Agri-tech Precision Soil Irrigation Scheduling using SMART Sensor Technology

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About us

Founded in 1992 – focussed on Precision Irrigation using sensors to schedule irrigation on soil grown crops

First GPRS telemetry systems deployed in the late nineties

Climate Monitoring sensors introduced in the late nineties

Precision Farming services introduced in the early 2,000's

About us

We've been analysing in-field sensor data for 30 years

Cloud based solution introduced 2009 with home designed DTU

The Overseas Business drove us to establish a relationship with a reputable hardware supplier with a Global supply and support network & an open API (application programming interface) – METOS provided the solution

We needed an In-house cloud based web portal for data analysis - designed for Growers by Growers – Enabling analysis of big data to be quick and easy to aid key decision making – specific to Substrate Berry Production

Existing Hardware

Probes measure

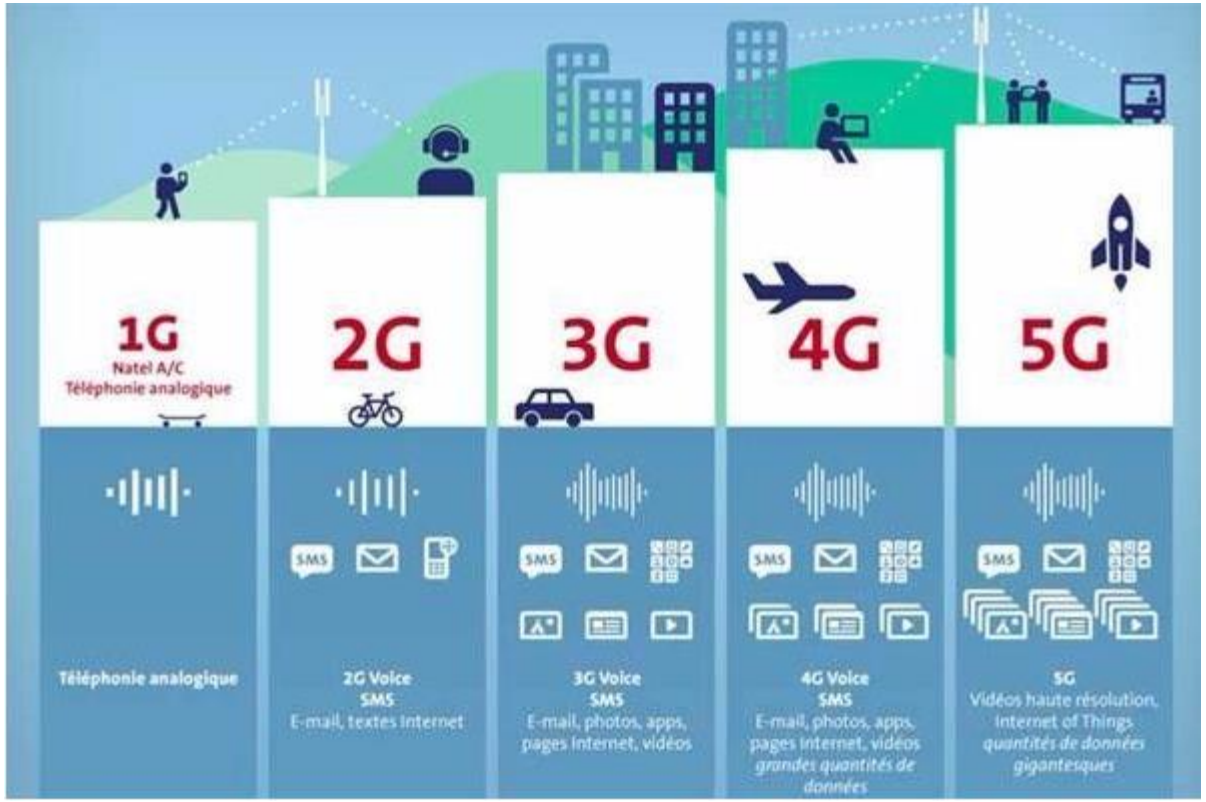
- Moisture
- Temperature
- EC

External sensors

- Run-off
- Temperature / humidity
- PAR sensors (light)

Added data logger required

Kb data sent to the cloud over the 2G network
reliable / robust / slow / power hungry



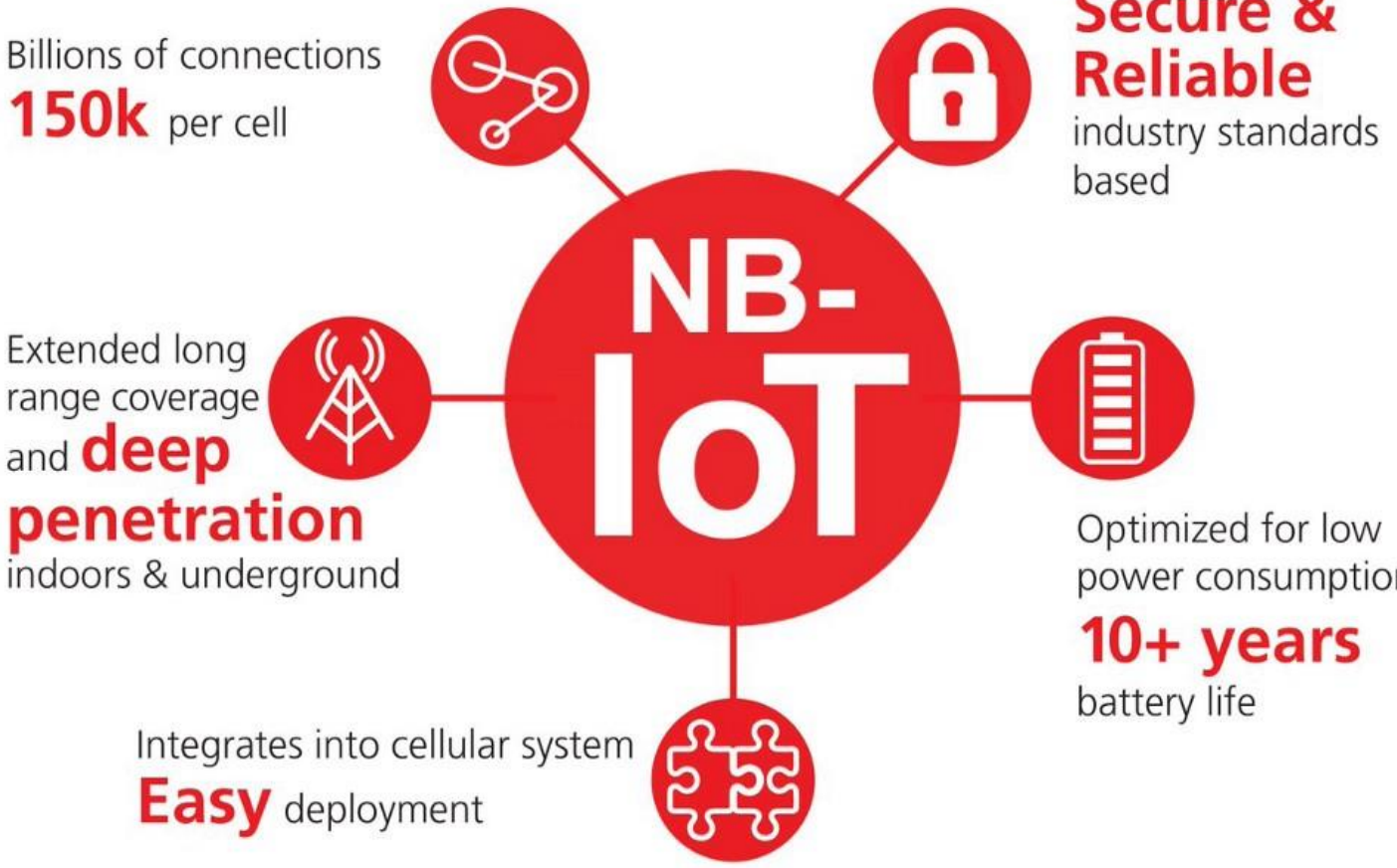
2G planned to be switched off 2030
3G planned to be switched off 2025

New SMART sensor Technology - Why NBIoT?

15 minute upload

NBIoT hardware
With 2G fall back

Kb data – very low power requirement



ATS Soil Dashboard

"Fuel gauge" indicating moisture status, SMD displayed in mm, and previous 24 hr water use in mm

Irrigation trigger and predicted irrigation date based on the previous 24hr water use

Additional sensor options such as a rain gauge, temperature and humidity sensor

Agri-Tech Demo Farm soil Fields

Search

Name	Moisture	SMD	24hr Water Usage	Irri. Trigger	Predicted Irrigation	Rainfall	Ambient Temp	Humidity
AGRI-TECH SOIL FIELD	221.82	8.18	0.10	200.00	03/03/23	N/A	N/A	N/A
ATS CARROTS	77.06	28.94	5.41	61.00	30/07/22	N/A	N/A	N/A
ATS POTATOES	77.09	23.91	3.23	66.00	31/07/22	N/A	N/A	N/A
ATS ONIONS	98.32	8.68	4.08	82.00	31/07/22	N/A	N/A	N/A

5 rows 1-4 of 4

In chart view mode - choose your selected date range – default 10 days

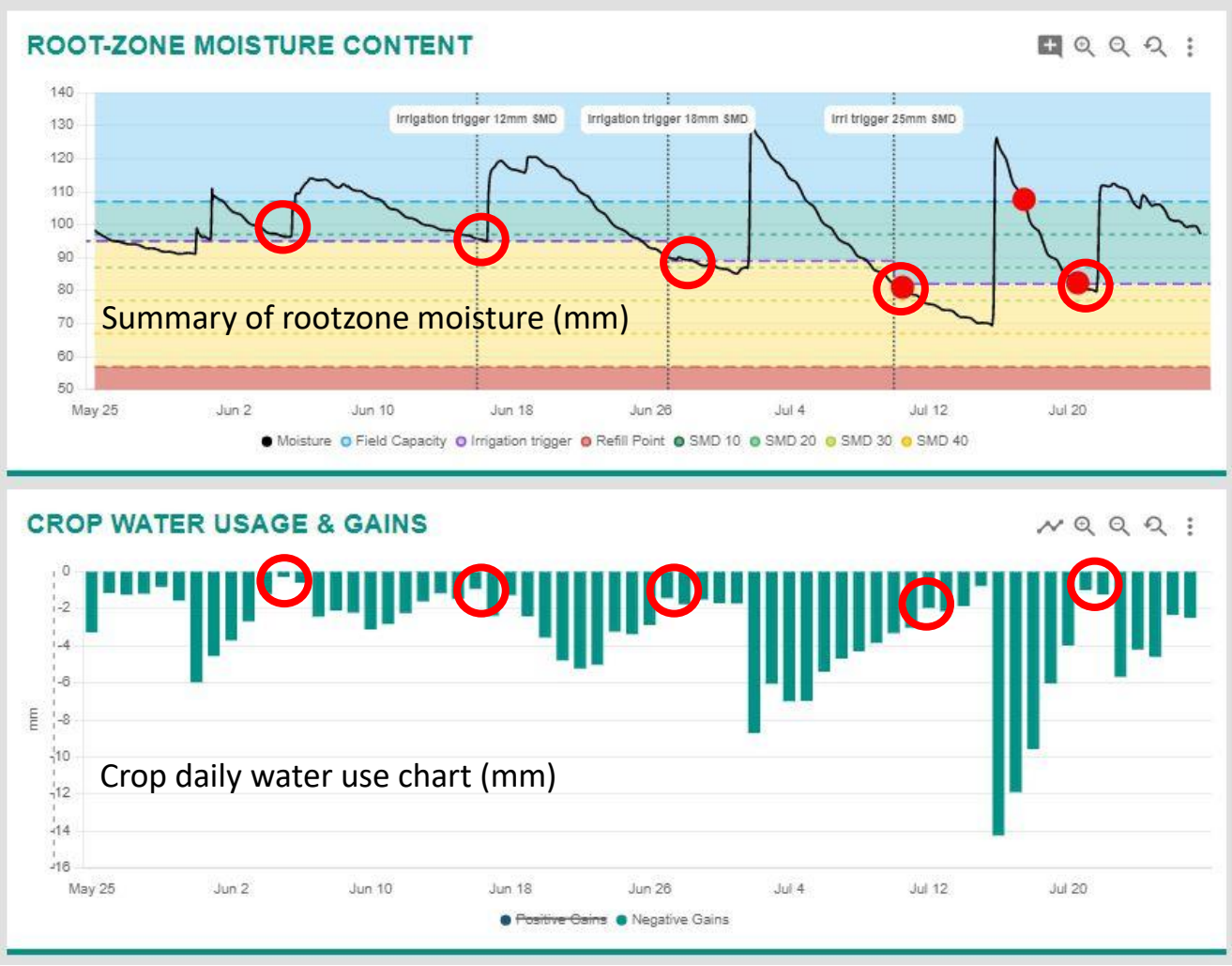
Click on the timer icon to reveal timer and date range at the bottom of the screen highlighted

Using rootzone water content chart and crop water use to determine irrigation trigger – drilled onions

Optimum crop water use declines at differing stages through the growing season as the rootzone develops (highlighted red circles)

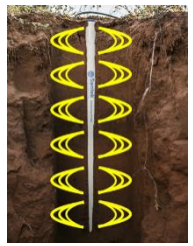
The irrigation trigger will alter accordingly, therefore ensuring optimum moisture is provided for the plant to utilise at any given point in time

The new crop daily water use chart providing key data for precision irrigation scheduling



SMART sensor data – updating every ¼ hr via the cloud directly into the client dashboard

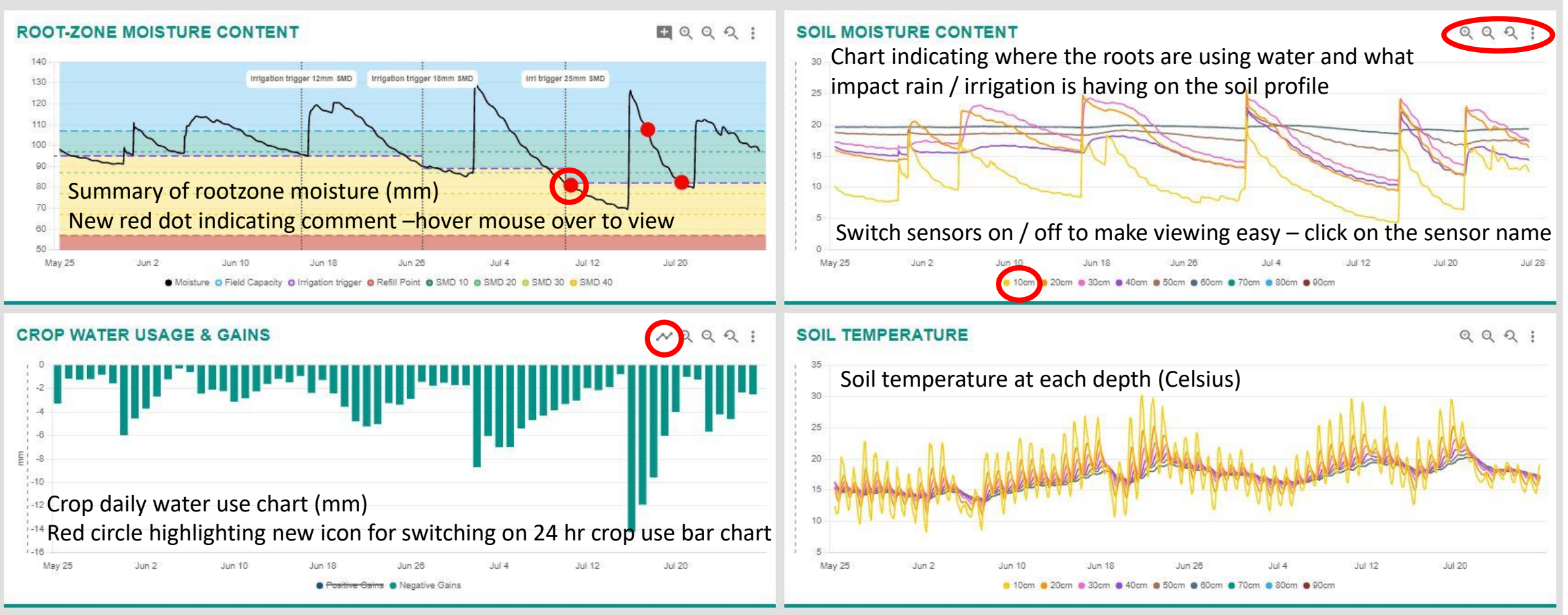
Up to date data at your fingertips to enable decisions and precise scheduling to take place



Soil charts for data evaluation

Soil conductivity chart also available – indicative of nutrient status of each soil zone

Zoom in / out / re-set & menu options



Precision Farming

Imprecise Farming!!

Irrigating large volumes every 5 – 8 days is in-precise and wasteful

Precision Irrigation

Precise control enabling you to match crop water demand

Precision Fertigation

Applying the plant's entire feed requirement in one to two applications is wasteful

Drip V Overhead

Overhead

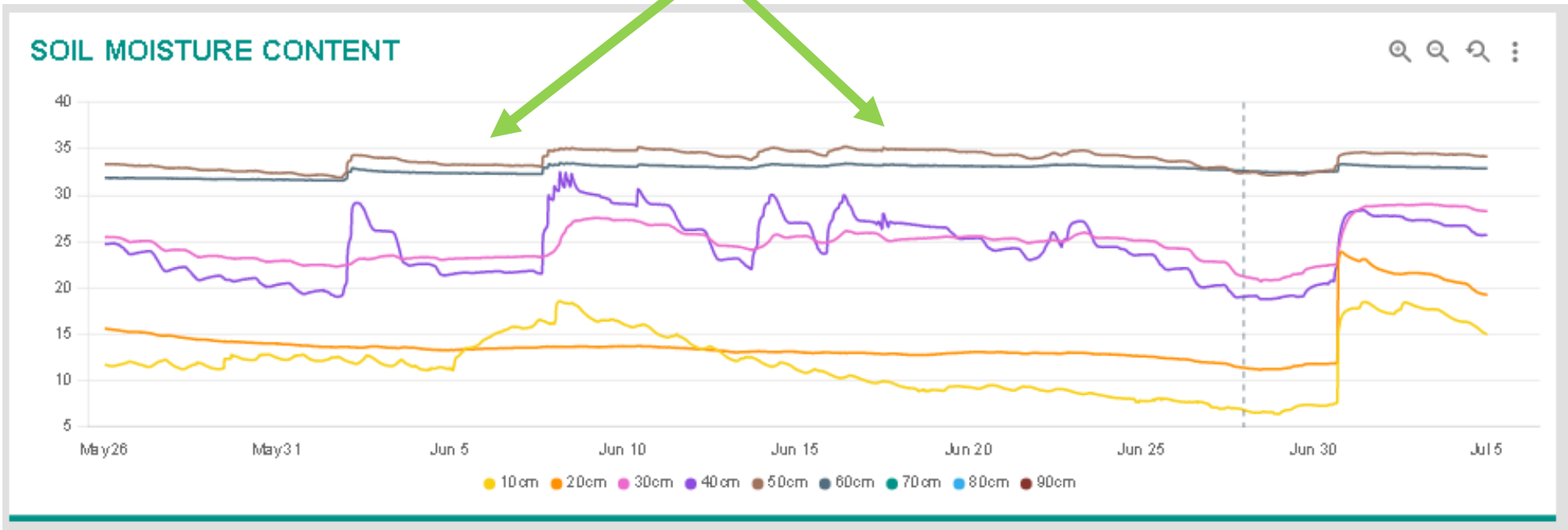
- Requires 8 to 10 bar pressure – high energy cost
- In-accurate – wind influence on spread pattern, compelled to apply large volumes – leaching of water and nutrient
- Creates a micro-climate suitable for fungal diseases
- Pesticide applications need planning around irrigation
- Evaporative losses from overhead – can be as much as 70% - wasteful of water
- Easy to move from field to field

Drip

- Precise application of water – opportunity to match crop demand
- Can irrigate and conduct other field tasks – spraying etc
- Low energy demand – system needs circa 2 bar in the field
- Can fertigate – match crop's water and feed demand with higher precision
- Water use efficiency – little evaporative loss - can cover three times the area of overhead
- Canopy stays dry – reduced disease pressure
- Can be a challenge to retrieve
- Cannot quickly move to irrigate another field

Precision Irrigation

Hitting the target – water applied to the depth of the rootzone avoiding any through drainage – eliminate wasting water and leaching of nutrients – no change below rootzone



In-precise Irrigation

Farming Services & solutions
to Agriculture & Horticulture

With fertiliser currently over £600 per ton can you afford this??