power** 2.5VDC @ 2mA to 5VDC @ 7mA

**Output** 250 to 1500 mV

## Operating Environment

-10°C to 60°C

## Expected Lifetime

2+ years continuous use

## Probe Dimensions

11.2cm x 5.8cm x 0.075cm

## Cable Length

5m standard,  
extension cables available

**Connector type** 3.5mm plug

## Datalogger Compatibility

*(not exclusive)*

Decagon Em5b, Em50, Em50R

Campbell Scientific CR10, 10X, 21X,  
23X, 1000, 3000, 5000

## Benefits

- No user manipulation or painting required
- High resolution detects trace amounts of water or ice on the sensor surface
- No calibration necessary; factory calibration set at standard wetness threshold
- Low power requirements enable long-term leaf wetness monitoring

## Applications

- Disease forecasting and modeling
- Ecological and Agricultural Research



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