



Dynamax

Sap Flow
Soil Moisture
Weather
Infrared Temp

GROWER SERVICES CROP WATER USE



Water only when needed
Dynamax sap flow sensors can help



GROWER SERVICES



Dynamax sap flow sensors measure how much water plants utilize directly. If a grower knows how much water his crops consume, he knows how much water has to be put back with irrigation.

Dynamax is now offering SapIP Services and systems where our technicians install and maintain the systems, and all the grower has to do is to go to Agrisensors.NET to see the data and schedule irrigation accordingly. SapIP systems may be leased or purchased.

With wireless SapIP systems and sap flow sensors, you can see how much water your crop is using in gallons per hour, per day, or per week. This facilitates maximizing irrigation efficiency, conserving water, managing plant stress, and irrigating only when needed. Many growers have saved 25% to 40% of their irrigation water. With savings in time and money, SapIP systems will pay for themselves quickly.

SapIP systems work on;

- Almond
- Apple
- Avocado
- Cherry
- Citrus
- Corn
- Cotton
- Grape
- Hops
- Kiwi
- Olive
- Peach
- Pear
- Pistachio
- Plum
- Sorghum
- Soybean
- Walnut

And many other crops

With one annual fee, you get;

- Equipment rental
- Installation & maintenance
- Data presentation on a secure website
- Consultation & data interpretation
- Data protection & security
- Wireless service



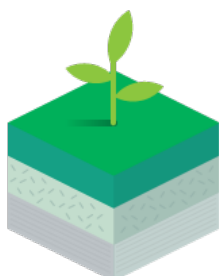
SAVE WATER, TIME, ELECTRICITY, FERTILIZER & MONEY

The sap flow sensors let you know what your trees are drinking which backs your ET calculations with real time data - Rob Wilmot Irrigation Manager Fresno State

Dynamax's sap flow tool has been a huge help this past season in knowing the actual transpiration of my trees after applying a soil moisture management solution – Agronomist Bardia Manshadi



Sap Flow Sensors



Soil Moisture Sensors

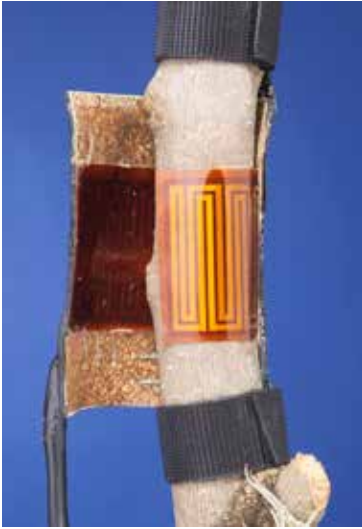


Weather Stations



Infrared Temp. Sensors

== EXO-SKIN™ SAP FLOW SENSOR



After more than 25 years of experience with sap flow sensor manufacturing and design, the Dynamax team has produced the EXO sap flow sensor. This sensor solves many of the commercial irrigation and research application needs.

The EXO sap flow sensor is based on a tried and proven energy balance technology. Thousands of these sensors have been applied in agriculture, plant physiology, water relations, crop science and numerous ecological, hydrology, and engineering studies worldwide.

Now, the EXO sensors, and the well-established Dynagage SGA, SGB, and SGC sensors, have become the primary tools employed when plant water use or irrigation management is required.

We are confident Dynamax sap flow sensors are the best method for determining plant water use in the field in real-time, and if you have sap flow sensors, you no longer need pressure bombs or dendrometers to determine plant water requirements.

Features

- Easy installation
- Low maintenance
- Allows for plant growth and expansion
- Sealed electronics
- Flexible for oddly shaped plant stems
- Water shedding layer wicks out water vapor
- For research or commercial applications
- Does not harm the plant

== SAPIP DATA LOGGER

The SapIP wireless data logging system with EXO or Dynagage sap flow sensors, can be used to measure plant water use in “real-time” with no calibration. The SapIP sap flow system solves many field data collection issues with a state-of-the-art wireless data collection platform. This system was developed so field monitoring would not require wiring sensors to a central data logger and data could be collected remotely.

Cables can be expensive, hard to maintain, and difficult to move around in the field, and existing RF data loggers and low cost motes typically do not have the range, power management, accuracy, or resolution required for scientific grade sensors. The SapIP system solves all these problems and is a breakthrough for most field monitoring applications. Data is collected and analyzed through the Agrisensors.NET website for easy monitoring and data download.

Features

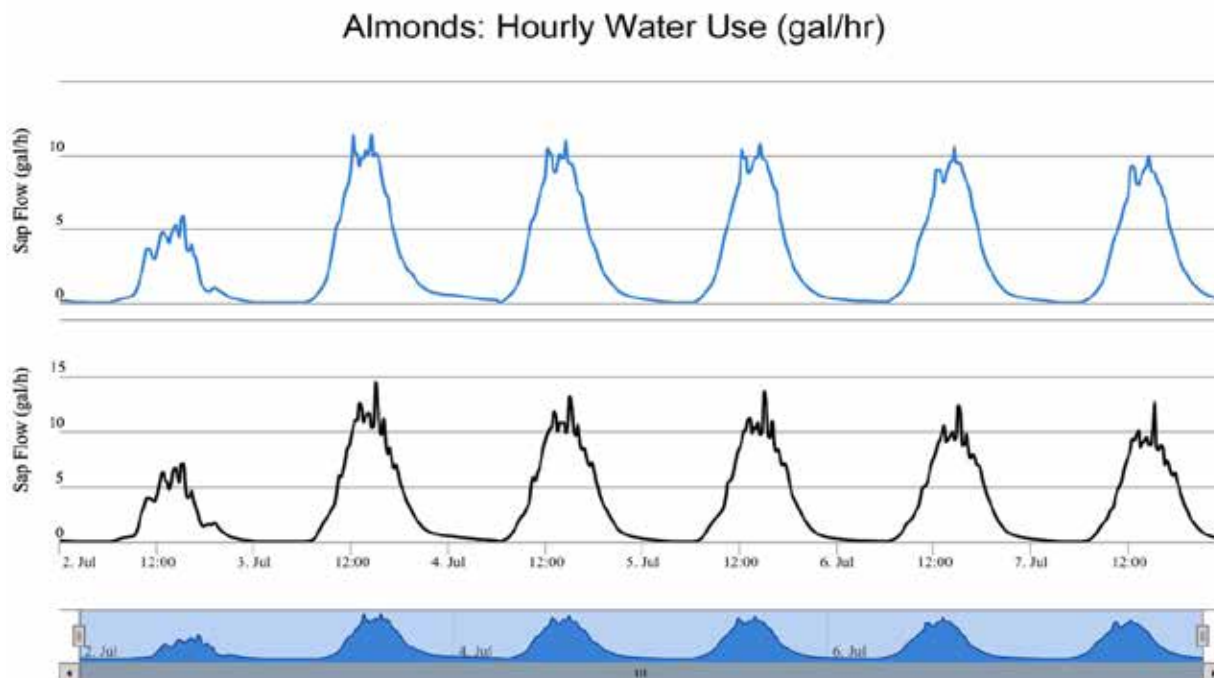
- Flexible Configurations
- Independent Data Logger Nodes
- Gateway, Cellular, GSM, or LTE Versions
- Excellent for Ranch Based Systems with Remote Fields
- FCC Licensed



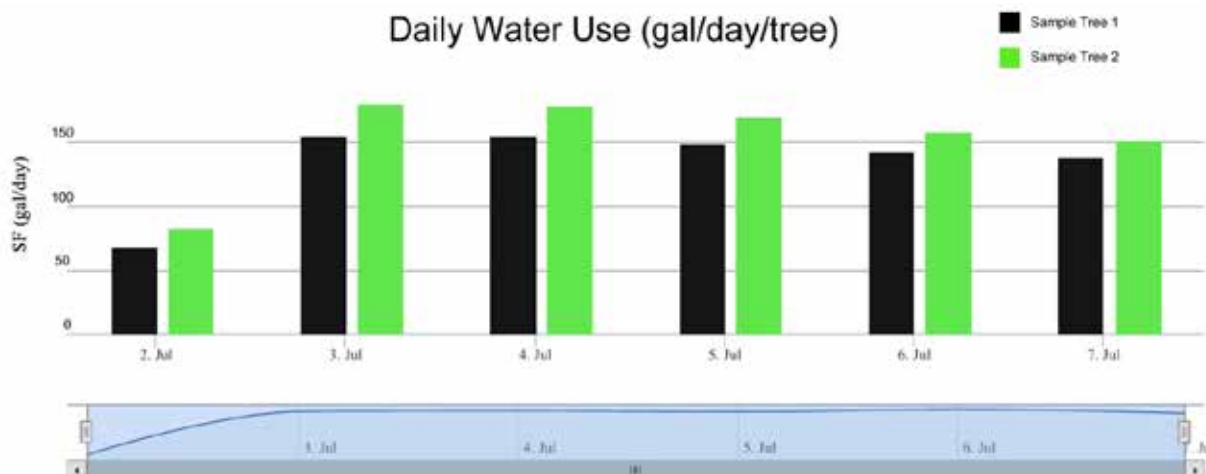
DYNAMAX SAPIP SYSTEMS AND SENSORS

Dynamax offers real-time plant water use monitoring for crops and trees using the SapIP system and sensors. Hourly water use and daily water use totals of sample plants are displayed and graphed on the AgriSensors.NET webpage on the Internet. If daily water use declines over time, the amount of reduction can be used to measure drought stress, and irrigation can be applied accordingly. Plant water use, soil moisture, weather data, or IR leaf temperature, can be collected and graphically displayed with the SapIP system. If weather data is collected, a crop water "Stress Factor" can be calculated and used to schedule irrigation.

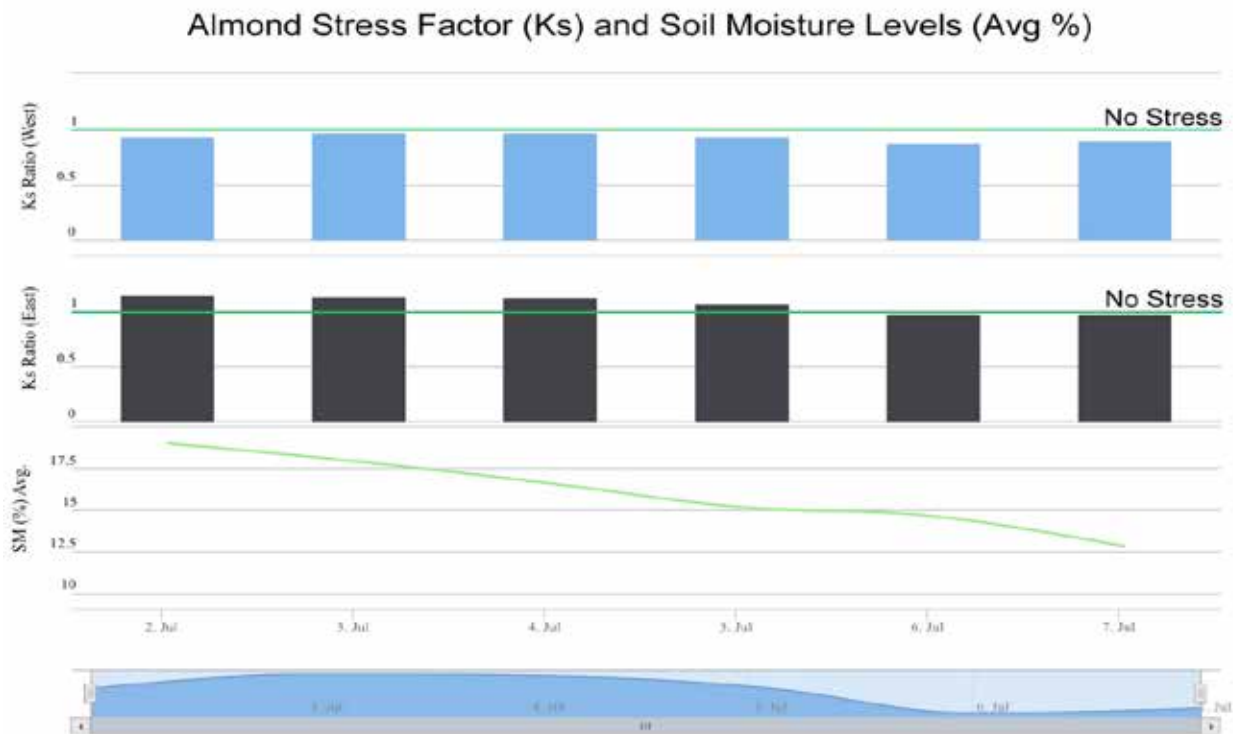
Here is an example of daily water use of (2) almond trees measured in gal/hr at orchards in Fresno, California. You can see the rate of water use for each tree for each day.



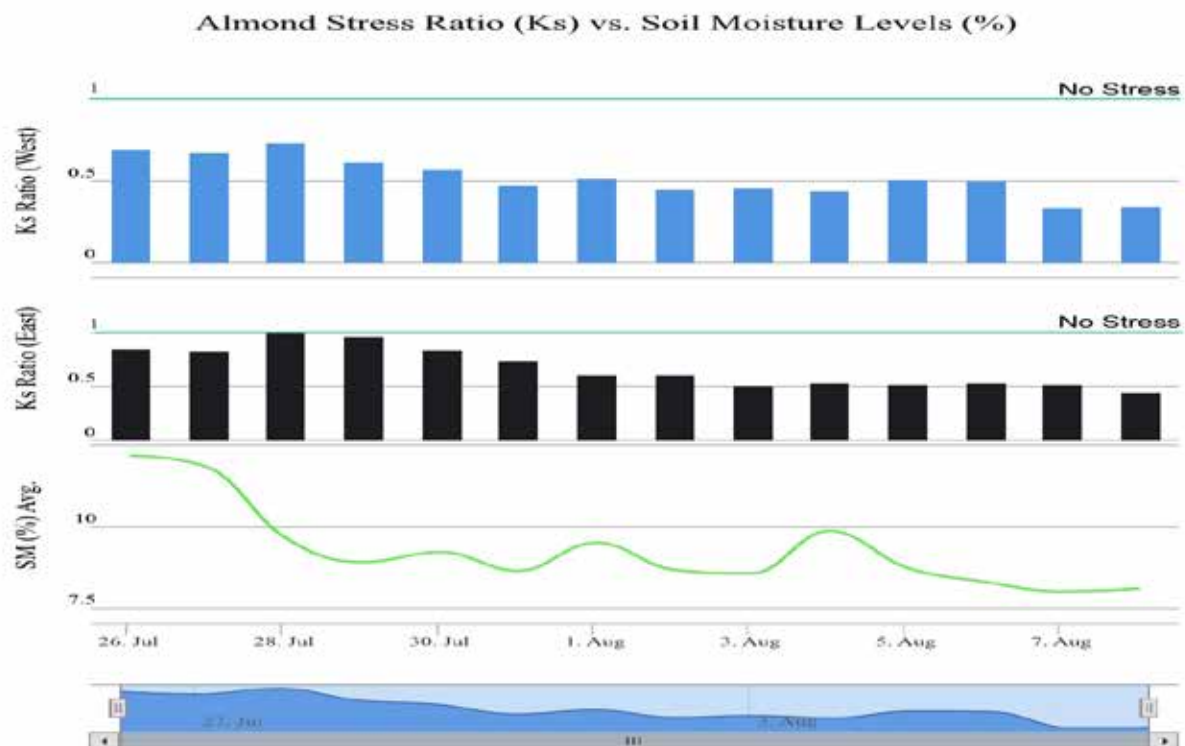
The hourly water use data is converted into a total daily water use chart, and data from representative plants are used to estimate total tree water use for an average tree. This can then be multiplied by the number of trees per acre to get total water use per acre.



Here is a Stress Factor chart for the almond trees measured at Fresno. You can see the trees are under little or no stress, but soil moisture is being depleted.



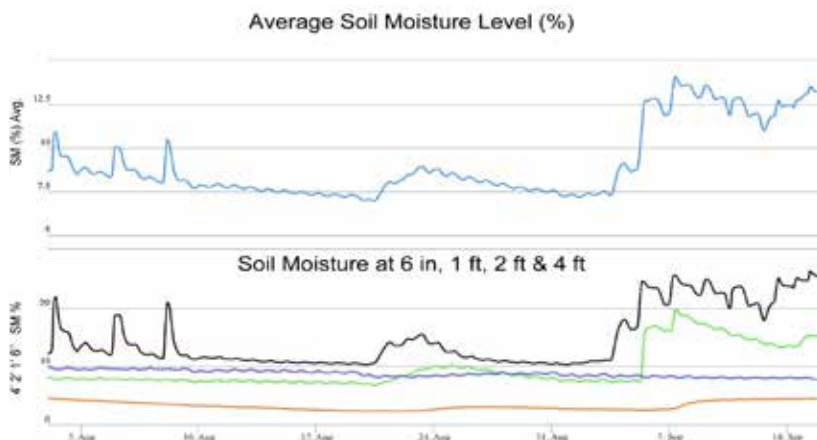
Here is a chart of the Stress Factor of the same trees later when water became limiting for a dry –down prior to harvest. You can see from this chart that the trees are using about 50% as much water as when well-watered.



== SAPIP™ SOIL MOISTURE NETWORK

The Dynamax SapIP-SM node adds a soil moisture profile to your SapIP system. With either (4) or (6) SM150T soil moisture sensors, you can get an accurate soil moisture profile in your fields. Usually, sensors are buried at different depths down to 4 ft. Data can be expressed in percent soil moisture, or in inches of water per 18" of soil, and is displayed at Agrisensors.NET in easy to read charts.

The SM150T soil moisture sensor is based on the Theta probe technology, and is very accurate and dependable. Once buried, the sensor can be left in place for several years with no need for maintenance or calibration. Significant advantages of the SM150T are that it works well in all kinds of soils, and has little to no temperature or salinity effects. It will also give good data in dry conditions, even down to around 4 or 5% water.



== SAPIP™ MICRO WEATHER



You may also add:

- Frost detection
- Soil temperature
- Leaf wetness

There are significant advantages to having local weather conditions taken in your field, rather than from a weather station that may be located miles away. SapIP wireless networks offer a solution. It is possible to add a complete ET weather station to your SapIP wireless system. You get wind speed & direction, solar radiation, RH & air temperature, and rainfall, all in one complete package. You also have the option to add frost warnings, Chill Portions/Chill Hours, or Growing Degree Days. All data is charted and displayed on the Agrisensors.NET web page.

Features

- RH & Air Temperature, with Radiation Shield
- Wind Speed & Direction
- Rainfall
- Solar Radiation
- Calculate ETp at your location
- Uses 12 V battery and small solar panel
- Wide variety of environmental sensors possible
- Pre-configured before shipping
- Complete packages available

IRT - INFRARED LEAF TEMPERATURE



The IRT wireless infrared temperature system is the latest development in IR leaf temperature sensing for use in irrigation scheduling and plant stress detection. This new system allows for IRT nodes to be distributed throughout a field. IRT sensors may be used as a complete stand-alone system, or as part of a SapIP wireless mesh network.

Frost & Freeze Alerts

For more accurate frost and freeze warnings, the SapIP-IRT system can help. The system consists of a SapIP data logger with (2) IRT infrared temperature sensors and a high resolution platinum air temperature sensor. The IRT sensors can accurately measure trunk, leaf, or fruit temperature while the PRT gives a very accurate air temperature reading. With the SapIP-IRT system, you also have the option to add frost warnings, Chill Portions/Chill Hours, or Growing Degree Days. During hot summer months, the IRT system can be used for scald protection, and cooling sprays can be turned on when a high temperature set point is reached. All data is charted and displayed on the Agrisensors.NET web page.

Features

- ± 0.5 C accuracy
- No calibration required
- Monitor leaves, trunks, or fruit temperatures
- CWSI Crop Water Stress Index
- Frost & Freeze Warning
- Scald Protection

CWSI Crop Water Stress Index

With the SapIP-IRT system, a CWSI Crop Water Stress Index can also be calculated. By measuring the leaf temperature and comparing to the ambient air temperature in the field, the CWSI is calculated automatically on the Agrisensors.NET webpage. This stress index lets you know the stress level in your crop so you can irrigate accordingly.

GROWER DASHBOARD AGRISENSORS.NET

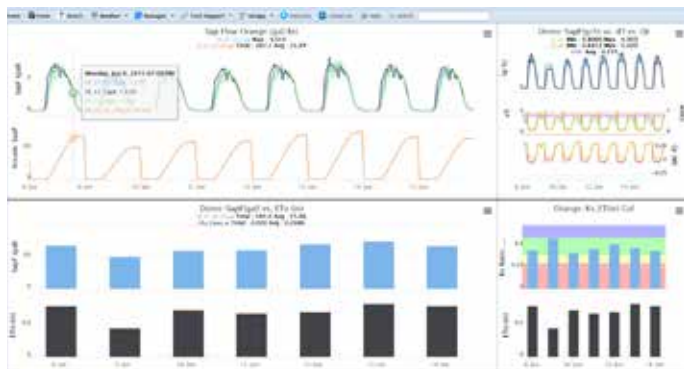


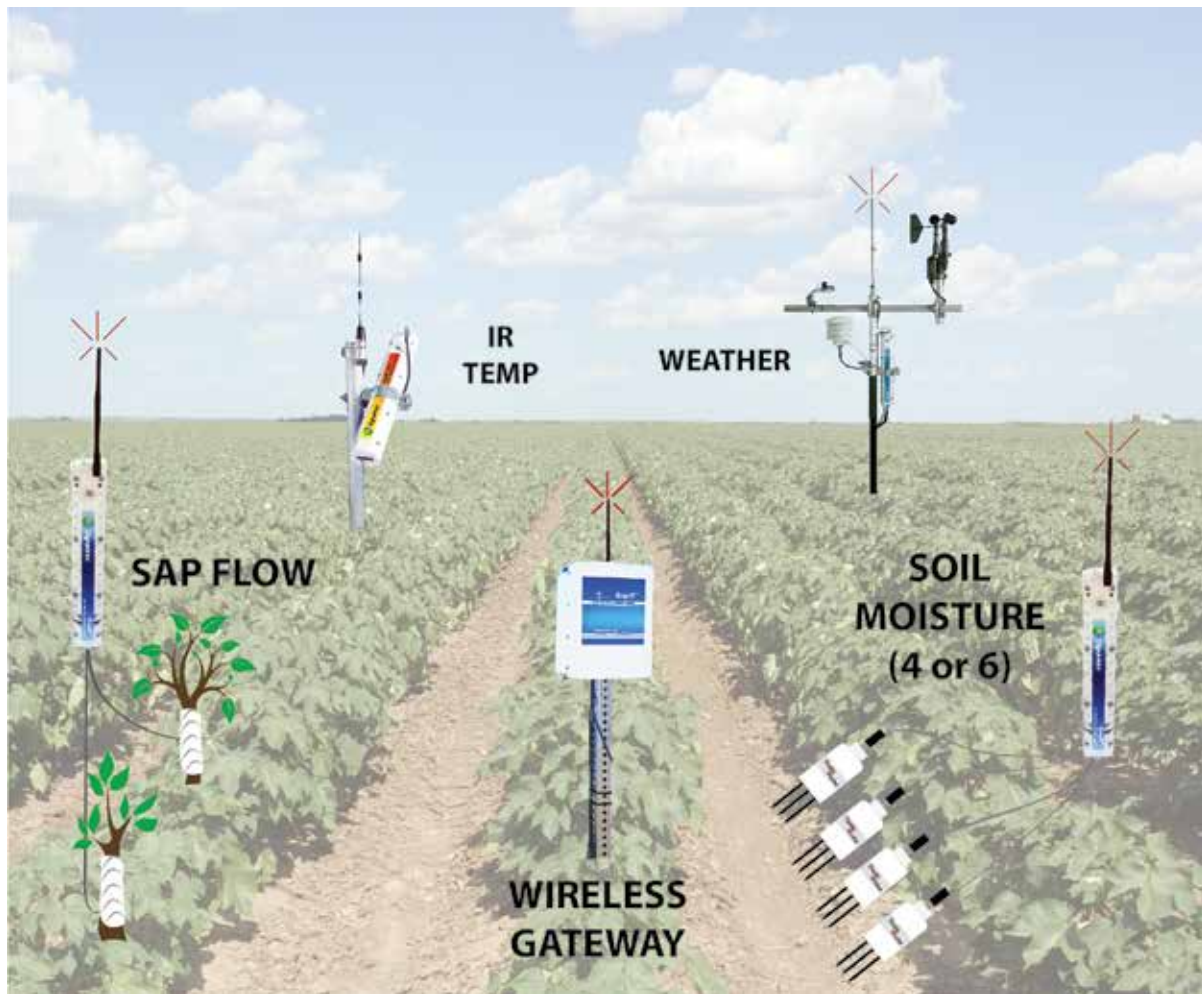
Dynamax Agrisensors.NET is a web based data analysis center for growers and researchers interested in plant water relations, irrigation management, or plant stress. Password protected data can be analyzed, graphed, displayed, or downloaded from the website.

Current crop water use, weather, ET Evapotranspiration, soil moisture, and crop type can be displayed. These pages are customizable, so you get to choose what is displayed on each of your pages.

Features

- Compare sap flow, soil moisture and ETo in one chart
- Sap Flow data summarized in gallons or liters
- Interactive charts
- Analyze an entire season of data
- Password protected
- Location image to identify sensor locations





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