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Kent Rural PLC Conference 26th November 2015 'Building Prosperity in Kent'

'WATERR' Project Findings and Support

Opportunities and Challenges for the Irrigation Sector in South East England



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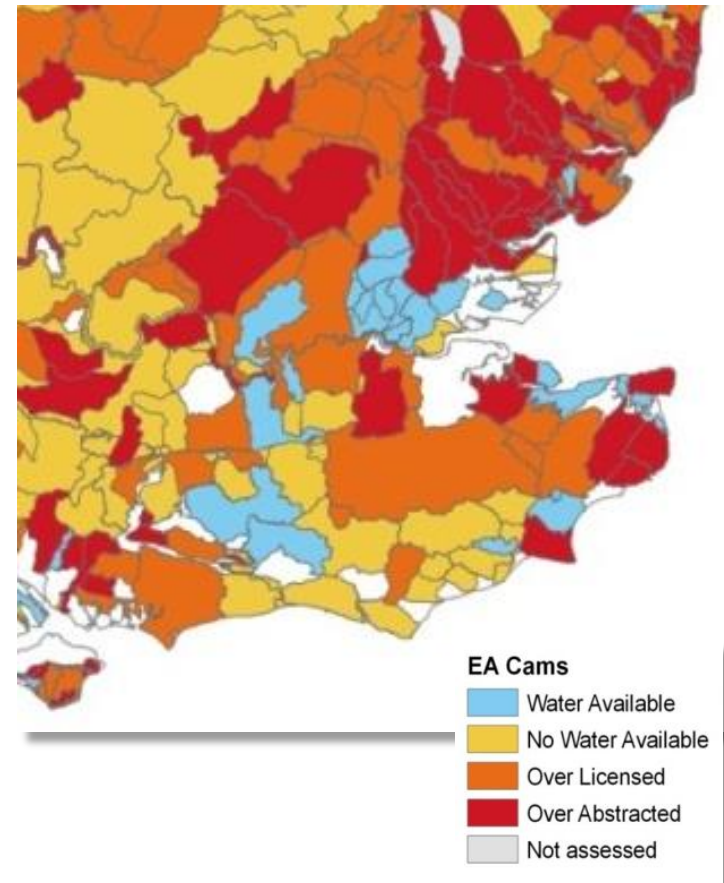
'WATERR' Project Background

Irrigation is critical for food security:

- 70% increase in food output needed by 2050 (FAO)
- Irrigation = 20 % of agricultural land use but 40% of global food production

South East catchments / habitats under pressure:

- Irrigators = largest users of direct water abstractions (rivers / boreholes).
- Many catchments already 'Over Abstracted' or 'Over Licensed' (EA)
- EA expect 25% increase in water use by 2020 and most SE catchments 'Over Abstracted' by 2050





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'WATERR' Project Objectives



To support South East irrigators to improve their profitability and competitiveness by improving water availability and use efficiency

- Improve irrigation productivity / returns by identifying and promoting irrigation 'Best Practice' and leading technologies to:
 - Increase yields
 - Improve produce quality / prices
- Identify opportunities to improve water availability and catchment management
- Improve the environmental footprint of South East river catchments



'WATERR' Project

Irrigation Business Reviews

In depth interviews with 110 growers (30% of South East irrigators / 70% of total irrigation water use) to :

- Assess current water availability and irrigation use efficiency
- Impact of irrigation on production / yields, pricing and financial returns
- Identify 'Best Practice' technologies and techniques
- Define Grower Support Needs and Priorities
- Agree '**WATERR**' Project Support Programme



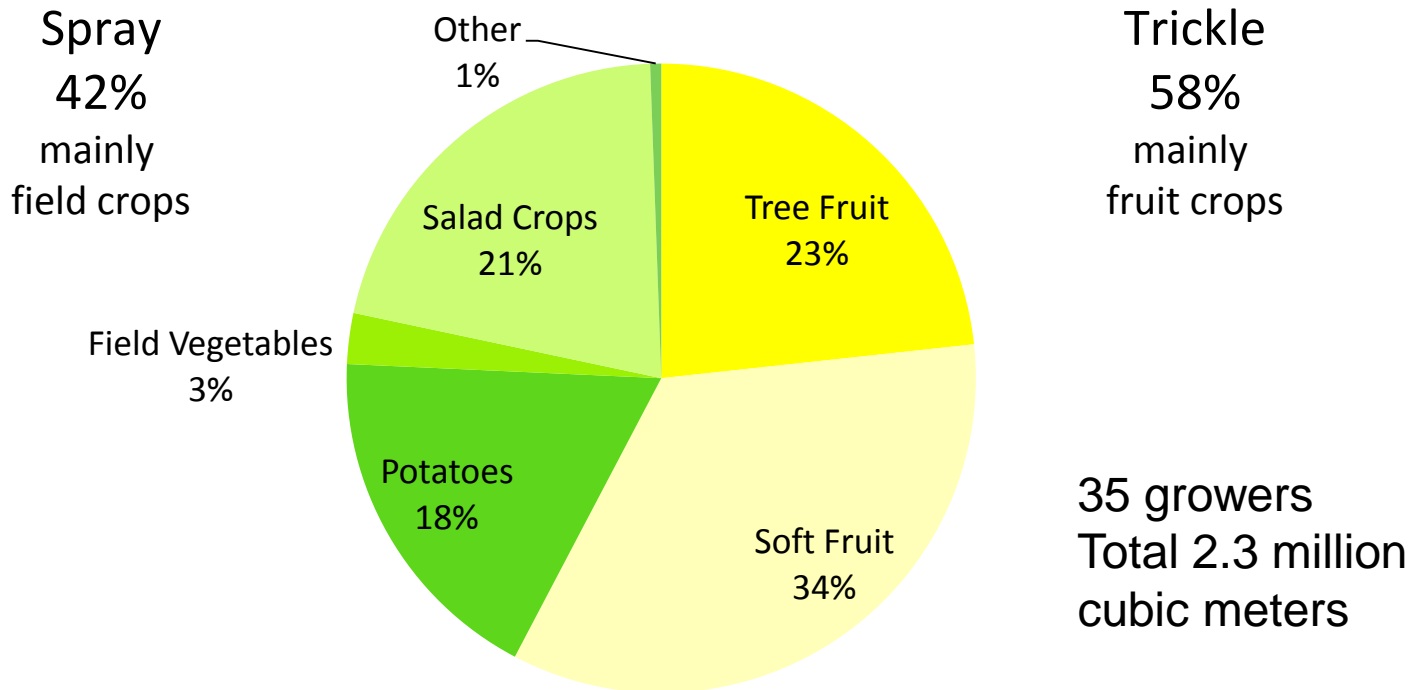
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'WATERR' Project Irrigation Business Reviews



Kent Growers – Main irrigated crops % irrigation use (by volume)





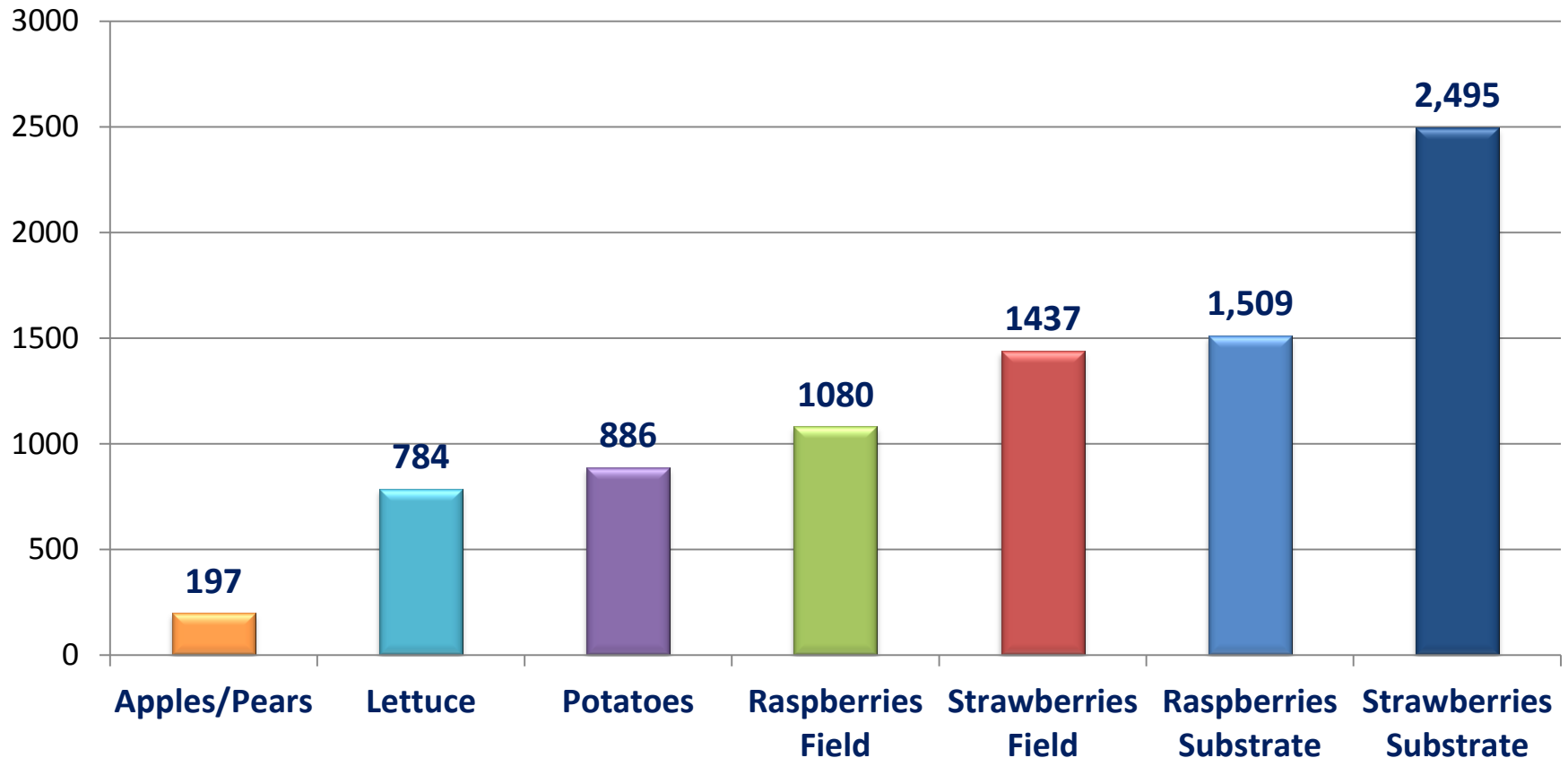
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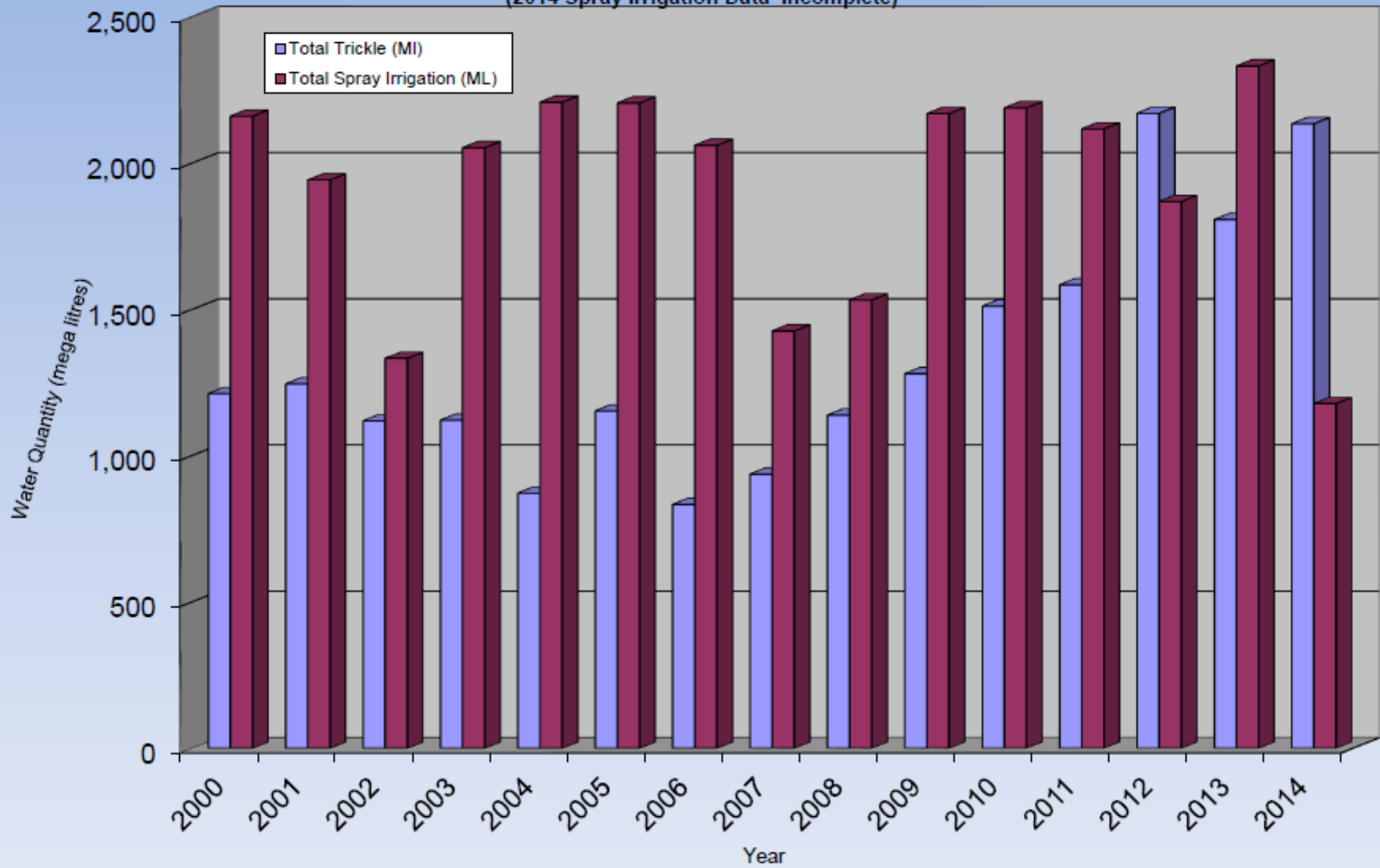
'WATERR' Project Findings – Water Availability



Average Water Use by Crop : 2011-2013 Cubic Metres per Hectare



Trickle & Spray Irrigation Trend Comparisons
(2014 Spray Irrigation Data Incomplete)





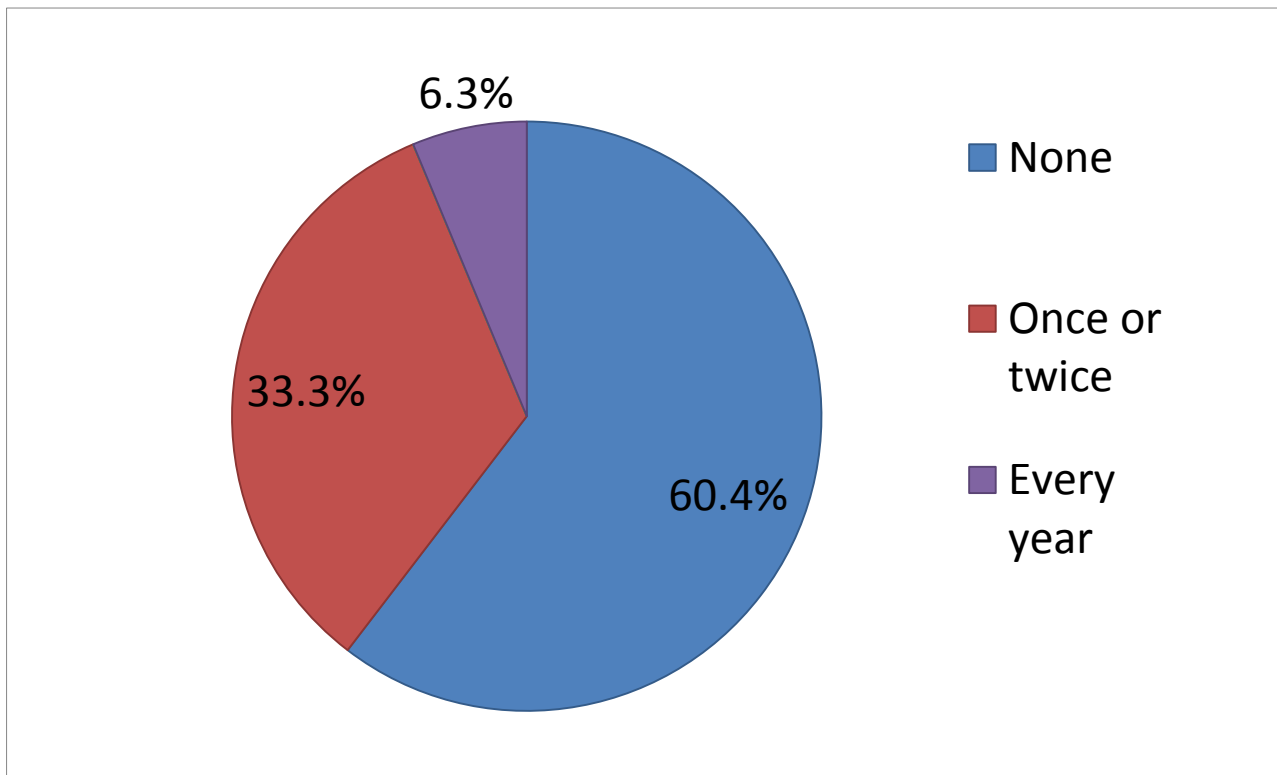
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'WATERR' Project Irrigation Business Reviews



Impact of Limited Water Availability on Irrigator Businesses in Past 5 Years – Kent Irrigators





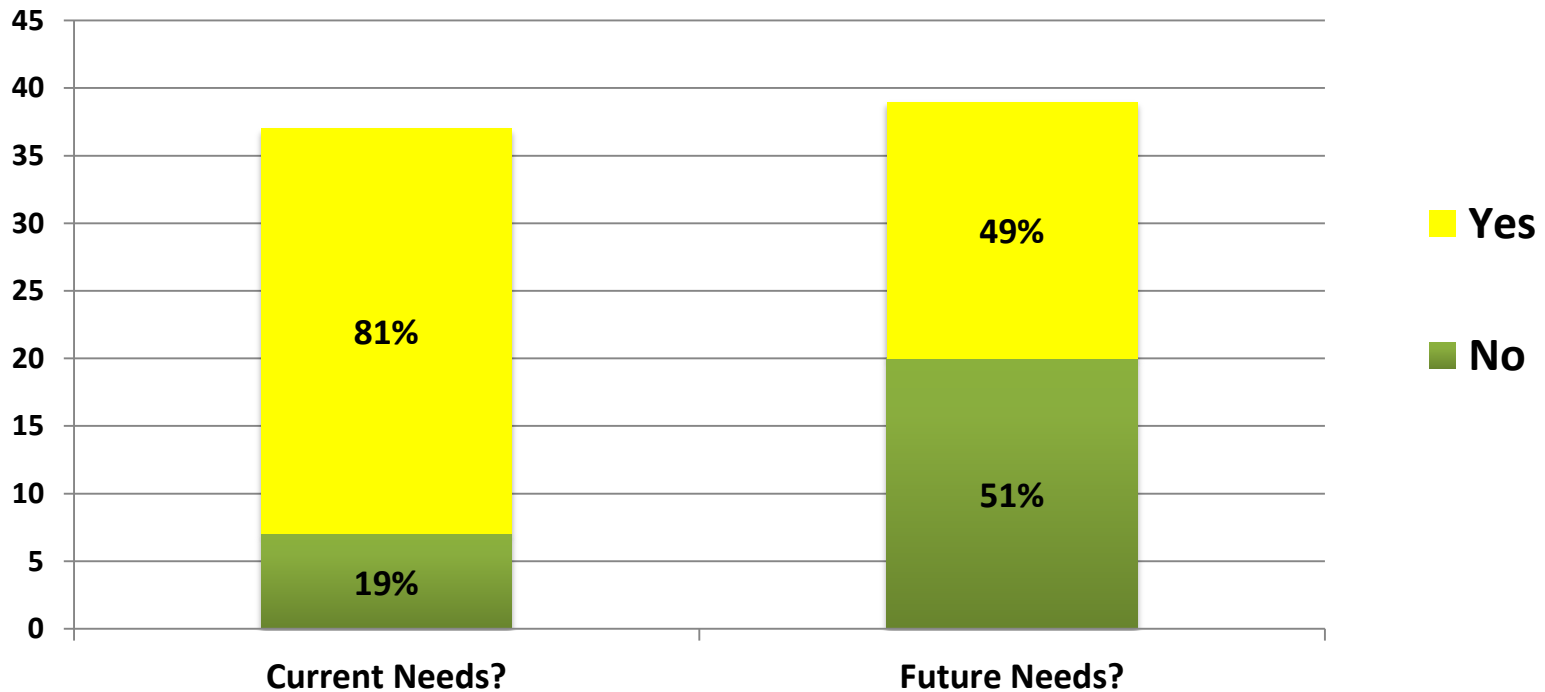
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'WATERR' Project Irrigation Business Reviews



Adequacy of Abstraction Licence for Current & Future Needs Kent Irrigators



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Findings : Water Availability

Summary

- **Water restrictions already impacting 40% of Kent growers**
- **Major growth in substrate production / trickle irrigation but putting increasing pressure on supplies**
- **Abstraction Reform planned for 2020 a major concern:**
 - **If licensed volumes are restricted, or for limited periods only, production will be impacted and future investment decisions very difficult**
 - **Trickle irrigators particularly concerned about the removal of their licensing exemption**
- **Over 30% of growers are planning to increase capacity through new reservoirs and rainwater harvesting.**
- **Improving water use efficiency is seen as the best way of addressing water shortages and security of supply.**



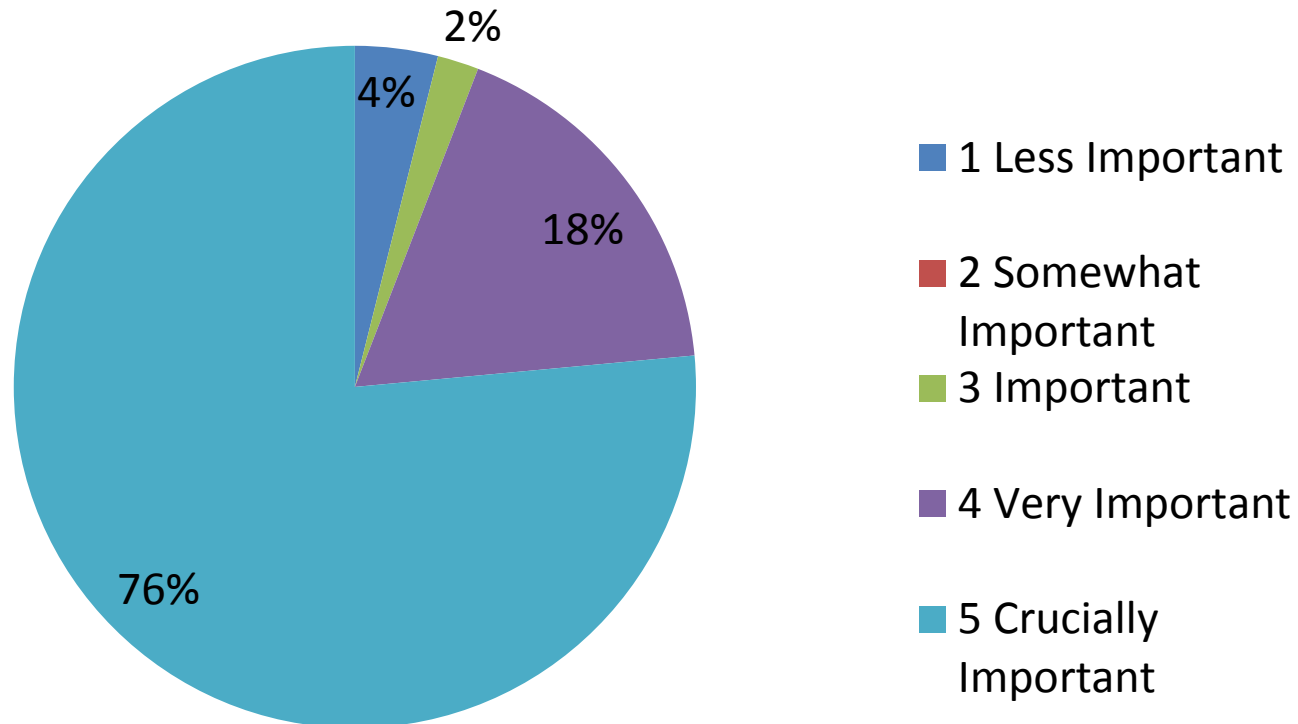
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'WATERR' Project Irrigation Business Reviews



Importance of Irrigation to Business Performance Kent Irrigators





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'WATERR' Project

Findings : Irrigation Performance and Returns



Impact of Irrigation on Financial Returns

£ per Hectare

**Financial Benefit of Irrigation:
Grower Estimates**

	Irrigation Cost		Gross Proceeds	Financial Benefit of Irrigation: Grower Estimates	
	Average	Range	Average	Average	% of Proceeds

Potatoes

791	108 - 3,636	8,084	3,904	48%
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Strawberries :

- Field	1,024	209 - 1,860	74,371	31,368	42%
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- Substrate	2,867	970 - 5,282	106,383	106,383	100%
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Raspberries:

- Field	1,138	554 - 1,800	66,464	51,291	77%
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- Substrate	2,527	840 - 5,014	74,091	74,091	100%
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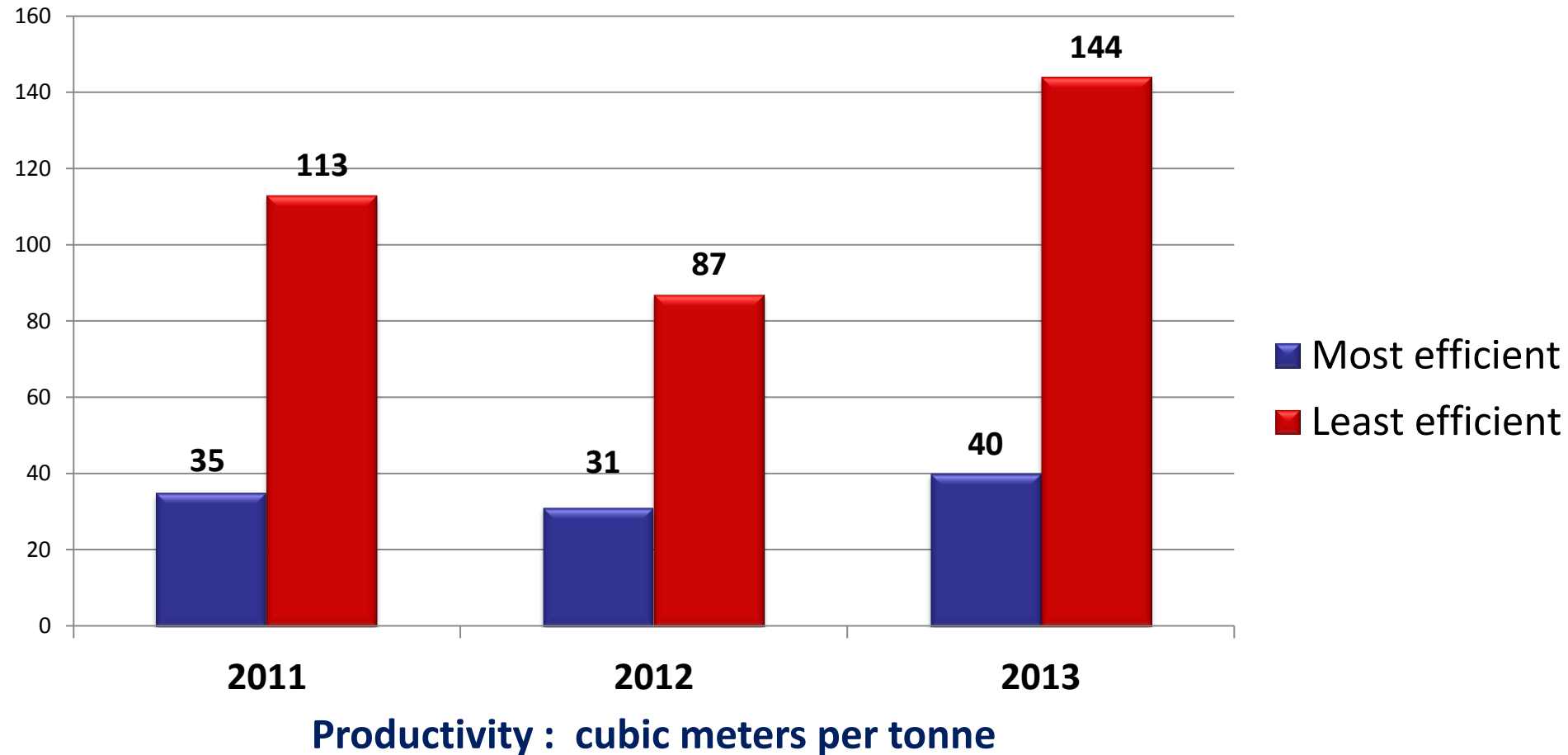


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'WATERR' Project Findings : Irrigation Performance and Returns



Water Use Efficiency - Substrate Strawberries





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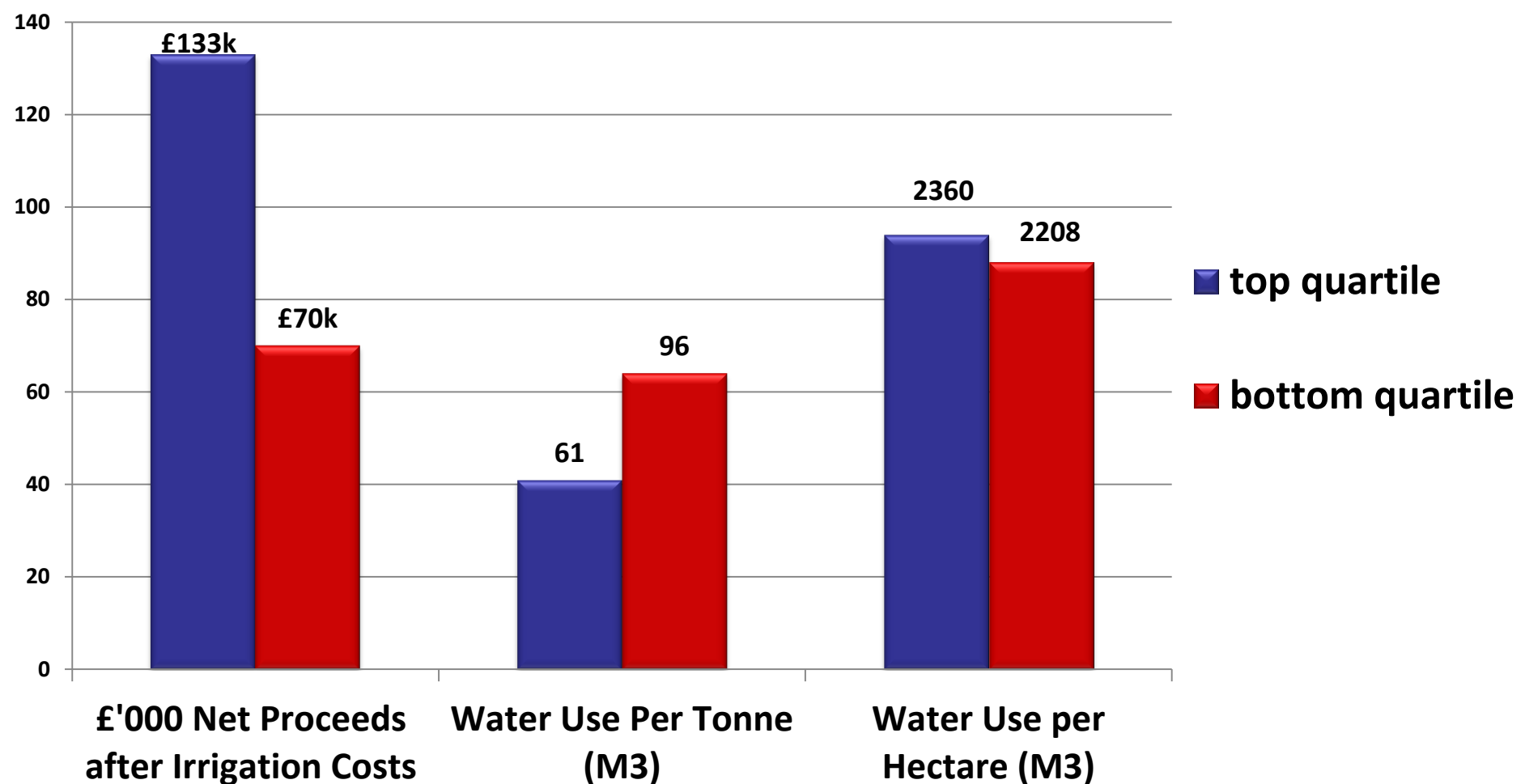
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Findings : Irrigation Performance and Returns



£ Returns and Water Use - Substrate Strawberries





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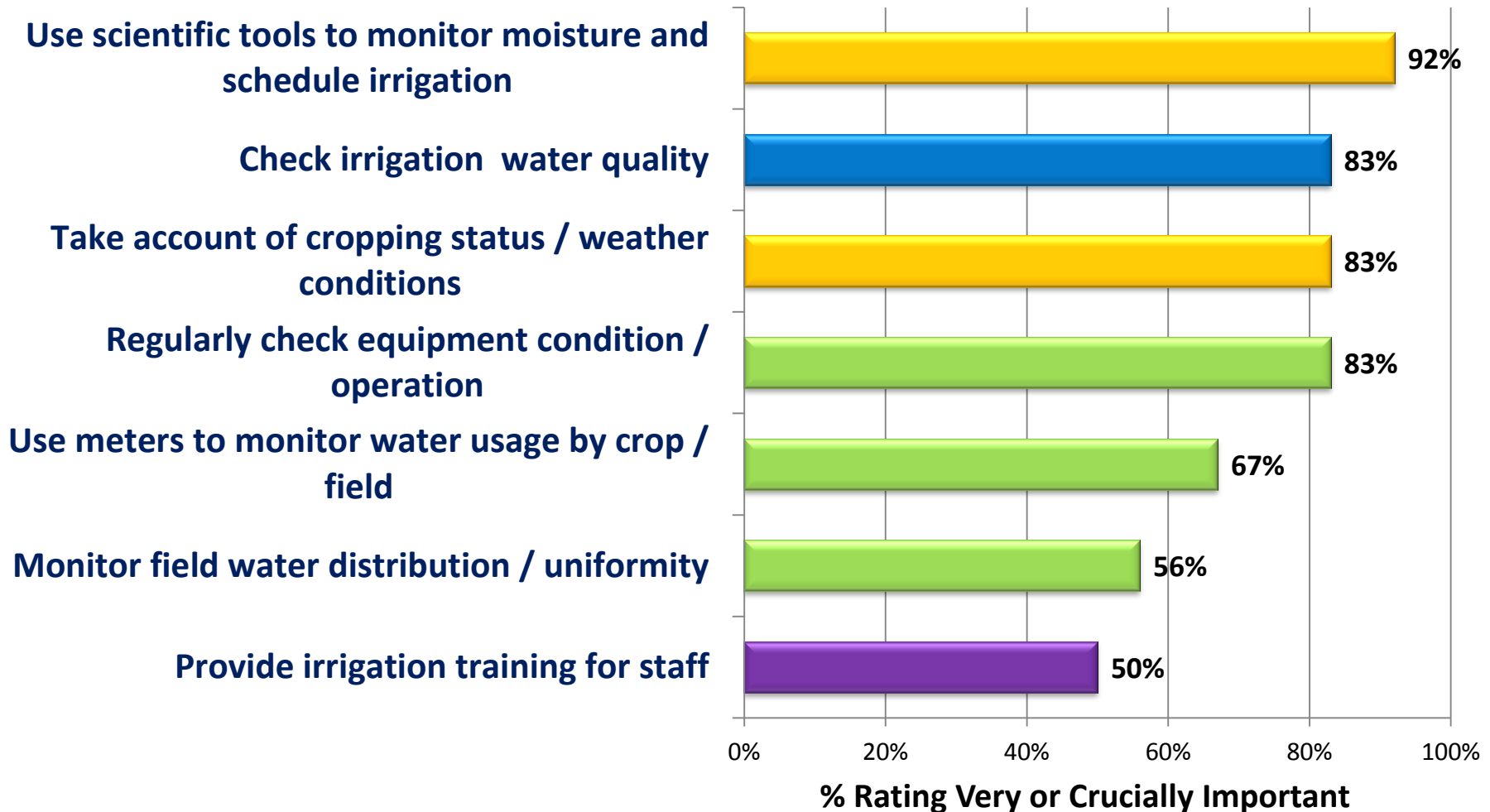
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'WATERR' Project

Findings : Irrigation Performance and Returns



Soft Fruit Growers : 'Best Practice' Ranking





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'WATERR' Project

Findings : Irrigation Performance and Returns



Summary

- **2 to 4 fold difference in water use efficiency / productivity**
- **Growers of field crops estimate that irrigation accounts for up 75 % of gross £ proceeds .**
- **Strong correlation between irrigation use efficiency and financial returns :**
 - **Monitoring soil / substrate moisture content to optimise water scheduling / volumes critical to maximising yields**
 - **Optimisation irrigation also delivers improved produce quality / prices:**
 - **shelf life / taste in soft fruit**
 - **fruit size / uniformity in tree fruit**
 - **tuber size / skin finish in potatoes**

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Irrigation Business Reviews

Irrigator Support Needs / Priorities

Ranking - % of Irrigators Rating Very or Crucially Important

1. Learning about planned changes to Abstraction Licensing System (85%)
2. Understanding which technologies/ techniques have the most impact on irrigation water use efficiency and financial returns (70%)
3. Collaborative opportunities to improve catchment management and water demand / supply balance (63%)
4. Understanding how own water use efficiency compares with other abstractors (60%)
5. How to improve own water availability e.g. build reservoirs, rain water harvesting (55%)
6. Visits to sites which demonstrate irrigation Best Practice (54%)

'WATERR' Project Irrigator Support to Date

Water Availability Workshops

5 Workshops involving 128 irrigators / key stakeholders :

- **Review of Abstraction Licensing Reform plans with Leader of the DEFRA Reform Team + NFU / Environment Agency/ River Trusts :**
 - options , proposals and potential impact
- **Opportunities to improve catchment management:**
 - better Environment Agency / irrigator collaboration
- **Opportunities to improve availability:**
 - Water Company untreated water supplies / trading

Design Guide for Irrigation Reservoirs

'WATERR' Project

Irrigator Support to Date

Irrigation Performance Improvement

IBR Follow Ups , Sector / Crop Specific Workshops (x5) , and Best Practice Demonstrations (x4) involving 150 irrigators :

- **Comparative irrigator water use efficiency performance**
- **Impact on Financial Returns : Top v Bottom Quartile producers**
- **Best Practice technologies/ techniques**
- **Latest Research / new technologies : EMR / irrigation suppliers**

Improvement Potential:

50% of growers targeting a 10 to 25% improvement in productivity

Crop Specific Performance Information:

Water Use Efficiency / Financial Impact Data Sheets

Irrigator Performance and Best Practice Fact Sheets (7 crops)



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Irrigator Support Needs Sources of Information



Grower Comments

- Shortage of local advice and training : need crop specific, ‘hands on’ technical support .
- Equipment suppliers a key source of information, but equipment often not compatible and integrated / total system support needed.
- Research organisations need to focus on translating new technologies into commercial use

Irrigation Supply Company Research (KCC / ADAS)

New technologies / systems can significantly improve irrigation performance but commercialisation requires

- Greater representation in the South East (East Anglia focus)
- Grower engagement: ‘research extension, training and support’
- Collaboration and ‘integration through the supply chain’



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Improving Irrigator Support: 'WET' Centre Proposal



Future Plans

UK Centre for Water Efficient Technologies at EMR

Objectives

Bring together leading irrigation researchers and equipment / services providers at EMR to:

- Research, develop and commercialise an integrated portfolio of technologies and systems for the tree , soft fruit ,HNS and Salad Crop sectors
- Deliver a step change in irrigation water use efficiency, productivity and financial returns .



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Improving Irrigator Support : 'WET' Centre Proposal



'WET' Centre Strategy

- Create a Centre of Expertise with the research, development and commercialisation infrastructure and critical mass for suppliers to locate in the South East
- Engage directly with growers, Producer Organisations and Retailers to ensure technologies developed meet the needs of the horticultural sector / supply chain
- Develop integrated / compatible products and systems
- Support commercialisation / raise awareness of the commercial benefits of these new technologies through grower trials, crop specific workshops, demonstrations, training and 1: 1 support .



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Improving Irrigator Support : 'WET' Centre Proposal



Irrigator Comments

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

BUT :

'There is a lack of knowledge across the industry concerning specific crops.'

' There is a shortage of high level training e.g. CPD type courses'

' We have to draw information from many sources . It would be very helpful if it could all be in one place .'