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ERDF 'WATERR' Project

Seminar : 28th September 2015

Where Next for the Irrigation Sector ?

WATERR Project Findings

Improving Irrigation Performance: Opportunities and Challenges

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'WATERR' Project Irrigation Business Reviews



Irrigation Business Review Objectives

In depth interviews involving 110 growers (25% of South East irrigators / 60% of irrigation volumes) to :

- Assess current irrigation water availability and use efficiency
- Impact on production / yields, pricing and financial returns
- Identify 'Best Practice' technologies and techniques
- Improvement Opportunities / Barriers
- Grower Support Needs, and Priorities
- Confirm 'WATERR' Project Support Programme



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'WATERR' Project Irrigation Business Reviews



IBR Growers by Catchment / Region

Kent :	Medway	17
	North Kent	9
	Stour	23
	Romney Marsh	4
	Kent Total	53
	Chichester	14
	Arun	15
	Hants/ IOW	13
	E. Sussex	9
	Thames	6
	South East Total	110



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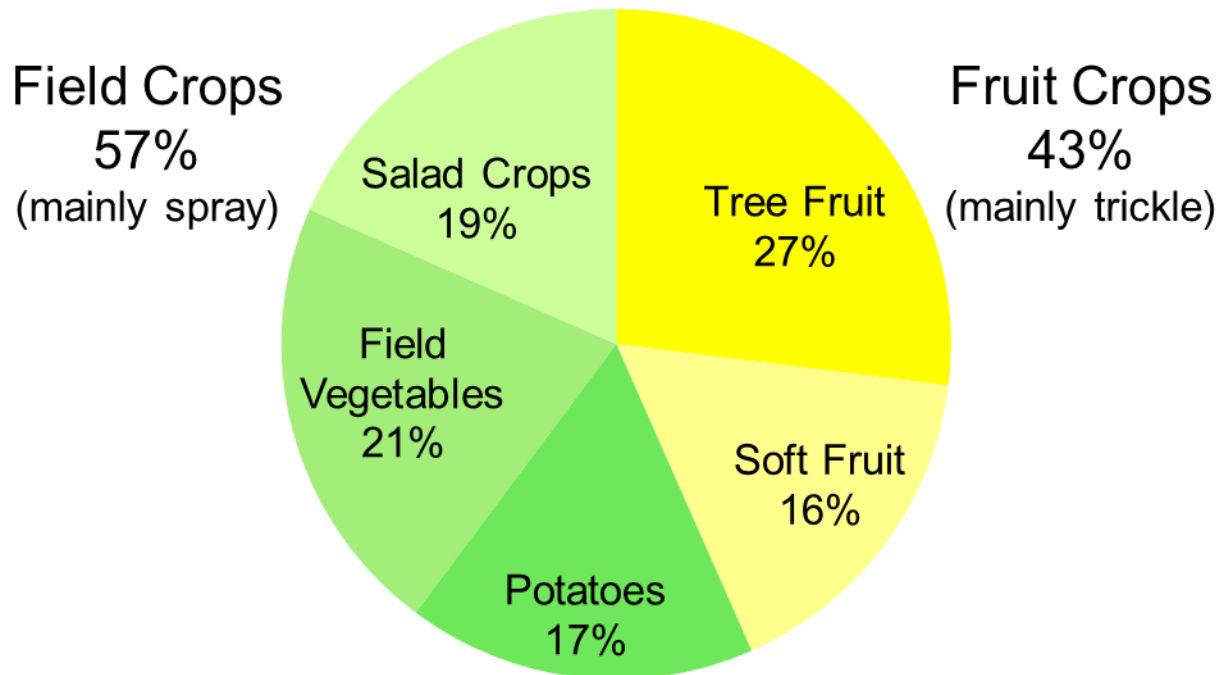
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IBR Growers by Crop

(Total 6300 Hectares - 27 Crops)





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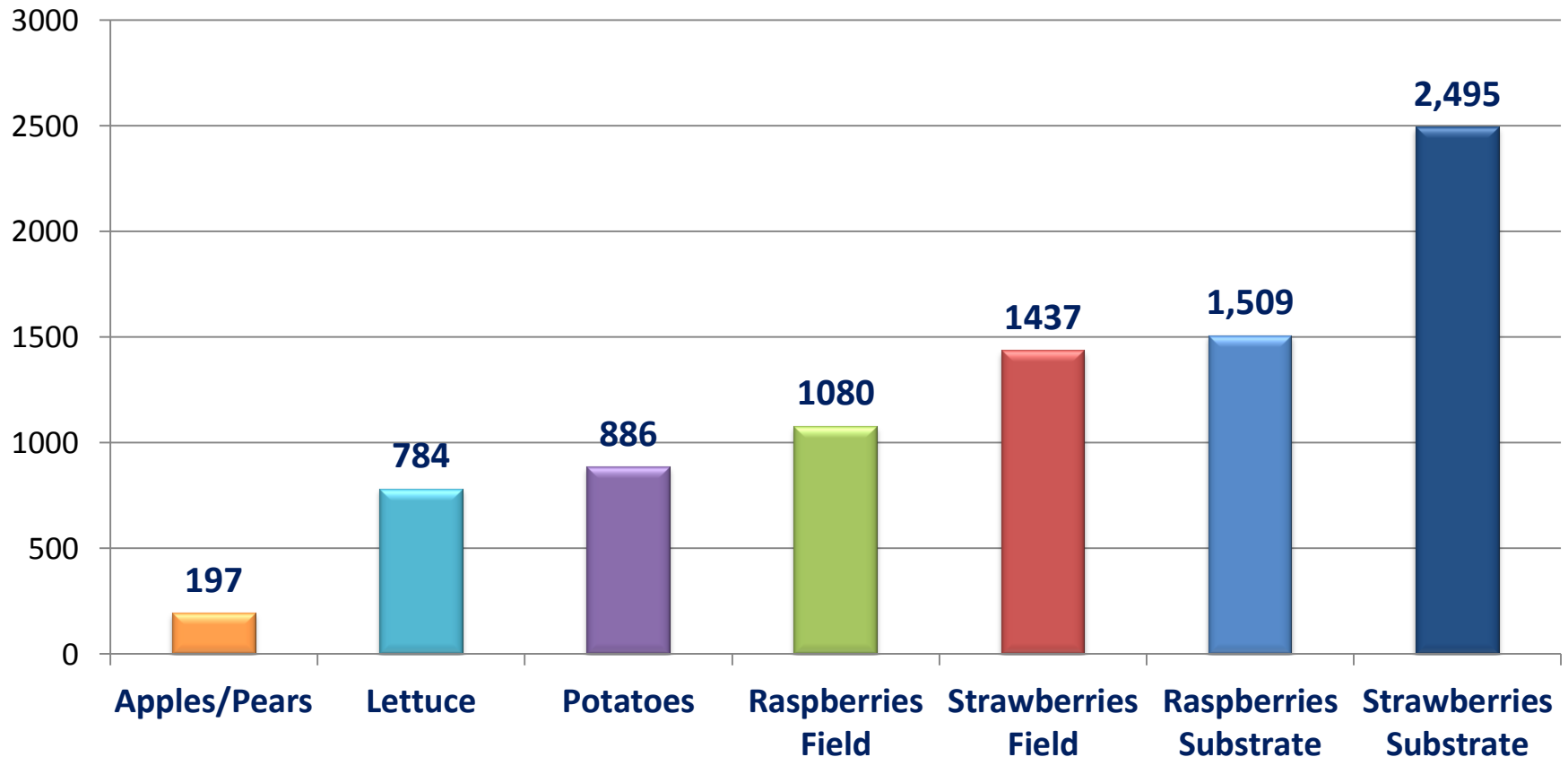
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Findings – Water Availability



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





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Findings – Water Availability



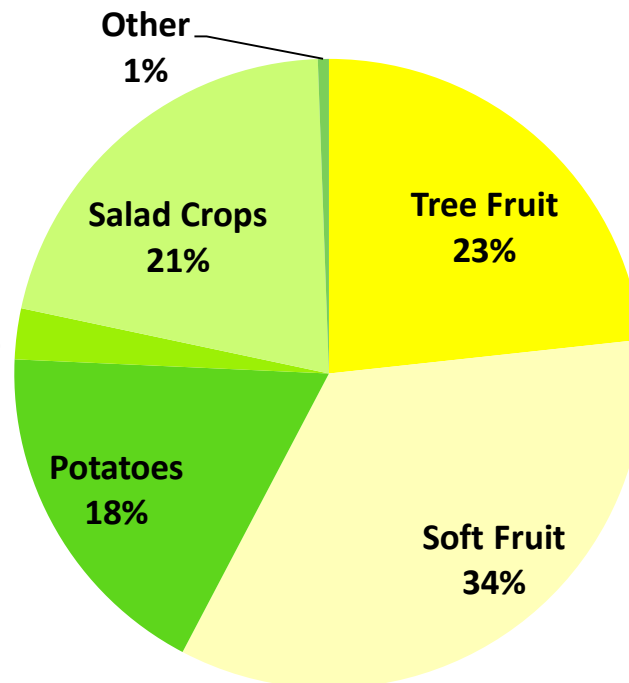
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Kent IBR Growers – Main Irrigated Crops

Irrigation Use By Volume

Field Crops
43%
(mainly
Spray)

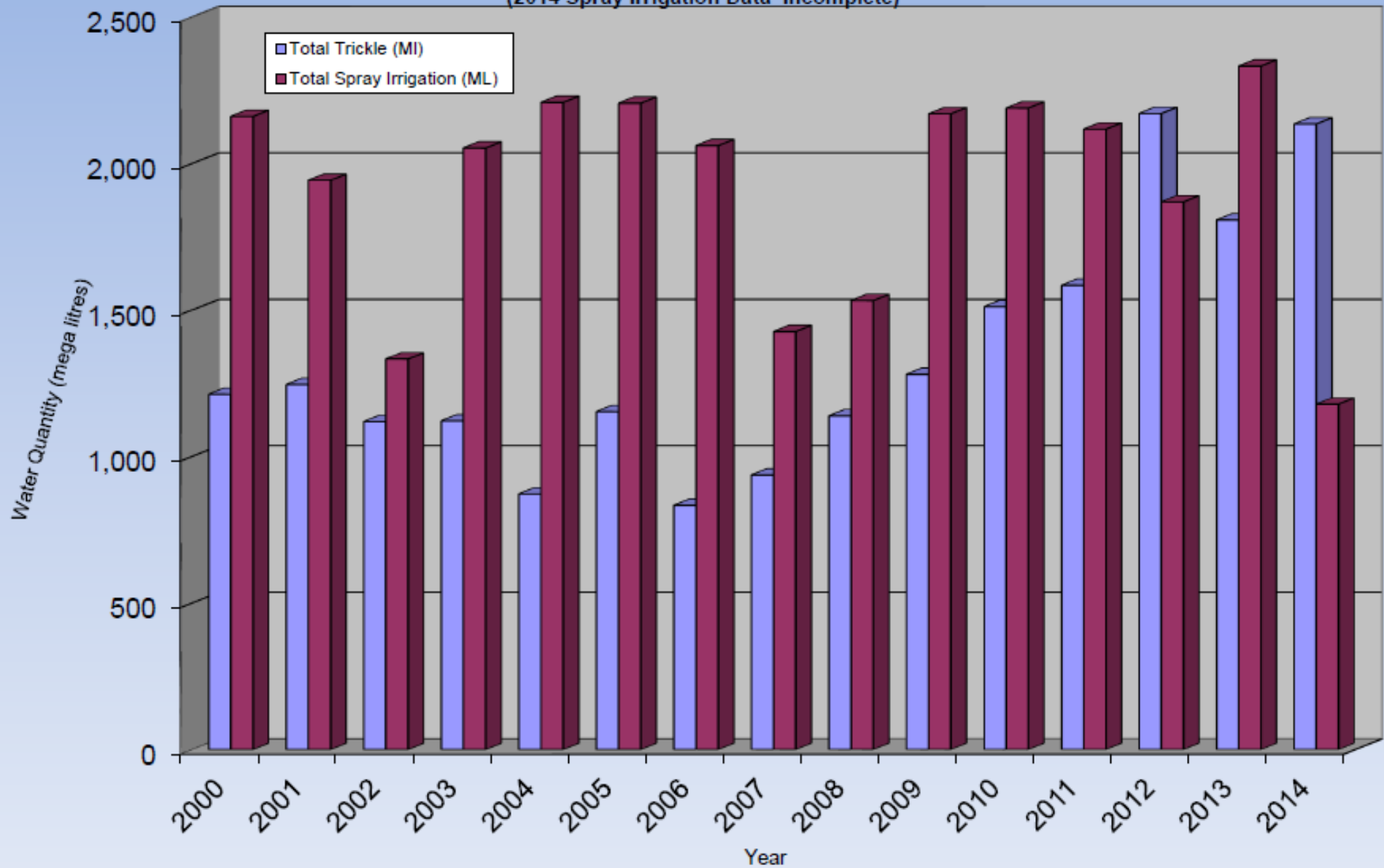
Field Vegetables
3%



Fruit Crops
57%
(mainly
Trickle)

35 growers -
Total 2.3 million
cubic meters

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





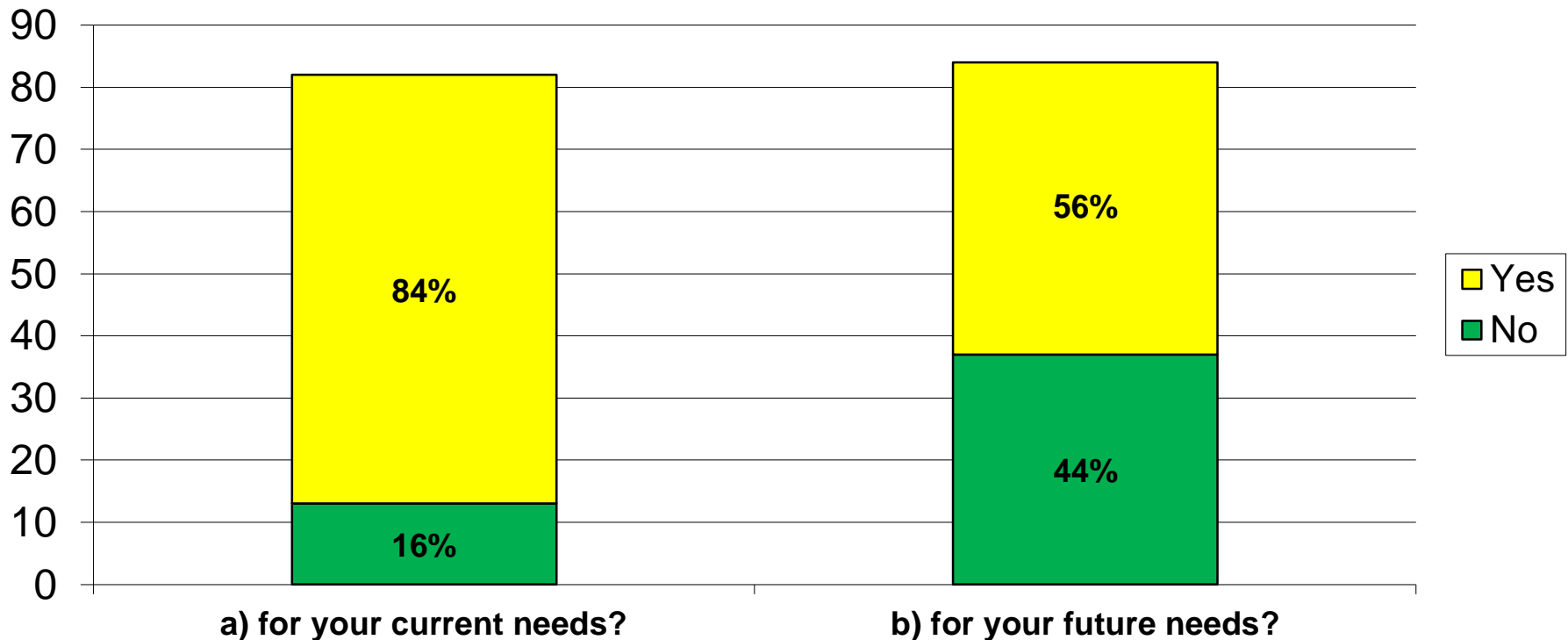
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'WATERR' Project Findings – Water Availability



Adequacy of Abstraction Licence for Current and Future Needs





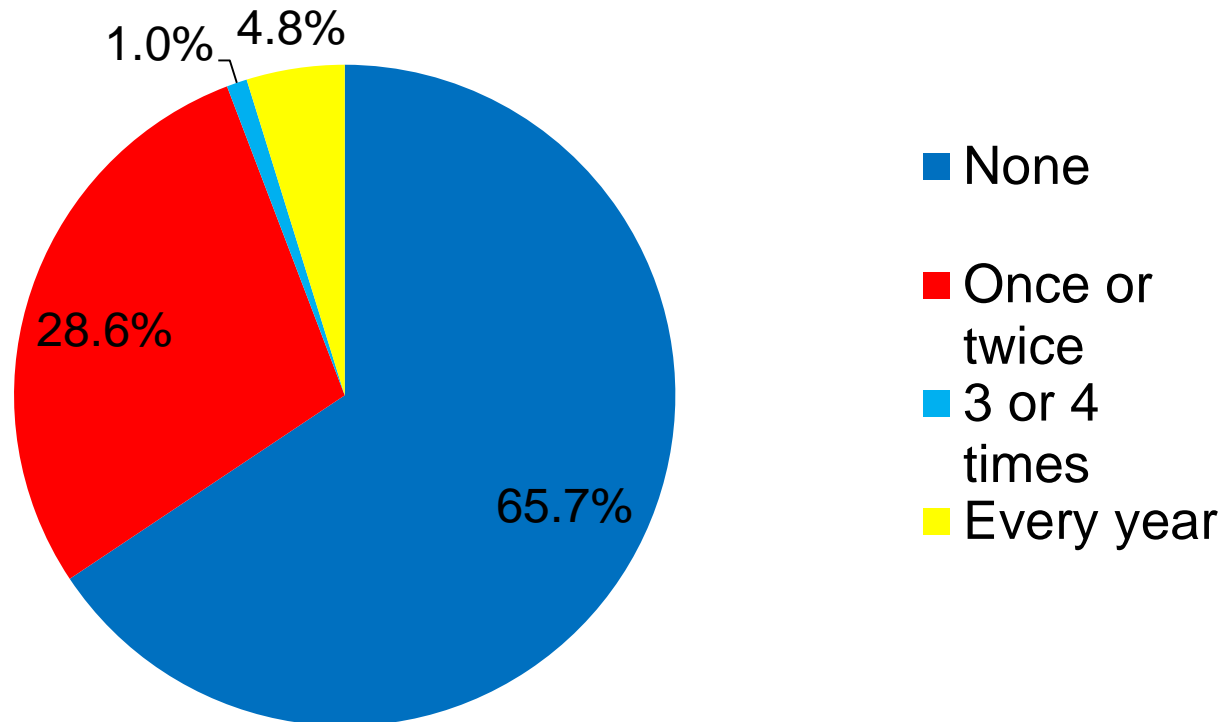
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'WATERR' Project Findings – Water Availability



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





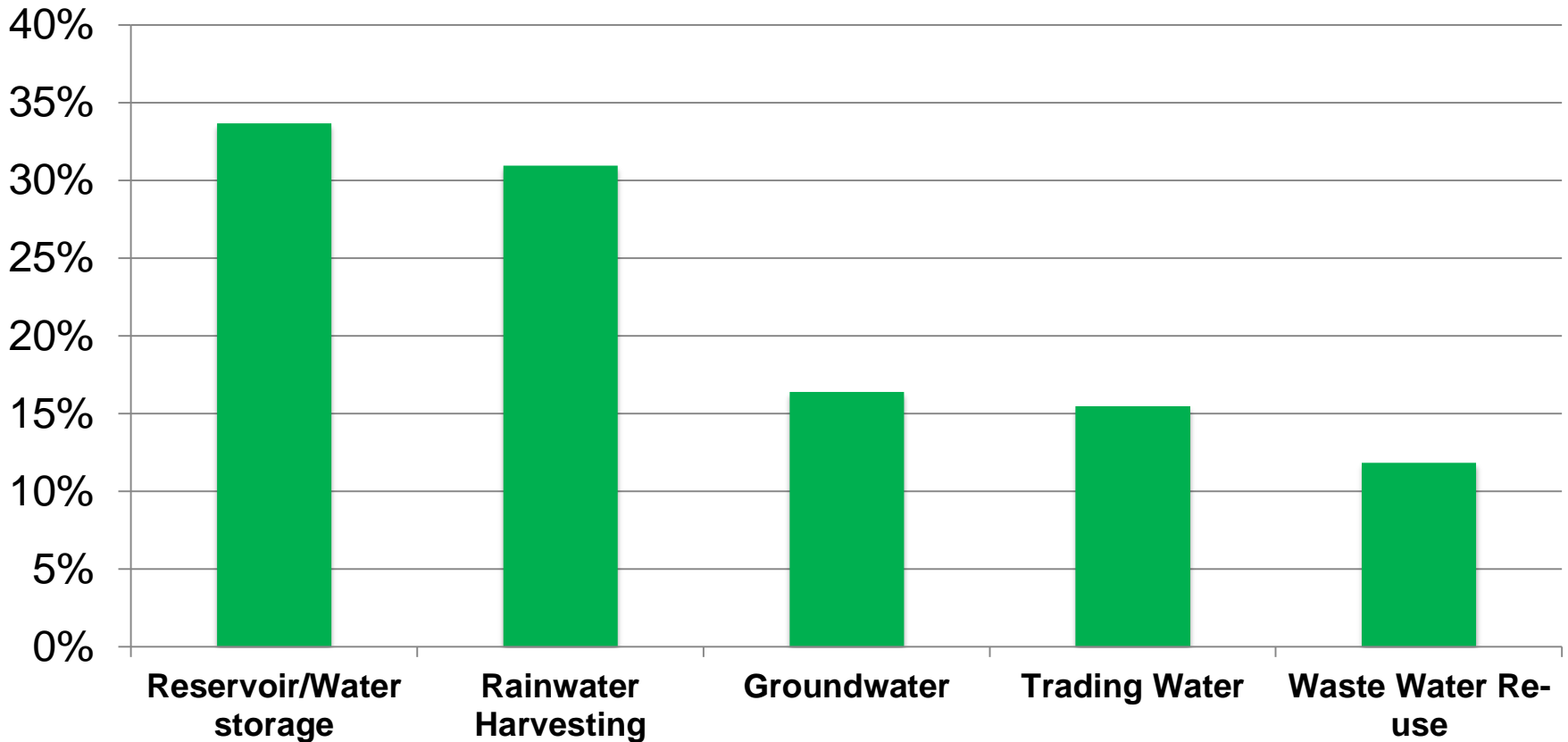
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'WATERR' Project Findings – Water Availability



Grower Plans to Increase Water Availability (%)



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Findings : Water Availability

Summary

- **Availability restrictions impacting a third of all growers**
- **Trickle sector growing rapidly – in Kent trickle volumes have doubled and overall irrigation volumes are up by a third since 2008**
- **Abstraction Reform a major concern - if future licenses are not fixed / for limited periods only, future investment decisions very difficult**
- **Trickle irrigators very concerned about how and when exemption will be removed**
- **Over 30% of growers are planning to increase capacity through new reservoirs (additional 0.5 million cubic metres being installed) and rainwater harvesting.**
- **Over 40% of growers stated that improving water use efficiency is the best way of improving water availability and security .**



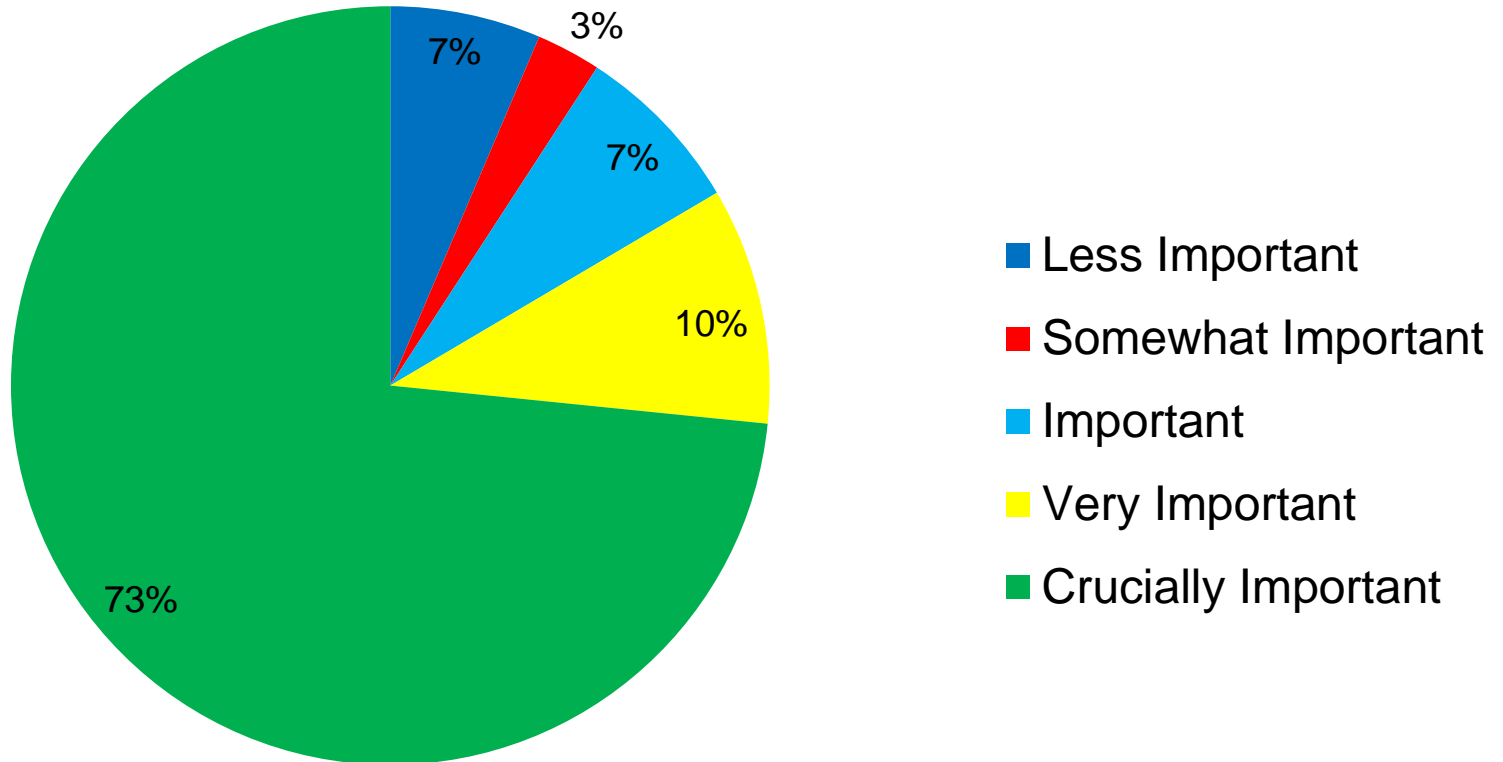
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'WATERR' Project Findings : Irrigation Performance and Returns



Importance of Irrigation to Business Performance





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'WATERR' Project

Findings : Irrigation Performance and Returns



Irrigator Performance Summary - Water Use Efficiency : 2011–13

	Water Applied		Crop Yields		Irrigation Productivity	
	(M3 / Hectare)		(Tonnes / Hectare.)		(M3 /Tonne)	
	Average	Range	Average	Range	Average	Typical Range
Potatoes	886	115 - 1,775	41	20 - 56	22	12 - 34
Lettuce	784	281- 2,142	20	7 - 34	41	22 - 60
Strawberries :						
- Field	1,437	244 - 2,400	19	5 - 34	79	58 - 99
- Substrate	2,495	1,275 - 3,942	32	18 - 45	82	49 - 108
Raspberries:						
- Field	1,080	543 - 1,523	10	7 - 17	114	87 - 134
- Substrate	1,509	650 - 2,600	13	10 - 20	111	43 - 166
Apples / Pears	197	22 - 860	25	13 - 40	7	3 - 14
Cherries	315	104 - 771	7	3 - 12	66	38 - 94



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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%
Lettuce	632	138 - 1,542	11,450	10,682	93%
Strawberries :					
- Field	1,024	209 - 1,860	74,371	31,368	42%
- Substrate	2,867	970 - 5,282	106,383	103,516	97%
Raspberries:					
- Field	1,138	554 - 1,800	66,464	51,291	77%
- Substrate	2,527	840 - 5,014	74,091	71,564	97%
Apples / Pears	327	33 - 1,789	15,334	2,257	15%



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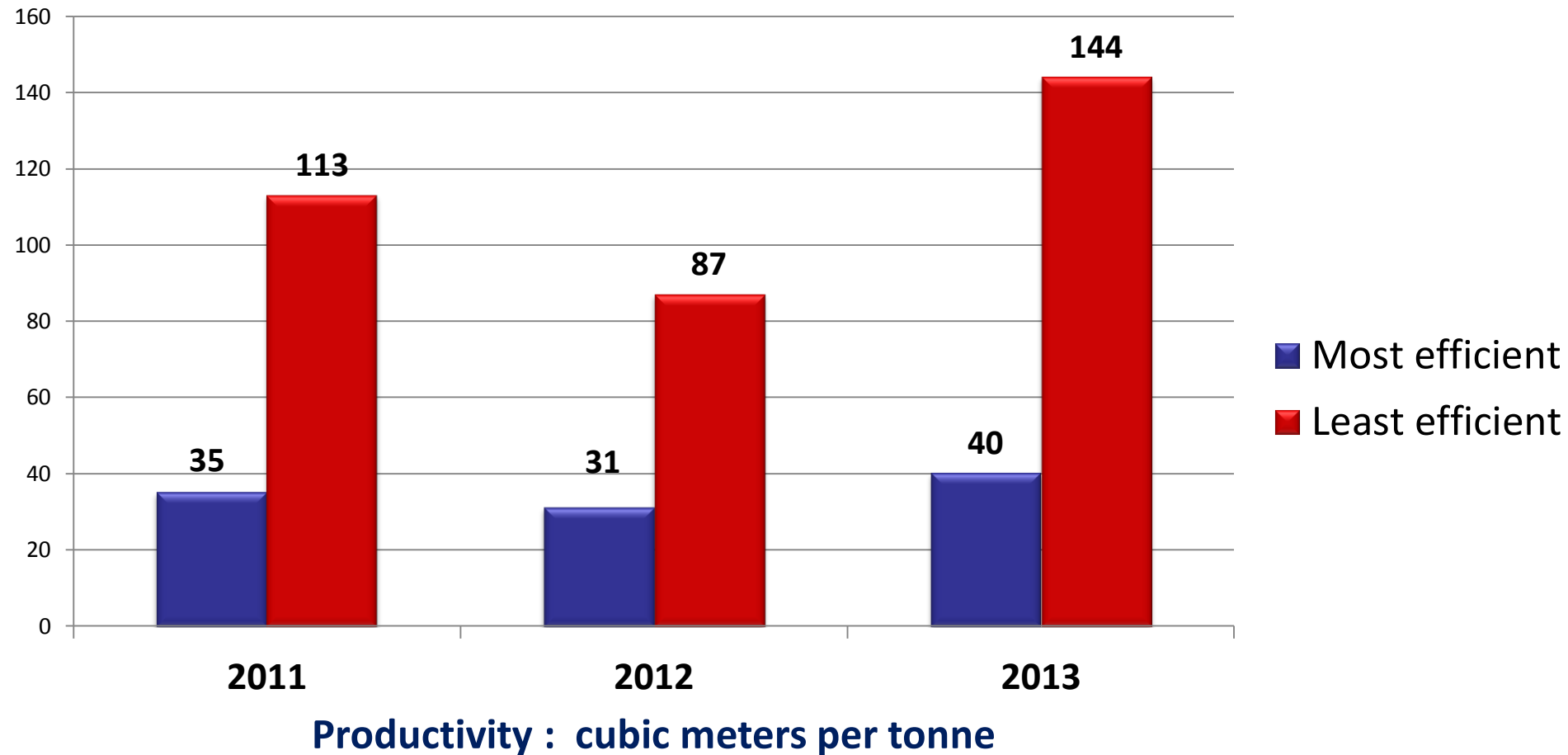
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Findings : Irrigation Performance and Returns



Water Use Efficiency - Substrate Strawberries





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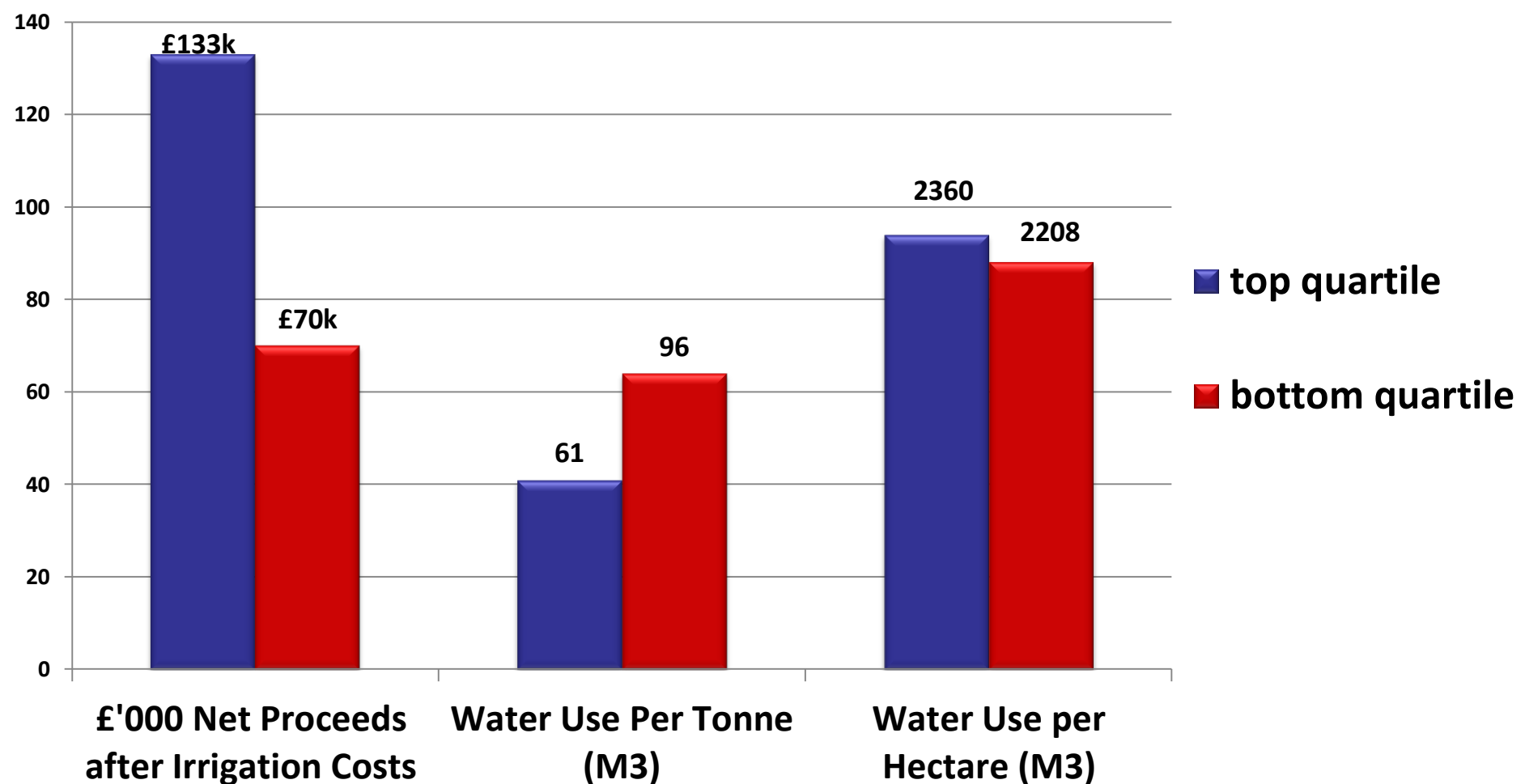
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Performance and Returns



£ Returns and Water Use - Substrate Strawberries





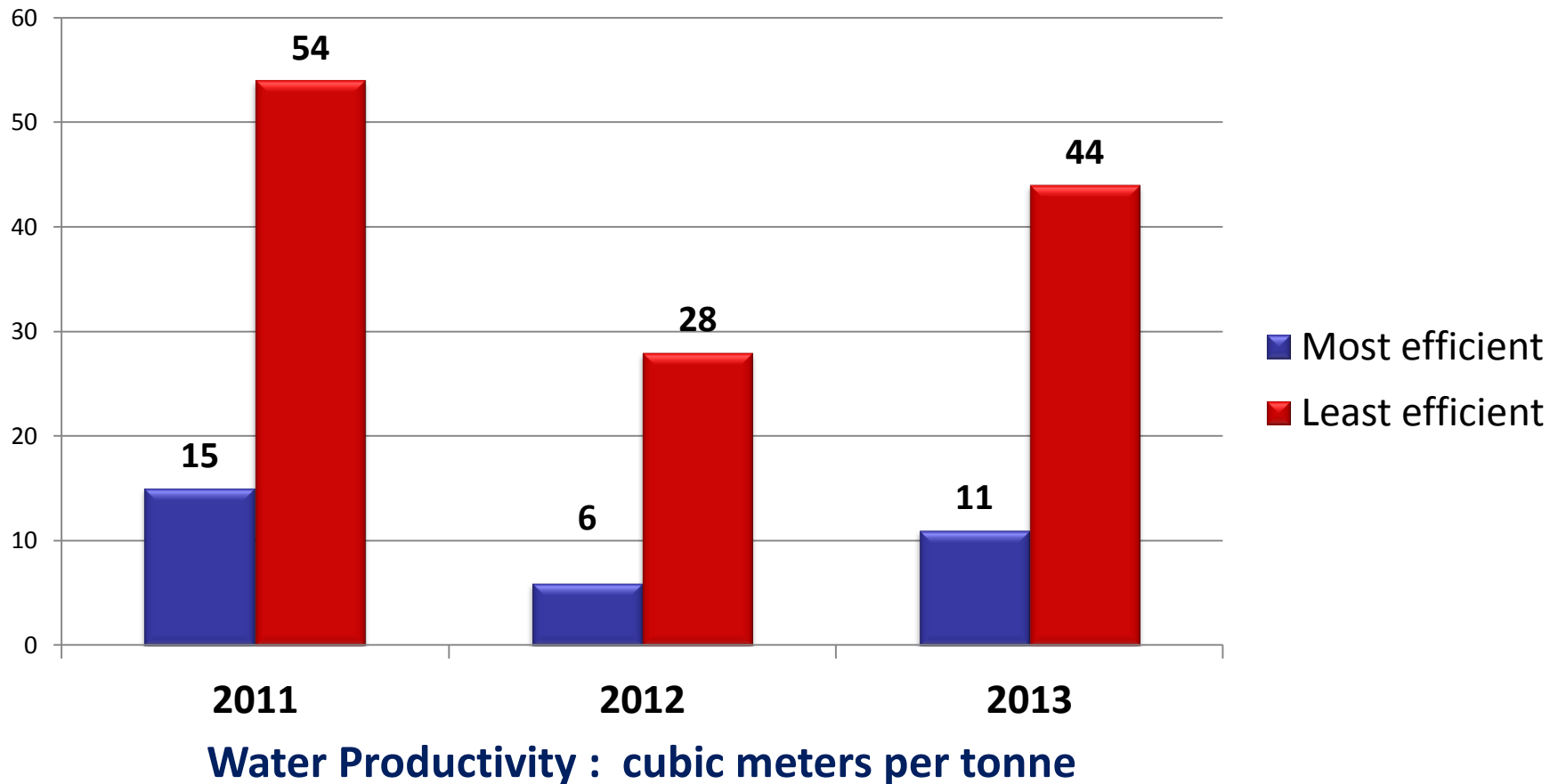
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'WATERR' Project Findings : Irrigation Performance and Returns



Water Use Efficiency - Potatoes





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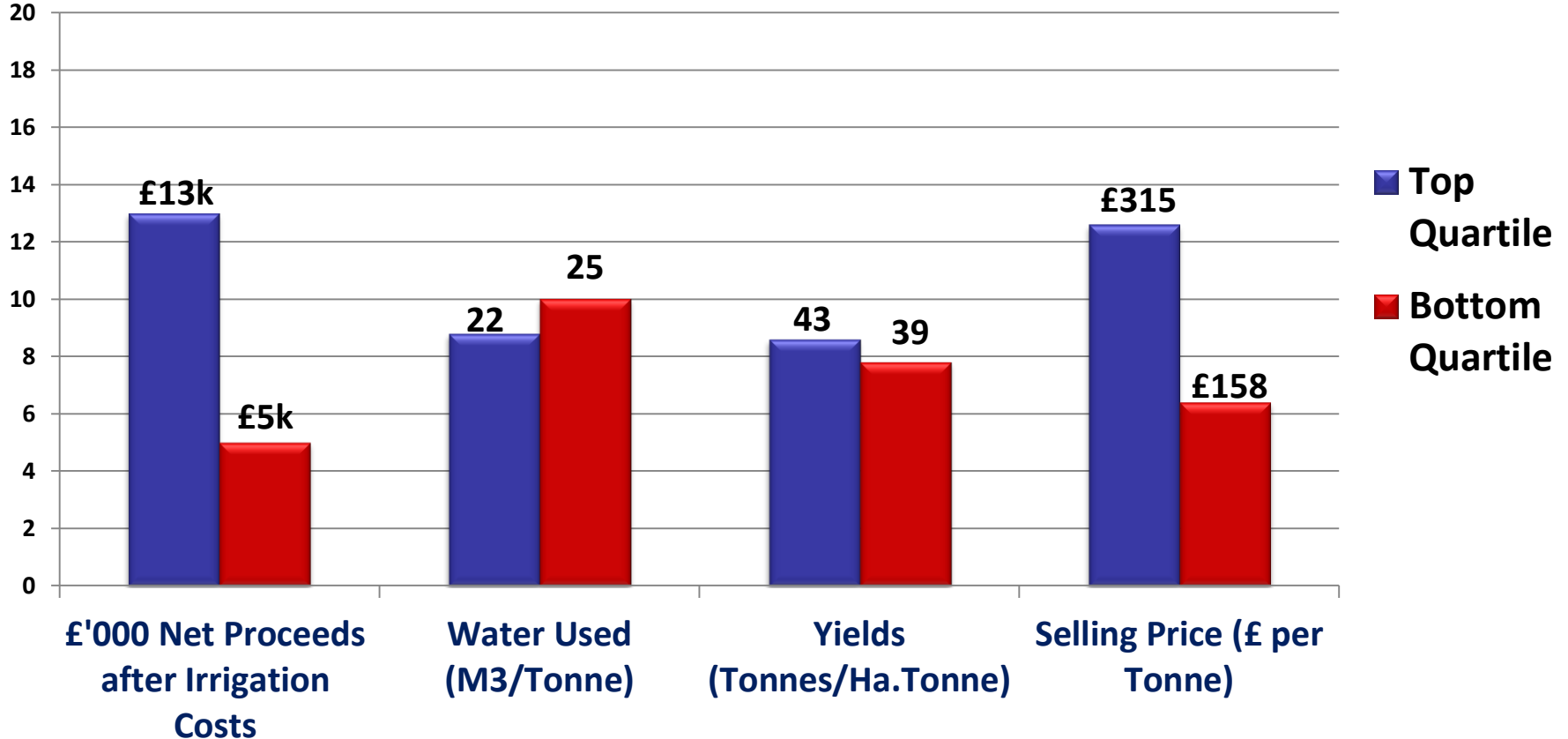
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Performance and Returns



Financial Impact of Irrigation Potatoes





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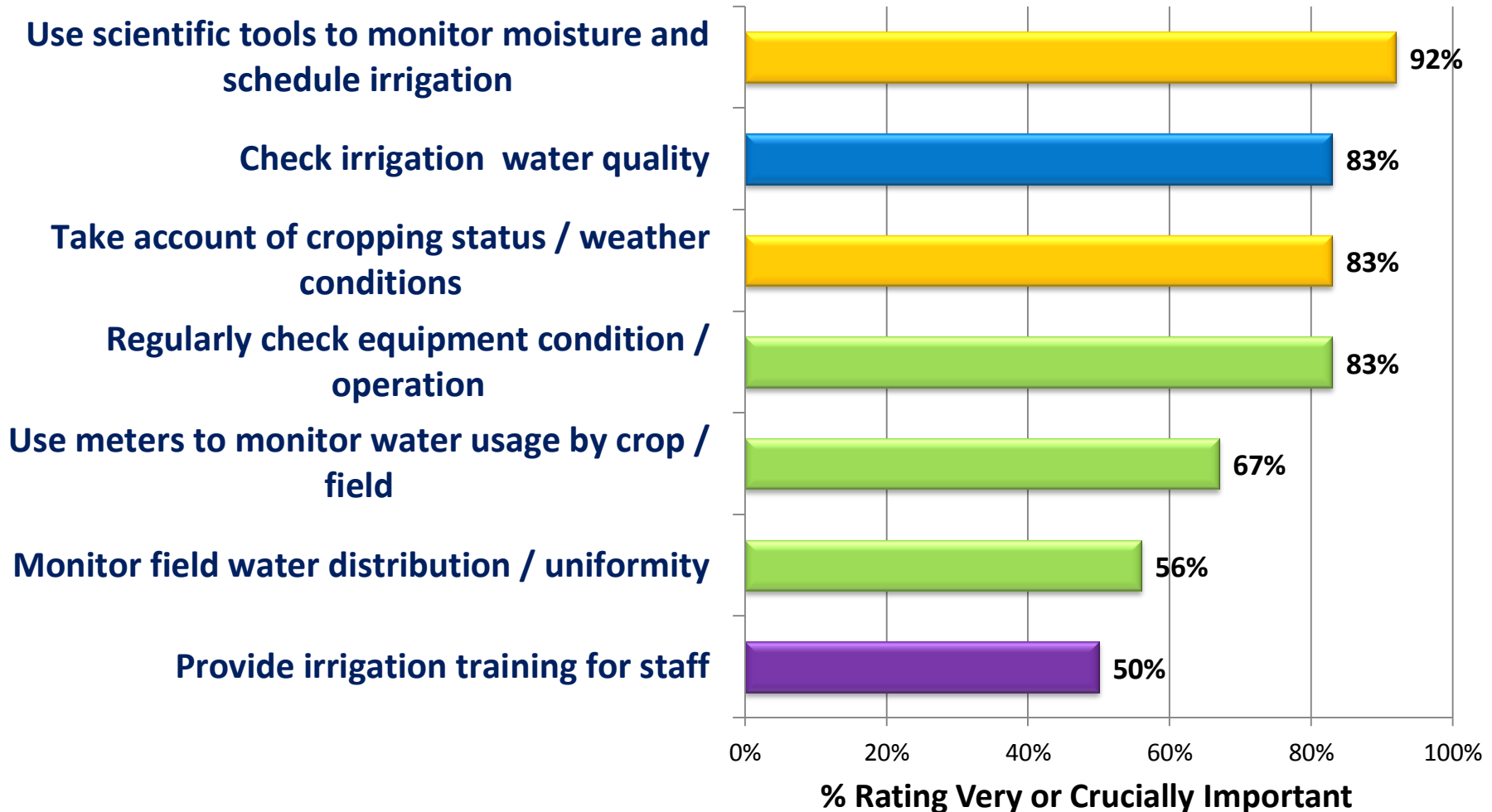
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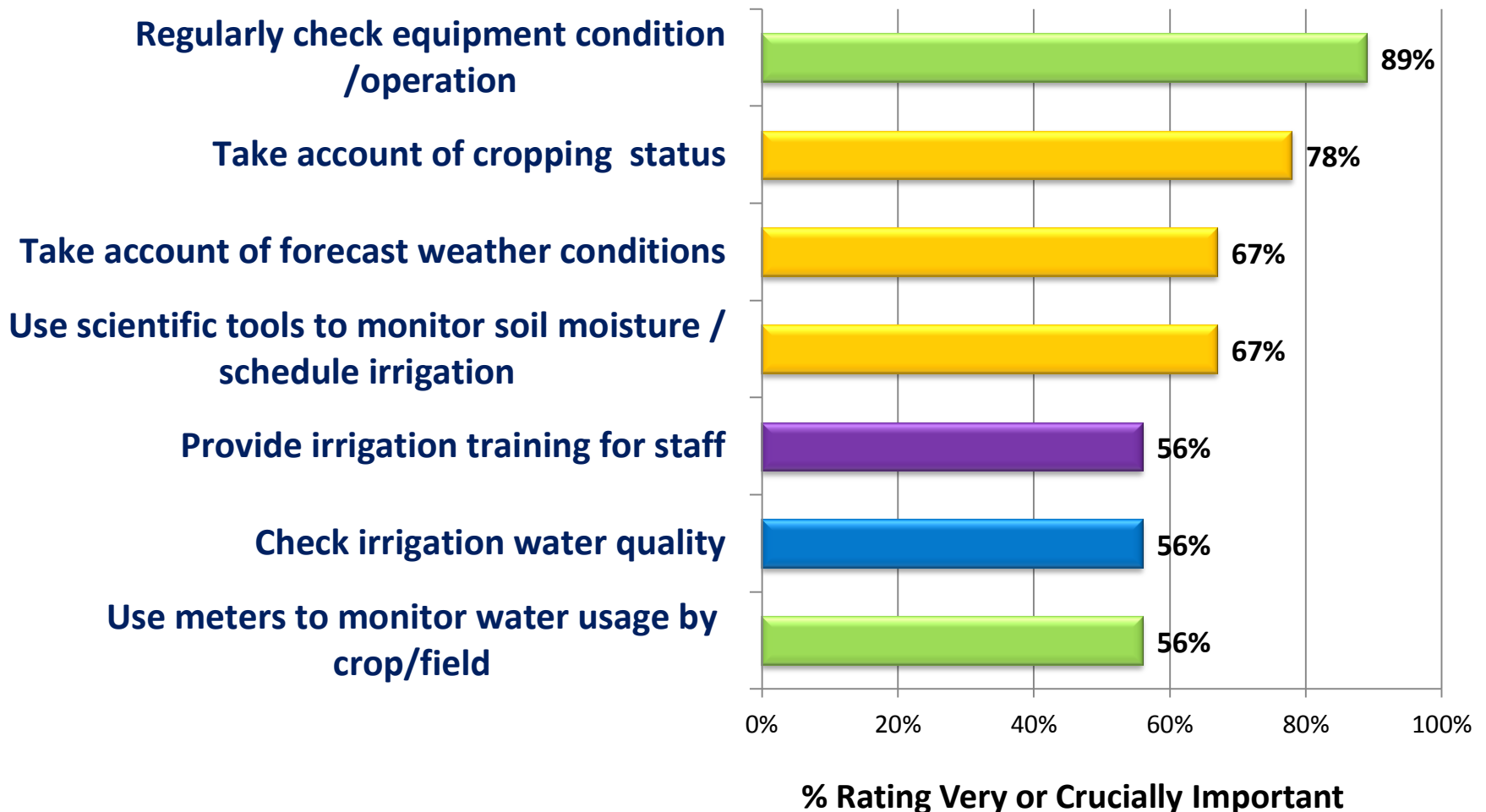
Soft Fruit Growers : 'Best Practice' Ranking



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Findings : Irrigation Performance and Returns

Tree Fruit Growers : 'Best Practice' Ranking





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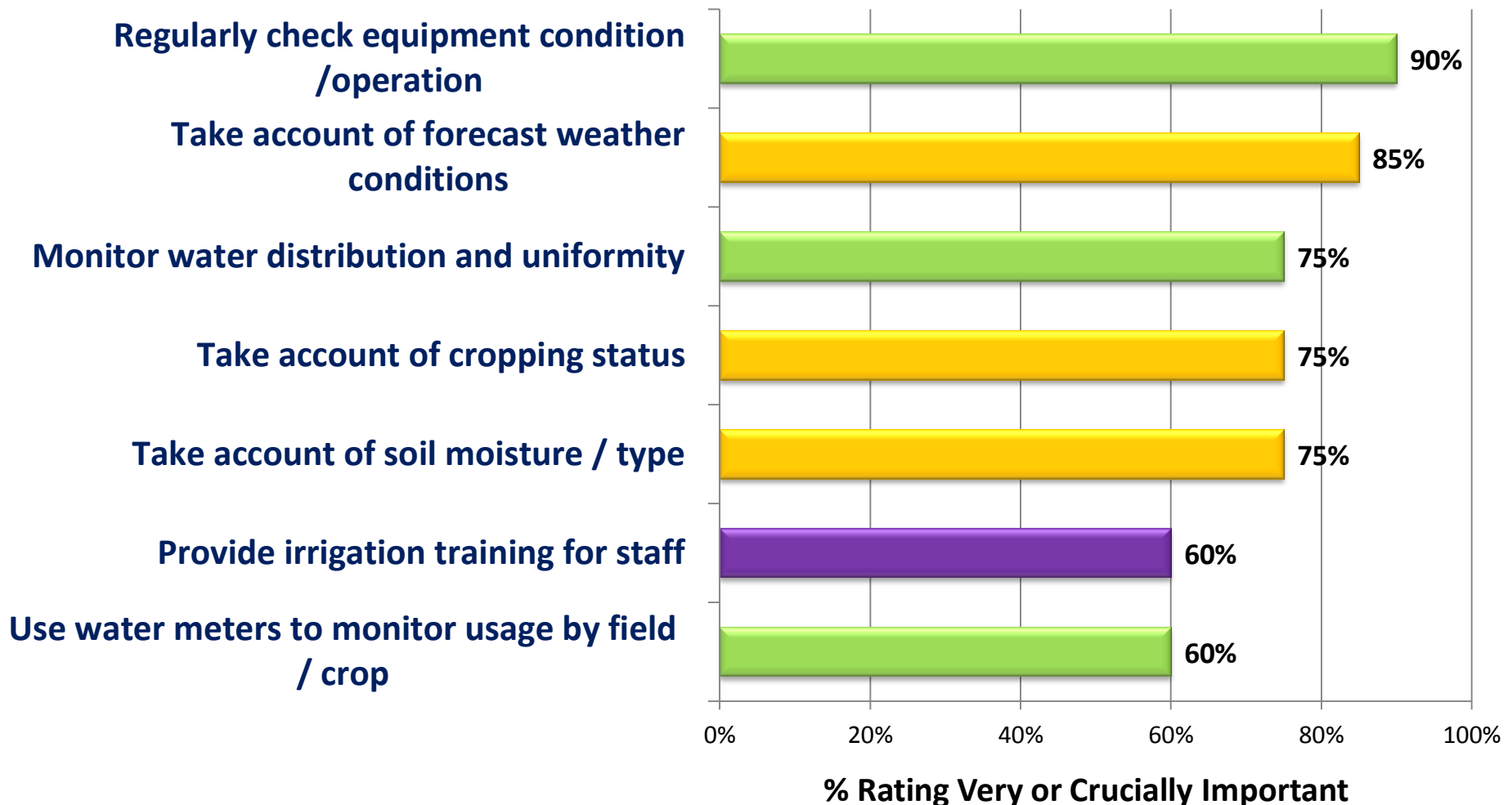
Findings : Irrigation

Performance and Returns



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Potato Growers - Irrigation Best Practice Rankings





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Findings : Irrigation Performance and Returns



Summary – Water Use Efficiency and Financial Returns

- Typically a 2 to 4 fold difference in water use efficiency / productivity
- Growers estimate that improved yields and/or prices due to irrigation account for between 15 % and 77% of £ proceeds in field crops and 100% in substrate grown crops.
- Strong correlation between irrigation performance and actual financial returns :
 - Top Growers more water efficient, but also use more water per hectare
 - Optimising water scheduling / volumes as important as use efficiency in maximising yields and returns
 - Irrigation key to 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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Findings : Irrigation Performance and Returns

Summary : Best Practice – Grower Uptake

- **Top performing growers are using most of the 'Best Practices' identified**
- **Soil / substrate moisture monitoring to improve scheduling / define water requirements seen as key to optimisation in all crops .**
- **Extensive use of probes / computerised tools to support scheduling in soft and tree fruit , but there is a need for simplification and better equipment integration / standardisation**
- **Equipment malfunction can significantly impact performance : need to use latest systems and undertake regular monitoring and servicing**
- **Use of water meters important to monitor usage / performance , but only half of field irrigators are using them .**
- **Given the increasing complexity of irrigation operations , more staff training is needed but there is a lack of suitable courses**
- **Irrigation is complex, time consuming and labour intensive : optimisation requires careful management of all the variables.**



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Findings : Irrigation Performance and Returns



Summary – Grower Comments

Water Availability

' Water is the biggest issue . We are totally dependent on it.'

'The lack of information on trickle licensing is a major concern . Any restrictions could have a massive impact.'

'Better communication with the Environment Agency is fundamental'

Performance Improvement

'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 .'

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