

The Importance of Irrigation to Growers

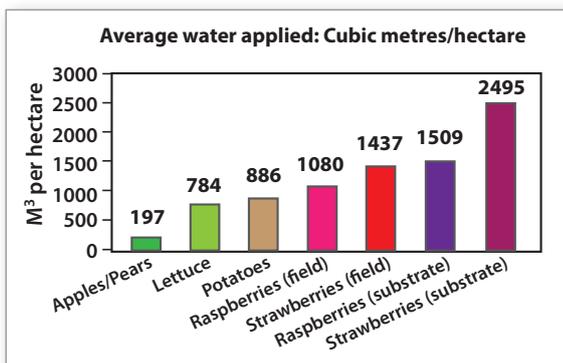
In depth interviews with 110 irrigators across the South East of England have shown that:

- 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

field raspberries

Raspberries need lots of water

The **WATER R** Project research confirmed that raspberries, like other soft fruit crops, are particularly demanding in terms of irrigation water requirements with average use for field raspberries of nearly 1100 cubic metres per hectare.

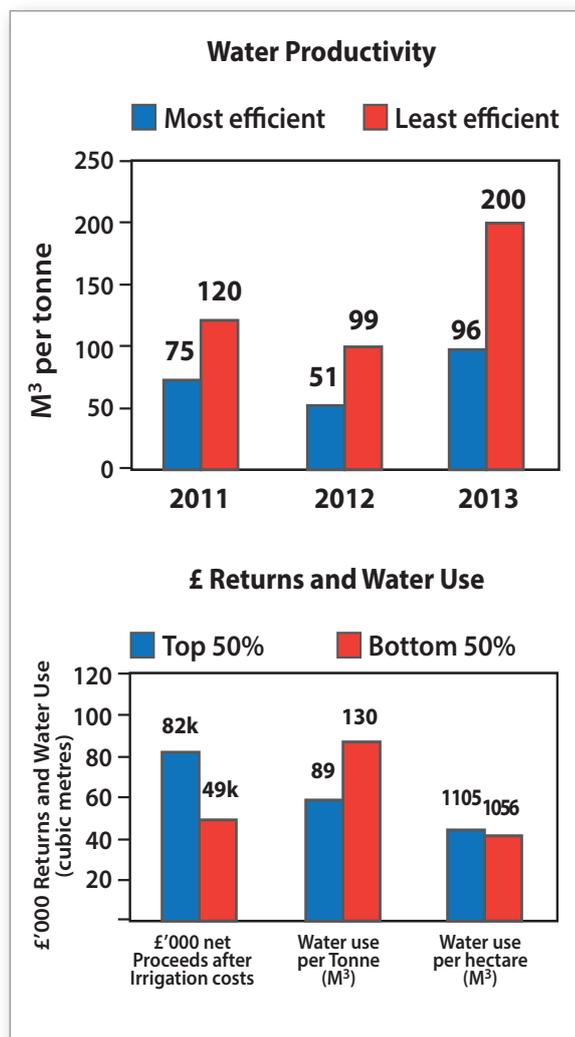


Raspberry Water Use Efficiency and Financial Returns

Likewise, field raspberries required a higher volume of water per tonne of crop produced than any of the other crops in the research, using on average 114 cubic metres per tonne. However, as with substrate grown raspberries, there was nearly a 2 fold difference in irrigation water productivity on average between growers, ranging from 74 up to 140 cubic metres per tonne produced.

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

- The Top 50% of growers in terms of financial returns achieved on average net proceeds after irrigation costs of £82,000 per hectare, compared with £49,000 per hectare for other producers
- On average, the Top 50% producers used 32% less water per tonne of raspberries produced than other producers. However, they also used 5% more water per hectare. This may reflect differences in planting density, but it also suggests that optimising water volumes per se, as well as water use efficiency, are key factors in maximising yields and financial returns
- At 13 tonnes per hectare on average, yields of the Top 50% producers were 50% higher than those of other growers. But they also achieved 8% higher prices per tonne on average, suggesting that optimising irrigation volumes also helps to deliver better fruit quality and marketability



Irrigation Best Practice: Grower Perspectives

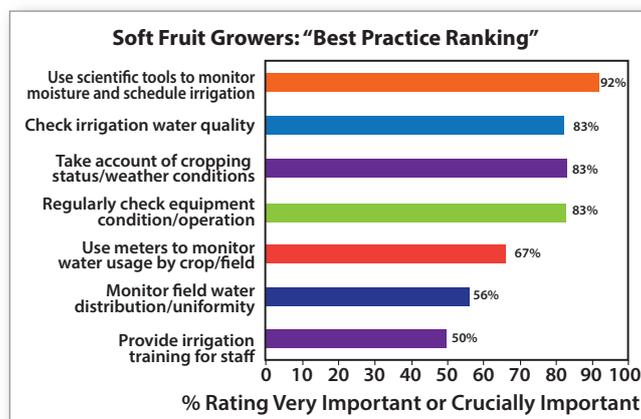
'Best Practices' regarded as most important in optimising irrigation performance and financial returns:

- 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 Field-Grown Raspberries – Latest Research Findings

The irrigation challenges faced by growers of soil-grown raspberry crops are similar to those faced by growers of substrate crops; too much water and fertiliser promotes excessive cane vigour which makes crop management difficult and harvesting costly, whereas a sub-optimal supply can limit marketable yields and the consistency of berry quality.

Improved on-farm management of water and fertiliser inputs is needed to optimise productivity, berry quality and environmental sustainability of the sector. Improving the efficiency of production and harvesting will become increasingly important for many fruit growers following the announcement by Government of the new National Living Wage in the Summer Budget 2015. To help to improve on-farm

irrigation scheduling decisions, information on changes in soil water content or availability at different depths in the rooting zone throughout each day is needed. The technologies and approaches already developed and tested for soil-grown strawberry crops are directly transferable to field raspberry crops. Changes in soil moisture can be monitored remotely and summary data made available to growers using either a web-based application or via a smartphone App. This information can be used by growers to optimise the frequency and duration of irrigation events so that cane vigour can be managed effectively without compromising marketable yields.

In addition to improving on-farm water use efficiency, effective

irrigation scheduling will also deliver savings in fertiliser and energy costs. The precision closed loop system developed for substrate-grown raspberry crops also has potential to be used to impose targeted root-zone soil moisture deficit stresses to reduce cane vigour without affecting marketable yields or quality.

Summary

Irrigation is complex and time consuming. Maximising returns requires optimisation of many variables, in particular soil 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 field raspberry growers participating in the WATERR Project 'Irrigation Business Review' interviews and covers 12 irrigated crops over the period 2011 to 2013.

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