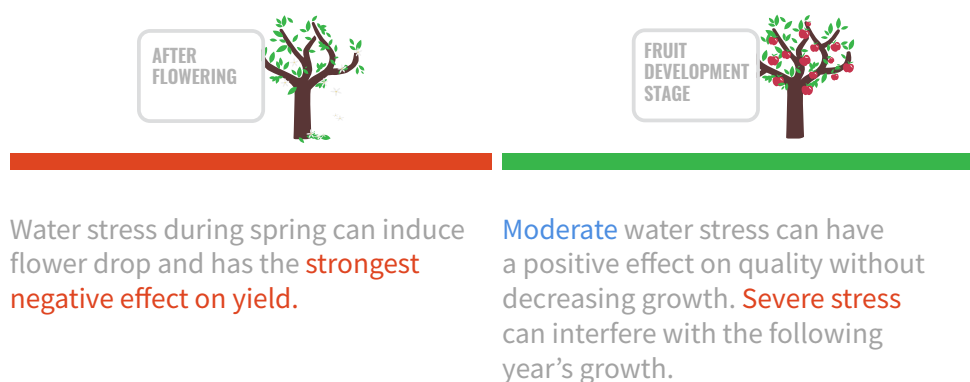




Irrigation in apples aims for achieving high yields and desirable fruit size at a certain date¹. Irrigation coefficients are commonly used to determine water application, however, in-season assessment of water stress is required to regulate fruit growth. Dendrometers are direct tree sensors proven determine water status in apples². Phytech combines their use with continuous fruit size monitoring for the optimal apple irrigation tool.

TIMING FOR WATER STRESS

At different stages of the season, water stress has a different effect on fruit size and quality.



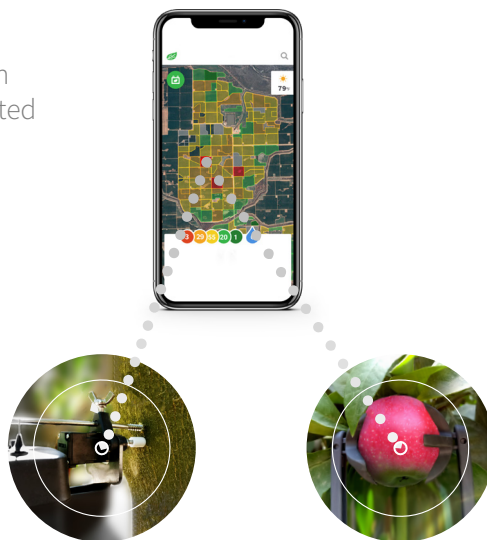
THE PHYTECH SOLUTION



Sensors on selected trees continuously measure changes in stem diameter, which are translated into plant stress indications.



Sensors on **selected fruits** continuously monitor **fruit development**.



Phytech identifies yield reducing stress and immediately alerts growers on mobile and web platforms.



Supporting parameters included in the system: irrigation monitoring, soil moisture monitoring, climate data and satellite image analysis.

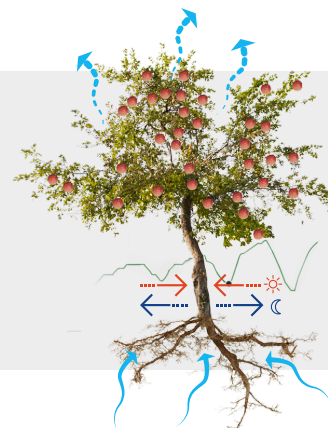


1. "Crop Yield Response to Water", UN food and agriculture organization report, <http://www.fao.org/docrep/016/i2800e/i2800e.pdf>.

2. unwei Liu, Shaozhong Kang, Fusheng Li, Sien Li, Taisheng Du, Ling Tong, Relationship between environmental factor and maximum daily stem shrinkage in apple tree in arid region of northwest China, Scientia Horticulturae, Volume 130, Issue 1, 2011.

HOW DOES IT WORK?

A trunk of an apple tree shrinks during the day as a response to lowering water levels. The more it is stressed, the more it contracts, before replenishing again at night. Phytech's algorithms utilize this shrink-swell mechanism as a tool to quantify water stress.



“IT’S LIKE AN AUTOMATIC PRESSURE BOMB..”

Stem water potential measurements (SWP), manually taken with a pressure bomb, are proven to assist in apple irrigation. However, acquiring the measurement is time and staff consuming. Phytech uses the dendrometers to create its' plant status stress indicator, which is correlated with SWP and has many advantages:

Plant status is taken **automatically** every day.

Plant status results go **directly** to the grower's mobile phone or computer.

Phytech automatically transforms reading into **stress alerts**.

The plant status indicator takes into account both the daily water stress level (MDS) and the **plant growth**, resulting in a more accurate algorithm.

FRUIT GROWTH REGULATION

Phytech allows growers to continuously track fruit size against the 'target curve' needed to reach their wanted fruit and date. If the fruit size is above the target curve, some stress can help decrease growth rate, while green or dark green plant status can help boost growth rate, if it is below the curve.

