

## WET 150

- Measures the dielectric properties of soil
  - o Ability to store and dissipate electric energy
  - o Affected by:
    - Moisture (the higher, usually higher dielectric property)
    - Temperature
    - Soil composition
- Sensor generates an electromagnetic pulse around the pins
  - o Water quantity influences the electromagnetic field and the sensor detects these changes
  - o Conversion to soil moisture content and pore EC
- There are different technologies to measure the soil moisture
  - o Some sensors produce higher frequency pulses which produce higher accuracy but more expensive

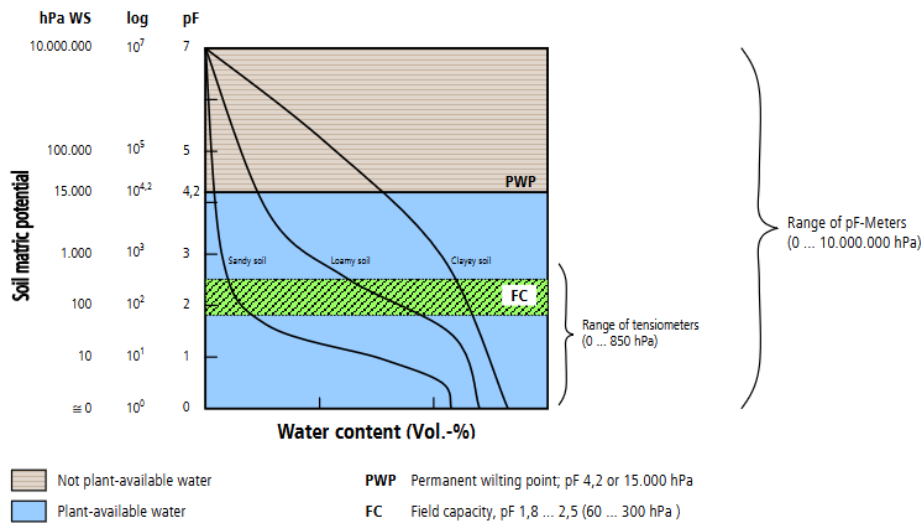


## Tensiomark

- Measures Matric Potential = Tension = Pressure Head = Water potential
  - o Is an expression of the energy acting on the soil water against gravity
    - adsorption and capillary forces “bind” the water and hold it against gravity
  - o Potential is higher when dry and lower when wet
- Usually measured in hPa but converted to log for convenience
- Permanent Wilting Point (PWP) at pF 4.2 is the minimum quantity of water needed before the plant wilts
- Field Capacity +/- 1.8-2.5 = water held in place against gravity, fully available to plants – the “ideal” condition
- Working methodology:
  - o Two porous ceramic plates which wet and drain sandwich the sensor element
  - o Heat capacity varies depending on the wetting and draining
  - o Measure this heat capacity. Help is given by a heat pulse created by the sensor. The higher water content requires more heat to be applied and more energy consumed. That energy is measured and converted to hPa or pF



## Soil moisture retention curves



## vanwaltDataNodes (DN)

- Sensors are attached to the DataNodes
  - o The sensors are hard wired to the DN
  - o The DN energises and controls the sensors and captures the data
  - o Those data are transmitted immediately to the vanwaltDataGateway by radio frequency

## vanwaltDataGateway (DG)

- Always "listens" for signals from the DataNodes (can monitor 32 DNs at the same time)
- Passes through those data to a cloud server over the GSM network

## vanwaltBluePeriscope (BP)

