Phytech New Generation 300 Sensor User Manual

Contents

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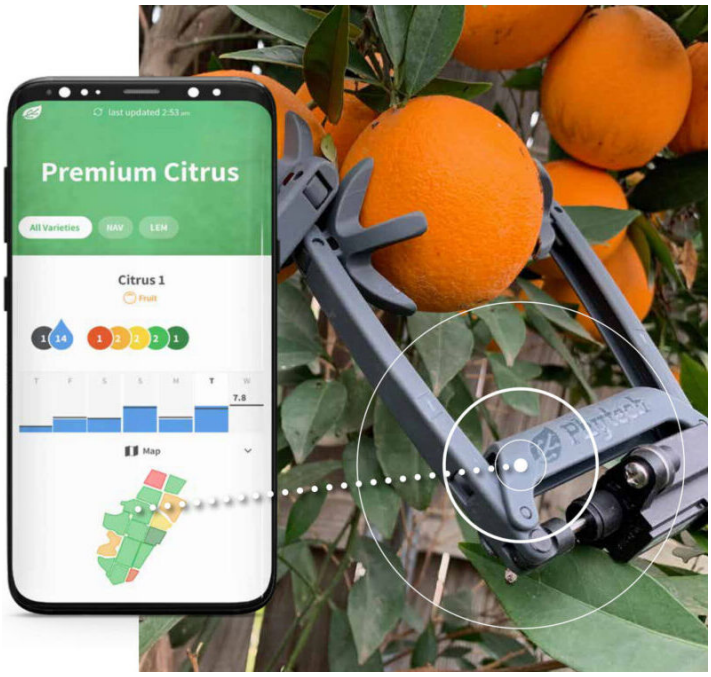


General description

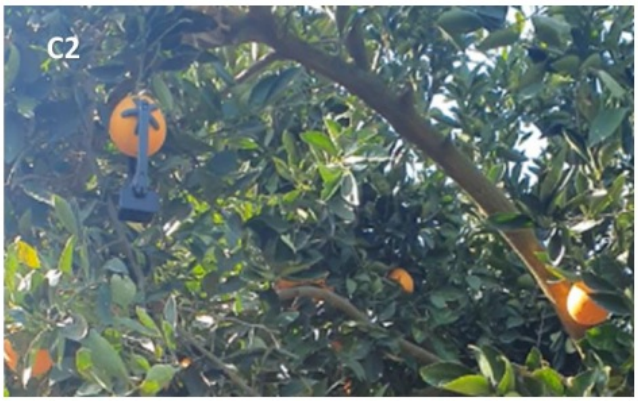
The Phytech 300 plant sensor is part of an advanced AG IoT platform for optimized Irrigation management. It is an upgraded version of the previous, 102 plant sensor and performs as part of Phytech's New Generation. The Phytech plant sensor (300 sensor) measures and transmits data to the hub. The hub organizes the data and then sends it to a Phytech datalogger. Finally, the data is sent to the Phytech cloud for analysis and processing. The outcome is a simple color scheme that aids the grower to decide online when and how much to irrigate.

Installation and operation

- Hub Installation
  - Up to 20 hubs can connect to a single logger.
  - The maximum distance between the hub and the logger is 300 meters.
  - After the logger is set up, set the hub near the middle tree of the project in between the trees in the row.
  - Mound the hub on a tree or in soil (Figure B).
  - Turn the hub switch ON to activate.

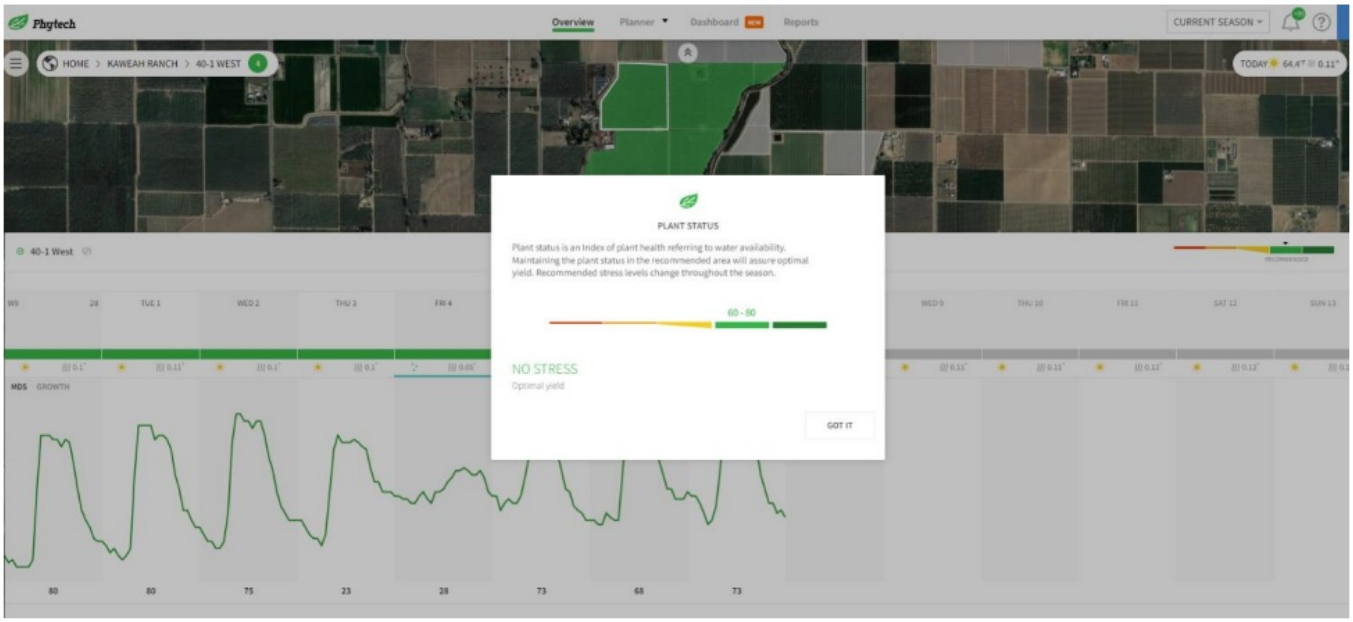
- **Sensor installation**
  - Up to 40 type 300 sensors can connect to a single Hub. The maximum distance between the sensors and the Hub is 80 m.Sensor must be installed after the hub was successfully installed and while in sensor acquiring mode.
  - The 300 sensor is a versatile sensor that can be installed as a dendrometer or a fruit sensor.
  - For a dendrometer – a “triangle” and attaching screw (with butterfly screw) need to be attached to the sensor.
  - For a fruit sensor – plastic “hooks” or “claws” need to be attached to the sensor.
- Dendrometer (Figure C1)
  - Choose a smooth area above of the grafting on the scion of the tree, preferably before any branching of the trunk. If there is no space before branching, choose the main tree branch. The chosen area should preferably have a clear line of sight to the Hub.
  - On some tree species scraping off the bark is needed with a knife – a flat surface is ideal.
  - Use a drill to drill a 2 mm x 20 mm deep hole at a 90 degree angle into the tree trunk.
  - Screw the attaching screw through the dendrometer designated hole. Note that the butterfly screw is completely free.
  - Screw the attaching screw to the new hole in the tree until the thread is completely embedded and the screw feels secure.
  - Push the calibration spacer device to set the right distance between the dendrometer piston tip and the tree trunk. Once the tip has been pushed the sensor LED will stark blinking, searching for a Hub.
  - Wait for the blinking to stop and the LED to become steady, an indication that the sensor has connected to the Hub.
  - Tighten the butterfly screw into place.
  - Push the calibration device back and take your hands off the sensor.
  - In case the light turns off while in the blinking stage
    (meaning the sensor could not connect to the Hub) open the butterfly screw to completely release the dendrometer from the tree and redo steps ‘6’ to ‘10’.
  - If the dendrometer still doesn’t connect – replace the dendrometer.
  - Repeat for all dendrometers in the project.

    - Sensors that their butterfly screw open, meaning the piston isn’t closed at all should send “I am dead message”.
- **Dendrometer recalibration**
    - Release the butterfly screw and distance the dendrometer from the tree until the piston is free.
    - Push the dendrometer calibration spacer towards the tree until the spacer reaches the trunk.
    - Tighten the screw into place.
    - Take your hands off the sensor.
- **Fruit sensor (Figure C2)**
    - Select 3 fruits on the chosen tree that look healthy at a regular size and are reachable by hand.
    - The selected fruits should be representative of all fruits on the tree/plot.
    - Try to avoid choosing fruits that are exposed to the sun or located in a very high/low position.
    - For installing the sensor, open the sensor’s “hooks” or “claws” and place them on the desired fruit.
    - The LED on the sensor will immediately start blinking when opening the fruit sensor.
    - Make sure the sensor LED becomes stable, meaning the installation is successful.
    - After installing, shake the branches gently and make sure the sensor is staying in its place.
    - Come and visit the fruit installation 1-2 weeks after installing to make sure the fruits you chose are indeed representative to the plot (replace them if needed).
    - Sensors that fall on soil should send “I am dead message”.



Received data

The data received from the sensors reaches the server where it is analyzed. The analyzed data provides users plant status and irrigation recommendations via web and mobile apps (Figure D).



Product features

- **Hub**
  - 40 sensors per hub.
  - Easy installation.
- **300 Sensor**
  - Easy mount.
  - High resolution trunk/fruit measurements.
  - Event triggered radio transmission.

Interfaces

- **Hub**
  - ON/OFF switch.
  - 1 indication LED.
- **300 Sensor**
  Indication LED.

Radio

- UHF 433.9 MHz.
- FM modulation.
- 2.4 kbps.
- Custom antenna

Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including cause undesired operation.

This device complies with FCC Rules Part 15 and with Industry Canada licence- exempt RSS standard(s). Operation is subject to two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference that may be received or that may cause undesired operation.
Changes or modifications to this equipment not expressly approved by the party responsible for compliance (Phytech Ltd.) could void the user's authority to operate the equipment. Professional installation is required due to the intended application of the system is exclusively for the commercial/industry use.

WARNING:
It is the responsibility of the installer to ensure that when using the outdoor antenna kits in the United States (or where FCC rules apply), only those antennas certified with the product are used. The use of any antenna other than those certified with the product is expressly forbidden in accordance with FCC rules CFR47 part 15.204."

Electrical

- **Hub**

  input voltage: 2.7-3.2 Volts (2X type C alkaline battery).
- **300 Sensor**

  input voltage: 2.7-3.2 Volts (2X AAA alkaline battery).

Documents / Resources

	Phytech New Generation 300 Sensor [pdf] User Manual 300, 2ALN6300, New Generation 300 Sensor, New Generation Sensor, 300 Sensor, Sensor