

The Importance of Irrigation to Growers



In depth interviews with 110 irrigators across the South East of England have shown that:

- Over 70% of growers regard irrigation as 'Crucially Important' to their business
- There is typically a 2 to 4 fold difference in water use efficiency between growers
- There is strong correlation between optimising irrigation water use and financial returns

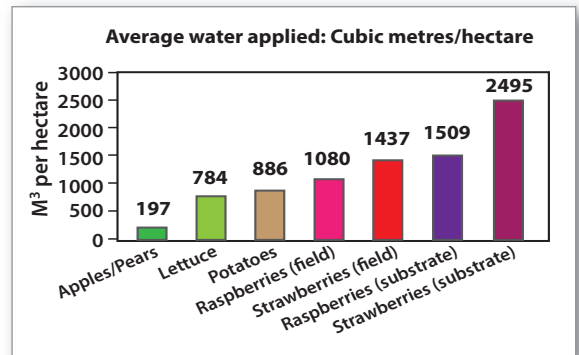
substrate-grown strawberries

The Challenge of Substrate Irrigation

Although trickle or drip systems are highly efficient methods of irrigation delivery, they must meet 100% of the crop's water requirements. The intensive nature of substrate production, and the extended growing period, means that substrate crops use significantly more water per hectare than field and spray irrigated crops.

With the expansion of substrate production, there has been a major growth in water used for trickle irrigation. In Kent, where the majority of soft fruit growers are based, volumes

of water used for trickle irrigation have doubled in the past 5 years, resulting in demand for irrigation water growing by a third. With the pending removal of the extraction licence exemption for trickle irrigation, growers face potential restrictions on water availability, and the need to improve water use efficiency will be critical.

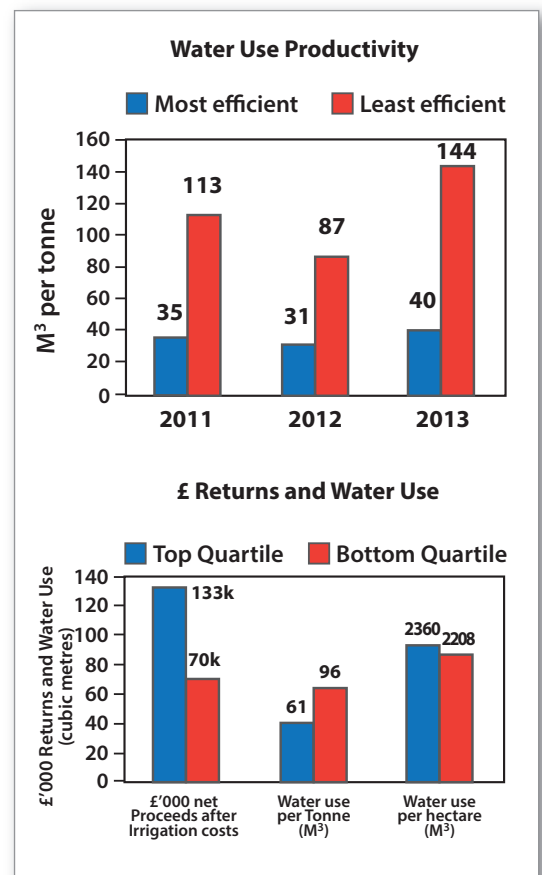


Strawberry Water Use Efficiency and Financial Returns

The WATER R research found that on average substrate strawberry growers used 82 cubic metres of water per tonne of crop produced. But there was a 3 fold difference in water use productivity between growers, ranging on average from 35 up to 115 cubic metres per tonne.

There was also a strong correlation between water use efficiency and financial returns:

- Top Quartile growers in terms of financial returns achieved net proceeds after irrigation costs of £133,000 per hectare on average, compared with £70,000 for Bottom Quartile producers
- On average Top Quartile producers used 36% less water per tonne than Lower Quartile producers. However, they also used 7% more water per hectare. This may be due to differences in planting density, but it also suggests that optimising water volumes as well as productivity are key factors in maximising yields and financial returns
- As well as securing 60% higher yields, Top Quartile producers also achieved 7% higher prices on average than Lower Quartile producers, confirming that optimising irrigation volumes also delivers benefits in terms of fruit quality and marketability



Irrigation Best Practice: Grower Perspectives

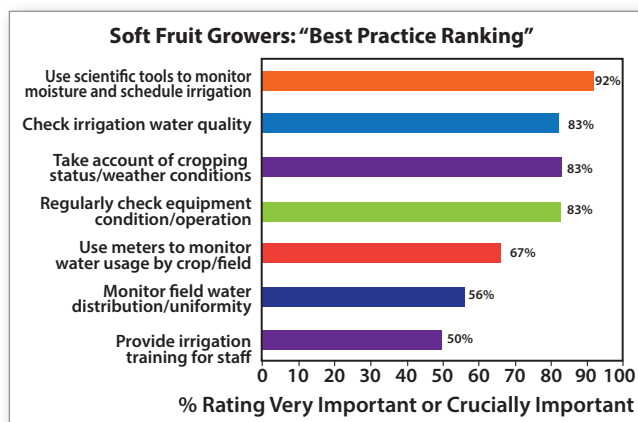
'Best Practices' regarded as most important in optimising irrigation performance and financial returns:

- Using scientific tools to monitor soil and substrate moisture levels to optimise scheduling was ranked as 'very' or 'crucially important' by over 90% of growers. There is, therefore, extensive use of probes and computerised systems to optimise irrigation frequency and duration
- Taking account of crop status and weather conditions was similarly rated by 83% of growers.

However, growers need better integration of these technologies with other scheduling and application systems

- Regularly checking irrigation equipment condition and operation was also highly ranked by over 80% of growers. Equipment malfunction can be extremely costly and growers emphasised the importance of using the latest

systems and undertaking regular monitoring and servicing

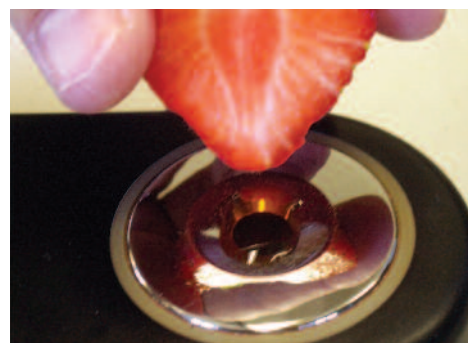


Optimising Water Use in Substrate Strawberries – Latest Research Findings

In addition to improving water use efficiency, effective irrigation scheduling will also deliver savings in fertiliser and energy costs. Scientific research and on-farm trials have shown that precision irrigation can increase marketable yields due to a reduction in fruit waste during production, and aspects of berry quality including % BRUX, flavour, firmness and shelf-life can also be improved.

Many soft fruit growers have high employee costs and the rise in the minimum wage announced in the post-election budget will impact greatly on profit margins unless remedial steps are taken to improve the efficiency of production and harvesting. Research at East Malling Research (EMR) has shown that strawberry canopy areas can be manipulated using precision irrigation

and that plant leaf area can be reduced by 40% without affecting Class 1 yields or quality. In addition to reducing disease pressure and improving light penetration, the reduced canopy makes fruit more visible and can, therefore, potentially facilitate speedier picking and less time spent harvesting.



Summary

Irrigation is complex and time consuming. Maximising returns requires optimisation of many variables, in particular substrate moisture monitoring, irrigation frequency and duration. As one grower put it:

"It's about getting the right amount of water to where it's required at the right time."

This factsheet highlights the specific irrigation performance of substrate strawberry growers participating in the WATERR Project 'Irrigation Business Review' interviews and covers 24 irrigated crops over the period 2011 to 2013.

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