

The Importance of Irrigation to Growers

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

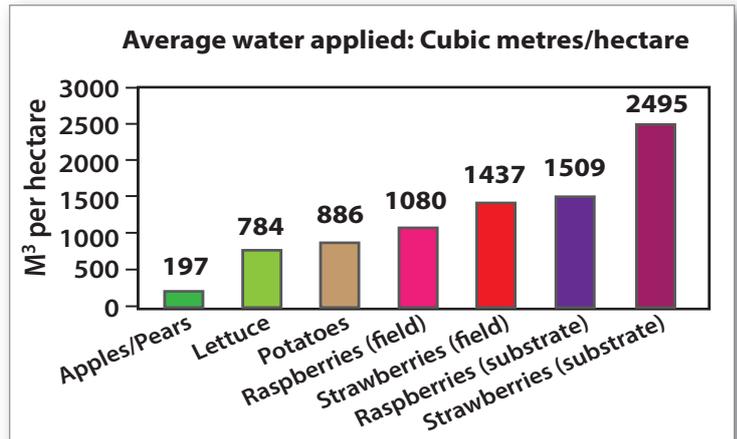
- Over 70% of growers regard irrigation as 'Crucially Important' to their business
- There is typically a 2 to 4 fold difference in water use efficiency between growers
- Over two thirds of growers wish to understand how their own performance compares with other growers and which 'Best Practice' technologies and techniques have the greatest impact on water use performance and financial returns

potatoes

Potato Water Use and Weather Conditions

In potato crops, the amount of irrigation water applied depends very much on weather conditions. Thus the high rainfall experienced in 2012 meant that average water use of 560 cubic metres per hectare, was half of that

used in 2011 and 2013. Average use of around 900 cubic metres was below that for soft fruit crops which mainly use trickle irrigation.



Water Use Efficiency and Financial Returns

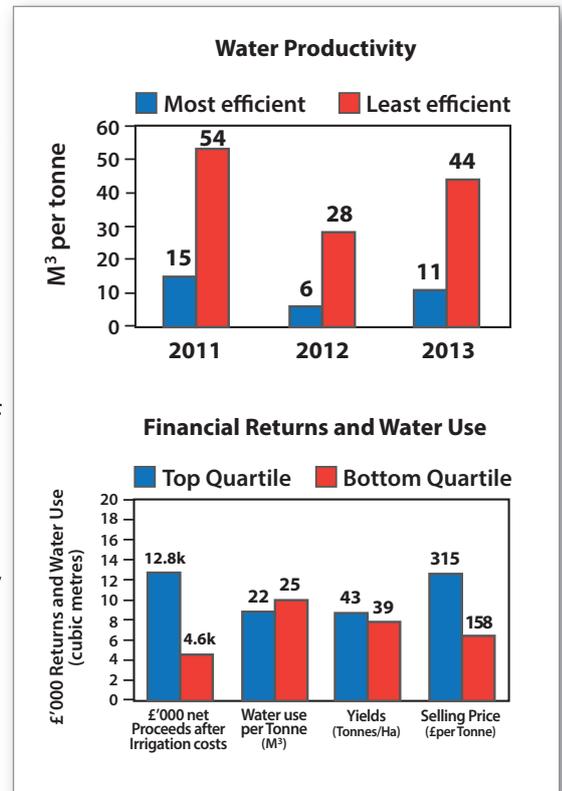
Growers were asked to estimate the impact that irrigation has on their financial performance in terms of increased yields and better produce quality and prices. After deducting the costs of irrigation, potato growers estimated that irrigation accounts for some 48% of their Net Proceeds based on:

- A 32% increase in crop yields compared with not irrigating
- A 32% increase in selling prices resulting from improved produce quality, in particular better skin finish and larger baking size tubers

On average, potato growers used 22 cubic metres of water per tonne of crop produced. However, there was typically a 3 to 4 fold difference in water productivity ranging on average from 11 to 42 cubic metres per tonne.

Although not the only factor determining outputs and profitability, the data provided by growers about their actual performance confirmed a strong correlation between irrigation water use efficiency and financial returns:

- The Top Quartile growers in financial terms achieved net proceeds after irrigation costs of £13,000 per hectare on average, compared with £5,000 for Bottom Quartile producers
- On average, the Top Quartile growers used 12% less water per tonne produced than Bottom Quartile producers
- Top growers also achieved 10% higher yields and significantly higher prices - £315 per tonne on average, compared with £158 per tonne for Bottom Quartile growers



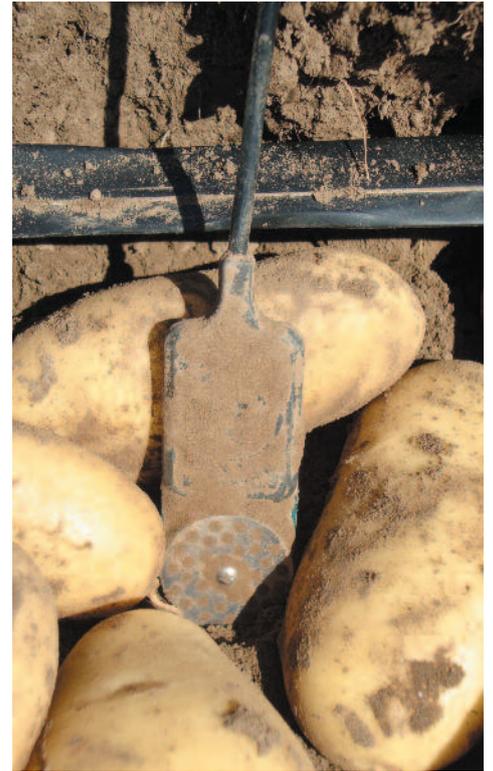
Irrigation Best Practice: Grower Perspectives

'Best Practices' mentioned by potato growers as most important in optimising irrigation performance and financial returns:

- Over 75% of growers stated that taking account of soil moisture content, forecast weather conditions and crop growth status were 'very important' or 'crucially important' in determining when and how much to irrigate
- Ensuring that irrigation equipment is working to specification is also critical: 90% of growers regarded regular monitoring of equipment condition and operation as the most important Best Practice activity, while 75% mentioned that monitoring water distribution and

uniformity were 'very' or 'crucially' important

Many leading growers, use probes to monitor moisture content as well as on-farm weather stations and specialist crop and weather monitoring advice to support their scheduling. Using water meters to monitor in field water use is also regarded as key by over 60% of growers but a lack of water meters meant that a number of producers were unable to provide information on their water use efficiency and impact. Ensuring that staff understand how to get the best out of irrigation systems was also emphasised, with 50% of growers mentioning that provision of appropriate staff training is 'very' or 'crucially important'.



Optimising Water Use in Potatoes - Latest Developments

Over the last 5 years a number of leading potato processors have been working with their growers in the UK and across Europe to utilise drip irrigation in processing potato crops. The primary aim is to reduce water use in growing the crop and savings of 30-50% have been achieved when compared to rain-gun irrigated crops. This water saving means a significant reduction in pumping costs. As drip can be fully automated over large areas, savings in the number of operators required to run the irrigation have also been seen.



In addition the drip lines can be used to apply fertiliser and this has helped some growers improve yields by as much as 30% when compared to a rain-gun.

Summary

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

"We need to develop a grower facing decision support system that integrates the best of existing and new technologies for monitoring, scheduling and application."

This factsheet highlights the specific irrigation performance of potato growers participating in the WATERR Project 'Irrigation Business Review' interviews and covers 41 irrigated crops over the period 2011 to 2013.

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