SENSOR CALIBRATION

The Agrowtek software system relies on data received from its climate and hydro sensors to ensure an optimal environment in your farm. It is normal for electronic sensors to lose their accuracy over time, therefore, calibration is important to keep the sensors in an accurate range. If you do not address the periodic inaccuracy of the sensors, the climate or water conditions in your farm will not be optimal and your crops will be negatively affected.

To calibrate your sensors you will use one of two sources as a reference point: a separate sensor (i.e. a water temperature thermometer giving an accurate reading - as seen in the example below), or calibration solution (i.e. pH calibration solution with a previously determined pH level). You will need to calibrate your farm's hydro sensors every two weeks and climate sensor quarterly.

It is important to understand how the calibration procedure works because if you understand it well you will be able to complete it confidently and correctly. Additionally, should you ever need to troubleshoot inaccurate sensor readings, understanding the calibration process will make a diagnosis much easier.

During each hydro sensor calibration you will set a Zero Calibration and a Span Calibration. The Zero Calibration sets the point from which incremental measurements begin (35F in the example below). Without a Zero Calibration the control has no point of reference to anchor further measurements. The Span Calibration gives the controller the end point so that it can calculate the size of each incremental measurement (i.e. the size of one degree Fahrenheit).

Another way to think about it: Imagine you are standing next to someone who is slightly taller than you and you are both told to take ten steps in the same direction. You both take your ten steps but you end in slightly different places. This happened because you started in slightly different places (a step or two away from each other) and the other person is slightly taller than you so they take larger steps (one step for them equals one and a half steps for you). In order for you both to take an equal ten steps (or in the case of a temperature sensor, measure an accurate ten degrees) you must be calibrated. To be calibrated you will be told to start in exactly the same spot (i.e. a Zero Calibration) and you will also be told where exactly ten steps is from your starting point (i.e. a Span Calibration). This information will allow you both to calculate the same size step and arrive at the same end point - therefore, you are both accurate in reference to a separate scale.

In case of a water temperature sensor: The Zero Calibration for this sensor has been set at 30 degrees Fahrenheit and its span set at 40 degrees Fahrenheit:

Zero Calibration

35F 1 2 3 4 5 6 7 8 9 10 45F

These scales represent a calibration procedure done with a Zero Calibration but without a Span Calibration.

Both start exactly at 30F but the incremental measurements (the size of one degree) and the end point (definition of 40F) is inaccurate when compared to the separate thermometer.

35F 1 2 3 4 5 6 7 8 9 10 45F

35F   45F

Separate thermometer with true temperature