

# Using Soil Moisture Monitoring Technology

## Fruit Growers Victoria Infosheet #3

Orchards will have different irrigation requirements based on crop type, soil type and micro-climate factors. Here we cover some of the technology available used for moisture monitoring and the benefits and factors to consider.

Technology	What is it?
Trunk dendrometer	<ul style="list-style-type: none"><li>• Measures uptake of water from tree trunk changes</li><li>• Real time data and historical records</li><li>• Indicator of Growth and Tree Health</li></ul>
Soil moisture probe	<ul style="list-style-type: none"><li>• Measures soil moisture content across profile (10, 25, 40cm depth) and changes over time</li><li>• Real time access in phone app</li><li>• Can also measure soil temperature</li></ul>
Fruit sensor	<ul style="list-style-type: none"><li>• Collects data of size of fruit (mm)</li><li>• Real time access in app</li></ul>



Trunk dendrometer to measure expansion and contraction



Fruit sensor to measure size

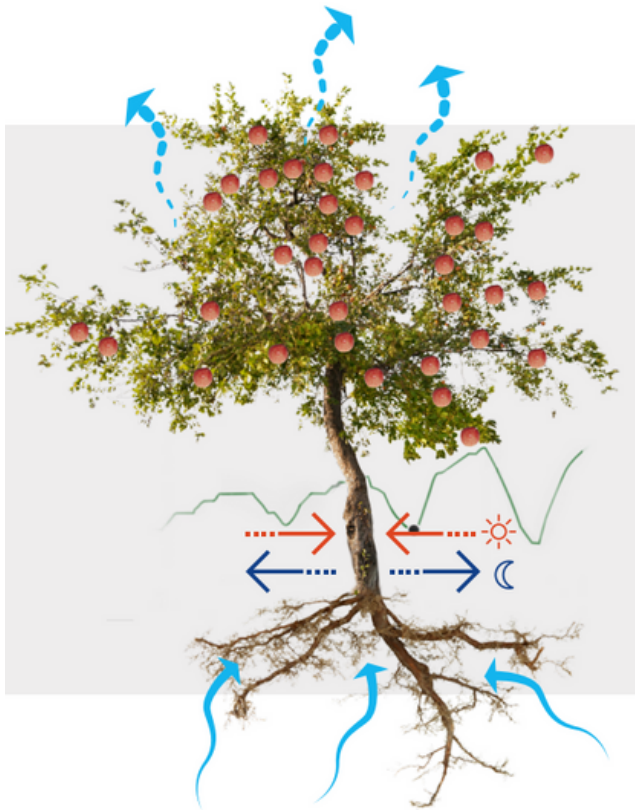


Diagram shows evapotranspiration, trunk girth expansion (night) and contraction (day), and water uptake via roots. Source: Phyttec

## How does it work?

- Tree trunks expands at night when the roots take up water and then the tree will loose water and contract during the day from **factors such as sunlight, temperature, humidity, and wind**
- The dendrometer measures the tree trunk **girth** throughout the day and night
- **Evapotranspiration (mm)** is measure of loss of water from soil and plant
- Looking at evapotranspiration **forecast** can assist with scheduling irrigation **when plants will need it most**
- Once the fruit is large enough for sensors to be fitted, the **growth can be tracked and irrigation manipulated** to help reach target size

## Considerations when setting up technology:

- Costs - can investigate options to trial, rent, learn from other orchardists
- Learning new system and understanding concepts in order to get best use
- Requires habit change to check software (phone app)
- Understanding of farm characteristics and where to put reference device(s) - so it can best represent across block (fruit, soil, tree trunk)
- To be used in combination with other methods - experience, observations

## Further Information

- **Soil Moisture Monitoring Technology AgVic** - <https://agriculture.vic.gov.au/farm-management/soil/choosing-the-right-soil-moisture-monitoring-device>
- **Phyttec** - <https://www.phyttech.com/knowledge-center>