



Precision Irrigation Package for soft fruit



Precision Irrigation Package (PIP)

Fully automated irrigation scheduling system

- High performance probes (x6) constantly monitor soil moisture content
- Moisture content levels fed into a Data Logger which automatically triggers irrigation timing and duration
- Soil moisture content maintained at precise target levels which optimise Class 1 yields
- Online 'Dashboard' enables 24/7 remote monitoring and management of moisture content and run off
- System can be programmed to deliver different moisture content / run off levels at different times of the day



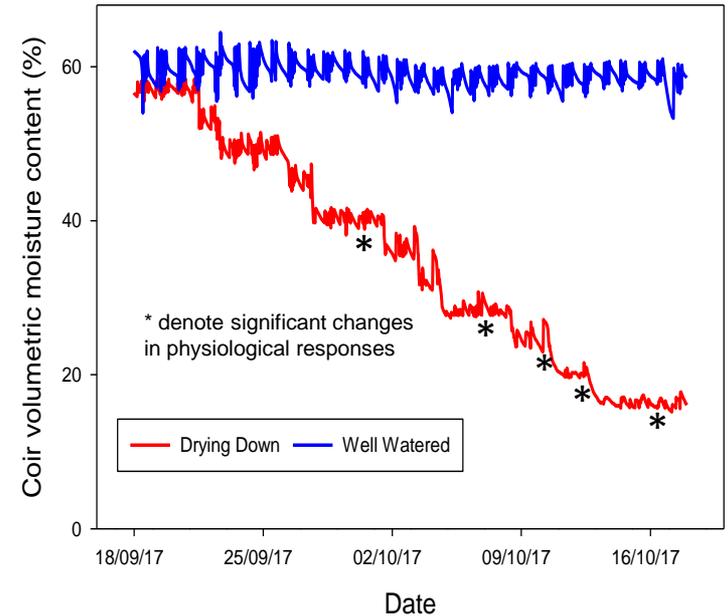
Fully installed with Technical Support from NIAB EMR

- Pre-installation water audit, system handover, operator training, 24/7 monitoring, on farm and telephone support

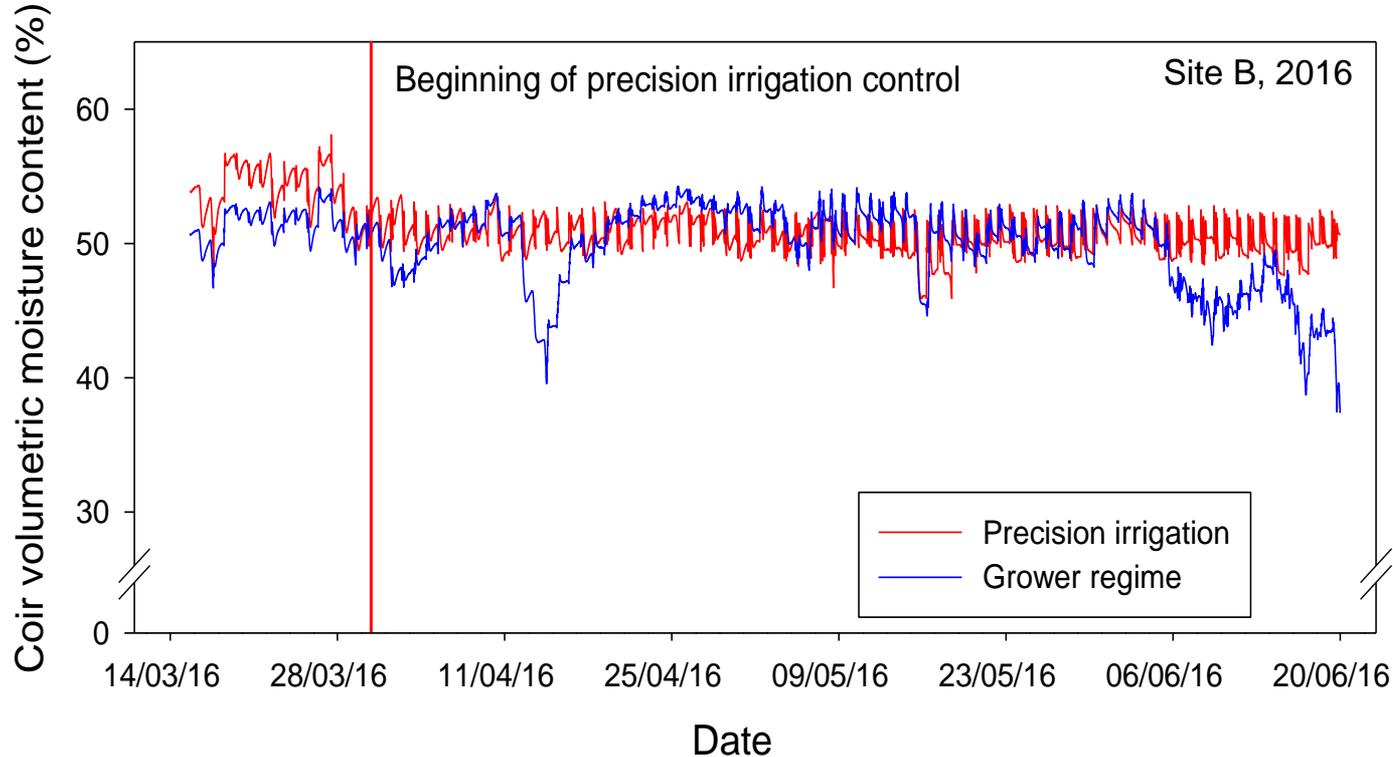


Coir Moisture Content Set Points established for each crop variety to ensure Class 1 yields are optimised

- Well-watered and Drying Down treatments were applied to cropping plants using the PIP
- Coir Moisture Content (CVMC), Relative Humidity, air temperature, solar radiation and vapour pressure deficit recorded every 2.5 min
- CVMC gradually reduced in the Drying Down treatment over a 3-4 week period
- Physiological measures (stem water potential, photosynthesis, stomatal conductance, fruit expansion rate), yield and quality (SSC, firmness) recorded at each CVMC value
- The CVMC that triggers a statistically significant change in each measured parameter, compared to well-watered values, was identified



PIP maintains moisture content at target levels to optimise yields



- Short-term coir water deficit in April reduced total CC Class 1 yields by 7%

Grower Added Value: Improved Irrigation Performance and Financial Returns

- ♦ **Fully automated 'Irrigation on demand'**: ensures moisture content levels are consistently maintained at target Set Point levels which optimise water productivity and yields
- ♦ **Optimised yields**: getting exactly the right amount of water to the plant when it's needed means no over or under watering:
 - ♦ 4 to 10 % higher yields v. manual scheduling in verifiable farm trials
- ♦ **Reduced inputs / costs**: improved water productivity and reduced run off (5 % or less) typically means 20% + less water, energy, and fertiliser costs
- ♦ **Increased Income**:
 - ♦ 20% reduction in input costs (£2,400 k/Ha.) = approx. 1 Year Pay Back
 - ♦ Basis yields of 35 tonne / ha., a 5% yield increase generates +£6k in net income per ha *i.e.* an additional £24k p.a. for each PIP installed

Grower Added Value: Improving Water Security and Enabling Future Growth

Licensing of Trickle: New Authorisations / Transitional Arrangements

- New licensed volumes will be restricted to 'peak historic abstractions' over the previous 7 years up to Jan 2018
- Any additional abstracted volumes after Jan 2018 will require a new licence which is likely to be 'more restrictive' than under the transitional system
- Growth may be restricted unless alternative sources of water can be secured
- Reservoirs involve high capital costs and are subject to planning constraints

PIP provides improved water availability and sustainable growth

- Water savings of up to 20% + with the PIP frees up additional irrigation water enabling a 20% increase in crop area without increasing abstraction volumes
- The Environment Agency have confirmed that as this involves no increase in the amount of water abstracted from a water body, no new licence is required

Grower Added Value: Maintaining Irrigation Expertise

- Risk of losing key irrigation staff / expertise, and the lack of irrigation training courses, are seen as key issues for growers ('WATERR' Project Research)
- Concerns accentuated by evidence of a shortfall in migrant workforce post the Brexit vote

PIP reduces the risk:

- Automated, 'irrigation on demand' provides a fool proof system which is less dependent on operator scheduling expertise
- On Farm support and monitoring provided by NIAB EMR specialists
- Demonstrations, workshops and training via the WET Centre
- Time and labour cost savings of up to 50% compared to manual monitoring and scheduling

Grower Added Value: New Crops, Technologies and Investment Opportunities

Raspberries

- ◆ PIP highly effective in raspberries:
 - ◆ Large volumes of water and frequent irrigation required
 - ◆ Performance being confirmed in BGG grower trials in 2018

New Technologies

- ◆ PIP provides a future proof platform to incorporate the next phase of NIAB EMR research e.g. incorporation of environmental conditions, ‘precision fertigation’ and yield prediction within the PIP system

New Investments

- ◆ PIP “water sustainability” supports PO Operational Programme applications