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ERDF 'WATERR' Project

Tree Fruit Workshop : 22nd July 2015

Irrigation Business Review Findings: Irrigator Performance / Financial Impact, Opportunities, Challenges and Support Needs



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Paul Dracott
Project Manager



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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
 - Reduce irrigation costs
- Identify opportunities to improve water availability and collaboration to optimise catchment water management
- Improve the environmental footprint of South East river catchments





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'WATERR' Project Irrigation Business Reviews



Irrigation Business Review Objectives

In depth interviews involving 100 + growers (20% of South East irrigators) 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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Growers involved in IBR Interviews by Catchment / Region

Kent :	Medway	13
	North Kent	13
	Stour	21
	Romney Marsh	5
	Kent Total	52
	Sussex	8
	Hants/ IOW	13
	Arun	15
	Chichester	7
	Thames	6
	South East Total	101



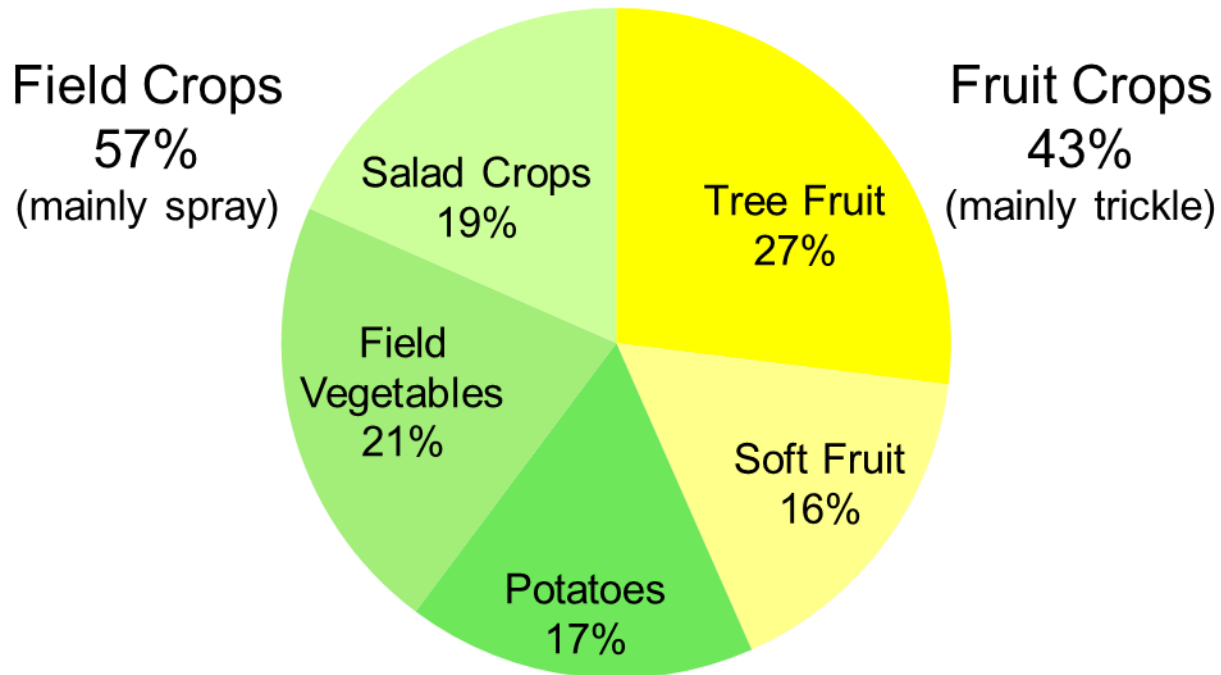
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South East Growers – Main irrigated crops % area irrigated (Total 4500 hectares)





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Tree and Soft Fruit Growers involved in IBR Interviews

Kent :	Medway	11
	North Kent	9
	Stour	9
Kent Total		29 (13 Tree, 10 soft, 6 T & S)
Hants/ IOW		2
Arun		2
Chichester		1
Thames		1
South East Total		35 (14 Tree, 15 Soft, 6 T & S)



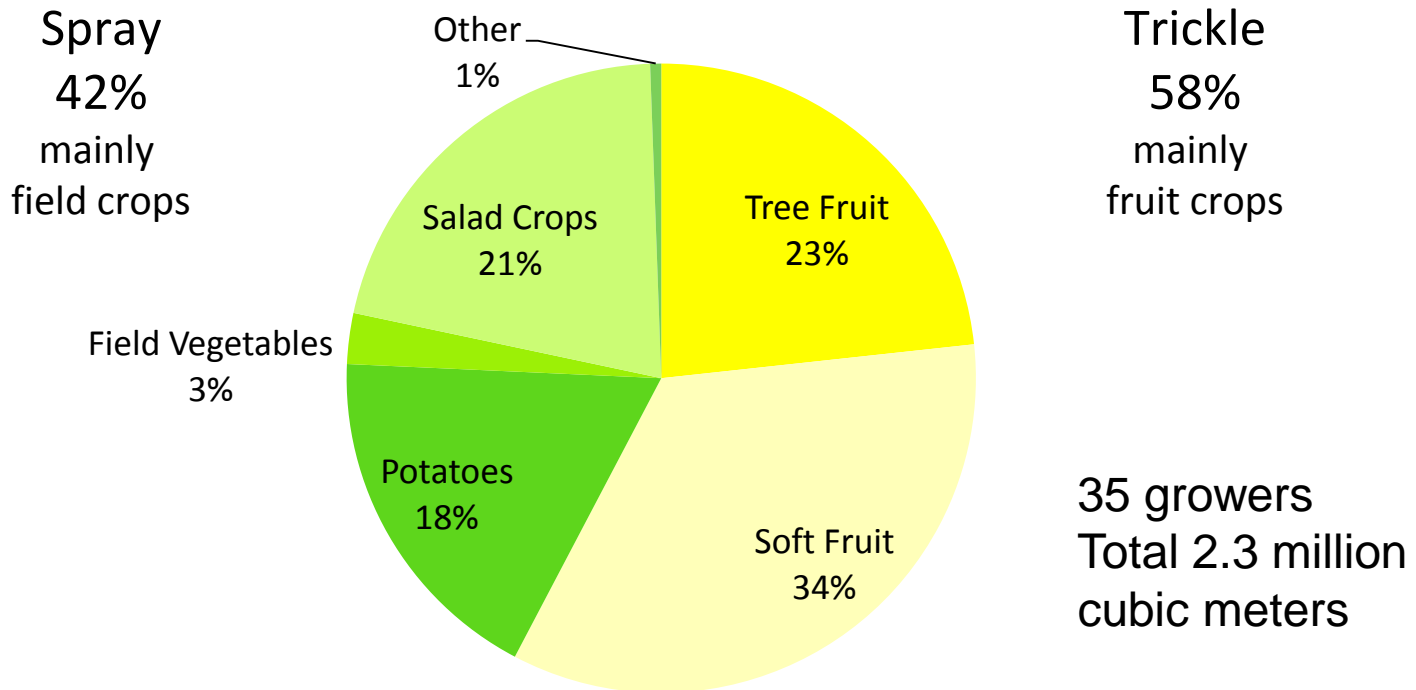
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Kent Growers – Main irrigated crops % irrigation use (by volume)





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IBR Performance Data Base :Tree and Soft Fruit

	Growers	Data Provided	Total Irrigated Crops (2011 – 2013)
Strawberries:	16		
Field		6	15
Substrate		8	21
Raspberries:	9		
Field		5	12
Substrate		4	10
Apples / Pears	16	10	24
Cherries	7	6	12



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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



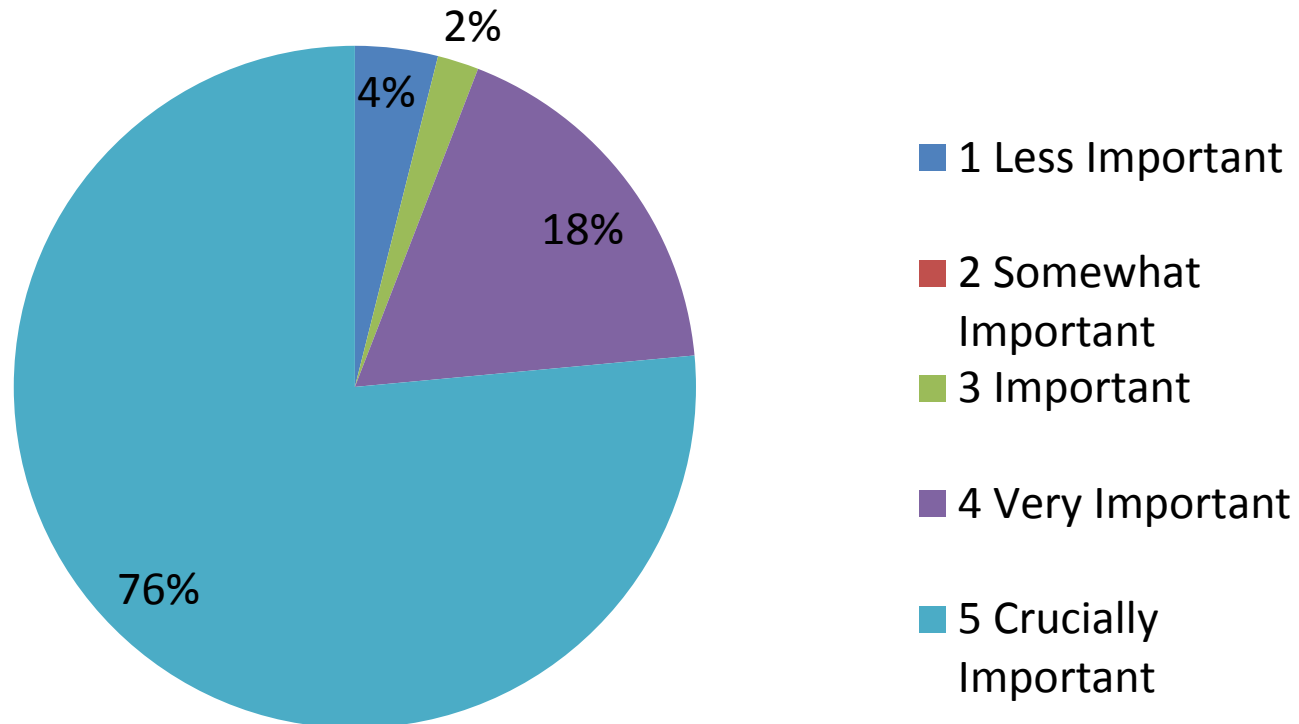
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Importance of Irrigation to Business Performance Kent Irrigators





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Substrate Strawberries : Irrigator Performance : 2011–13

	Yields	Water Applied		Irrigation 'Gross Margin'
		Tonnes / Ha.	M3 / Tonne	M3 / Hectare
2011 Top Quartile	42	65	2,681	£ 140,000
Bottom Quartile	22	111	2,477	£ 72,000
Ratio	1.9	0.6	1.1	1.9
2012 Top Quartile	41	55	2,214	£ 140,000
Bottom Quartile	31	77	2,106	£ 75,000
Ratio	1.3	0.7	1.1	1.9
2013 Top Quartile	36	64	2,185	£ 120,000
Bottom Quartile	21	101	2,042	£ 62,000
Ratio	1.7	0.6	1.1	1.9



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Apples : Irrigator Performance : 2011–13

Ranking Basis GM Returns

Irrigation 'Gross Margin'

	Yields	Water Applied		(Proceeds minus Irrigation Costs)
	Tonnes / Ha.	M3 / Tonne	M3 / Hectare	£ per Hectare

2011	Top 50%	32	12	402	£ 17,300
	Bottom 50%	19	7	130	£ 9,000
	Ratio	1.7	1.7	3.1	1.9
2012	Top 50%	31	7	255	£ 21,500
	Bottom 50%	21	3	60	£ 12,200
	Ratio	1.5	2.3	4.2	1.8
2013	Top 50%	29	17	499	£ 21,600
	Bottom 50%	21	8	176	£ 9,100
	Ratio	1.4	2.1	2.8	2.4



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Pears : Irrigator Performance : 2011–13

Ranking Basis GM Returns

Irrigation 'Gross Margin'

	Yields	Water Applied		(Proceeds minus Irrigation Costs)
	Tonnes / Ha.	M3 / Tonne	M3 / Hectare	£ per Hectare

2011	Top 50%	20	4	80	£ 13,700
	Bottom 50%	19	5	119	£ 7,500
	Ratio	1.1	0.8	0.7	1.8
2012	Top 50%	26	3	79	£ 23,200
	Bottom 50%	21	1	22	£ 16,200
	Ratio	1.2	3.0	3.6	1.4
2013	Top 50%	22	4	90	£ 13,600
	Bottom 50%	25	5	147	£ 11,900
	Ratio	0.9	0.8	0.6	1.1



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Cherries : Irrigator Performance : 2011–13

Ranking Basis GM Returns

Irrigation 'Gross Margin'

	Yields	Water Applied		(Proceeds minus Irrigation Costs)
	Tonnes / Ha.	M3 / Tonne	M3 / Hectare	£ per Hectare

2011	Top 50%	12	19	230	£ 44,000
	Bottom 50%	11	11	115	£ 39,000
	Ratio	1.1	1.7	2.0	1.1
2012	Top 50%	27	36	298	£ 27,000
	Bottom 50%	16	23	104	£ 16,000
	Ratio	1.7	1.6	2.9	1.7
2013	Top 50%	6	79	385	£ 21,500
	Bottom 50%	4	190	660	£ 14,500
	Ratio	1.5	0.4	0.6	1.5

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Tree Fruit Performance Summary

- Overall water use is significantly lower than in other field irrigated crops
- On average the top performing growers achieved proceeds less irrigation costs that were 100% higher than other growers in apples , 40% higher in pears and 35% higher in cherries .
- In many instances top performing growers used more water per tonne than other growers i.e. in top fruit optimising water volumes is more important than water use efficiency in maximising returns.
- Growers commented that irrigation is a key tool in meeting retailer quality and fruit uniformity requirements.
- In apples and pears top performing growers are on average achieving a quality price premium 30 to 40% above other growers .

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Tree Fruit Growers : 'Best Practice' Ranking (% Rating Important or Very Important)

1. Regularly checking equipment condition and that it operates at design pressure, flow rates, etc. (89%)
2. Taking account of cropping status / weather conditions (78%)
3. Monitoring soil moisture and using scientific tools to schedule irrigation (67%)
4. Providing training for irrigation staff (56%)
5. Using water meters to monitor water usage by crop / field (56%)
6. Checking the quality of irrigation water (56%)

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Tree Fruit : Adoption of Best Practice / New Technologies

- Top performing growers are using most of the 'Best Practices' identified in the IBR survey : optimisation requires careful management of all the variables .
- Equipment malfunction can significantly impact performance : need to use latest systems and undertake regular monitoring and servicing
- Monitoring soil moisture , crop status and weather conditions seen as key to optimising irrigation performance. .
- Extensive use of probes , weather stations , and specialist equipment / advice , but there is a need to integrate the different technologies and systems .
- Most growers use mulching to improve water retention and tree establishment .
- Need to be able to monitor performance more easily : lack of meters an issue.



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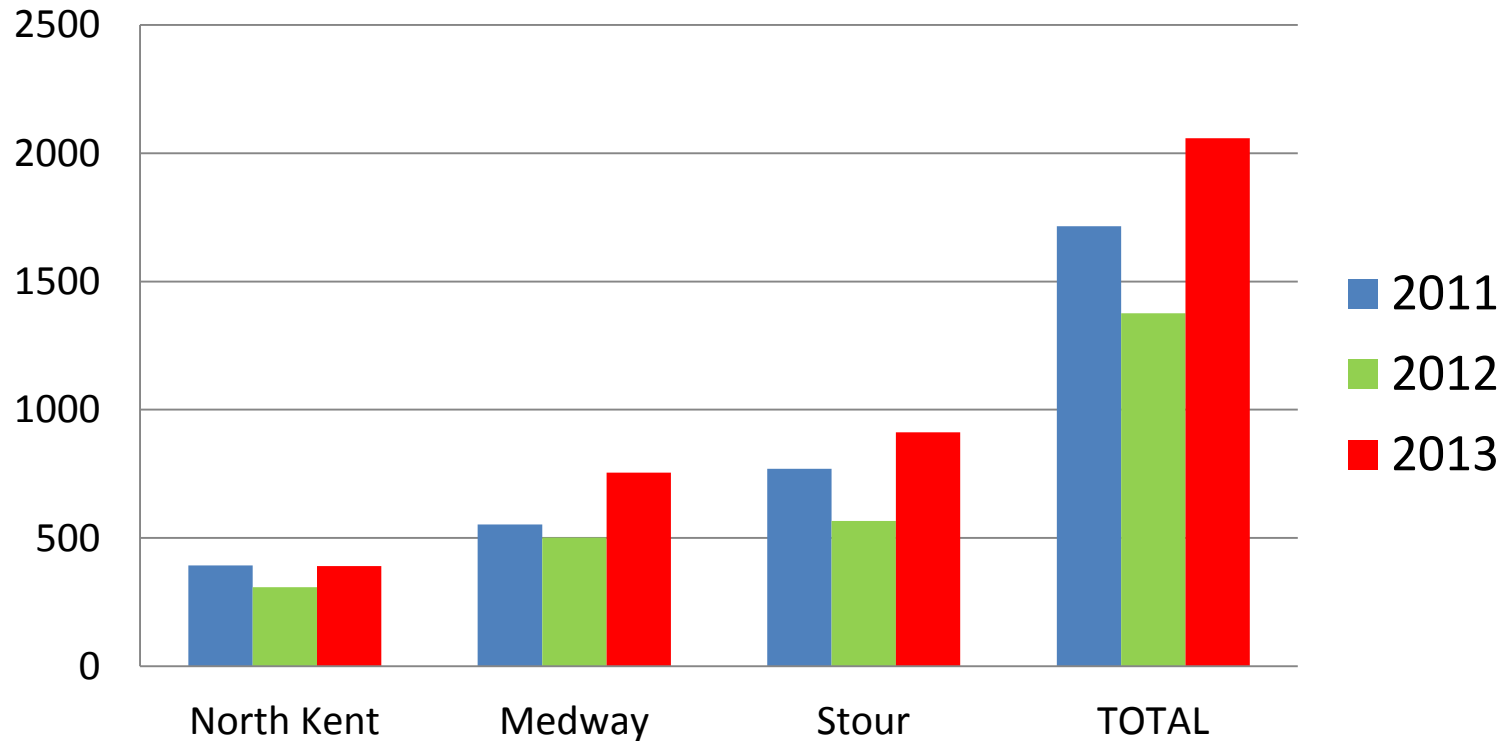
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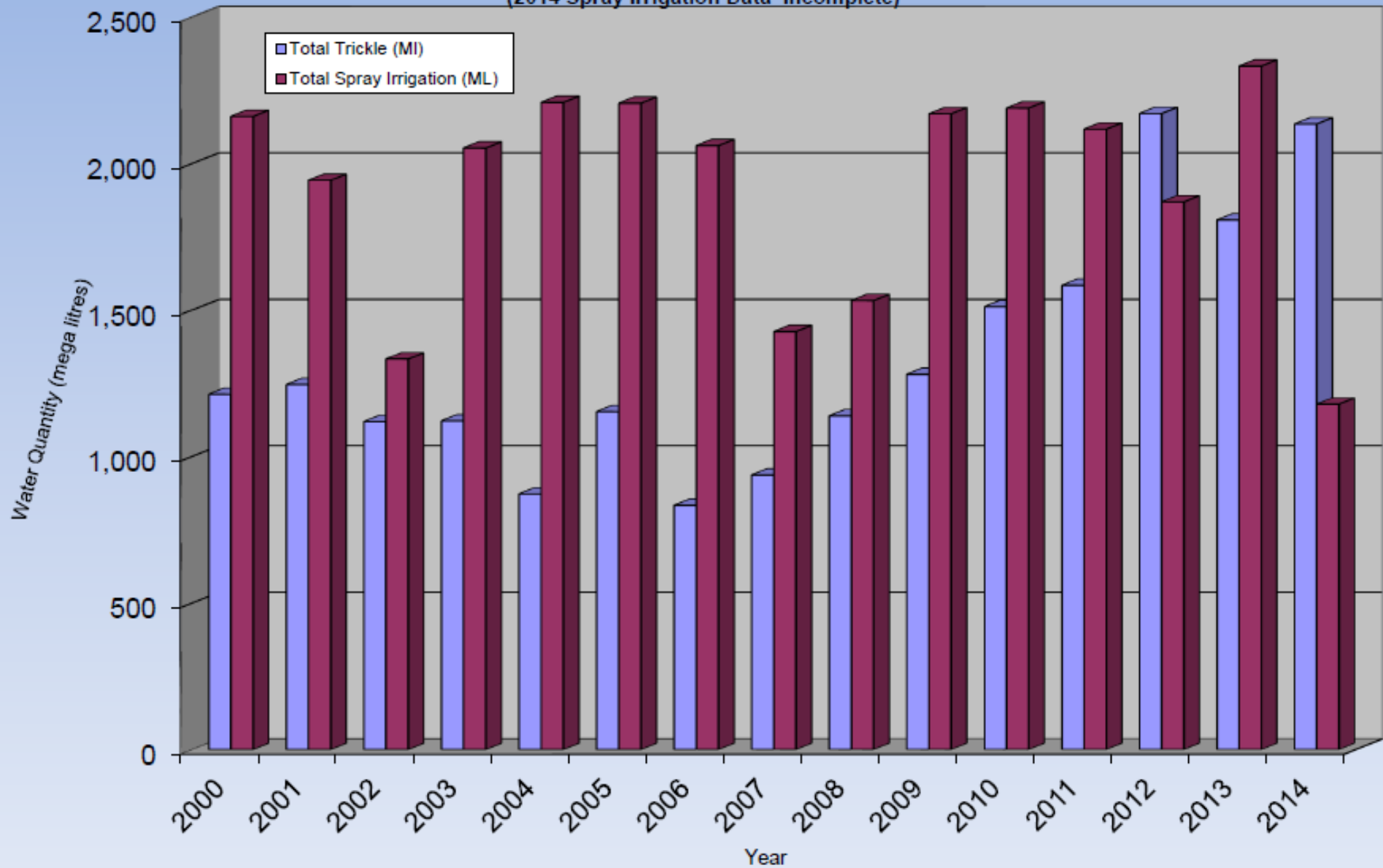


Kent IBR findings: Water Use 2011-2013

'000s cubic meters – total for 32 growers



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





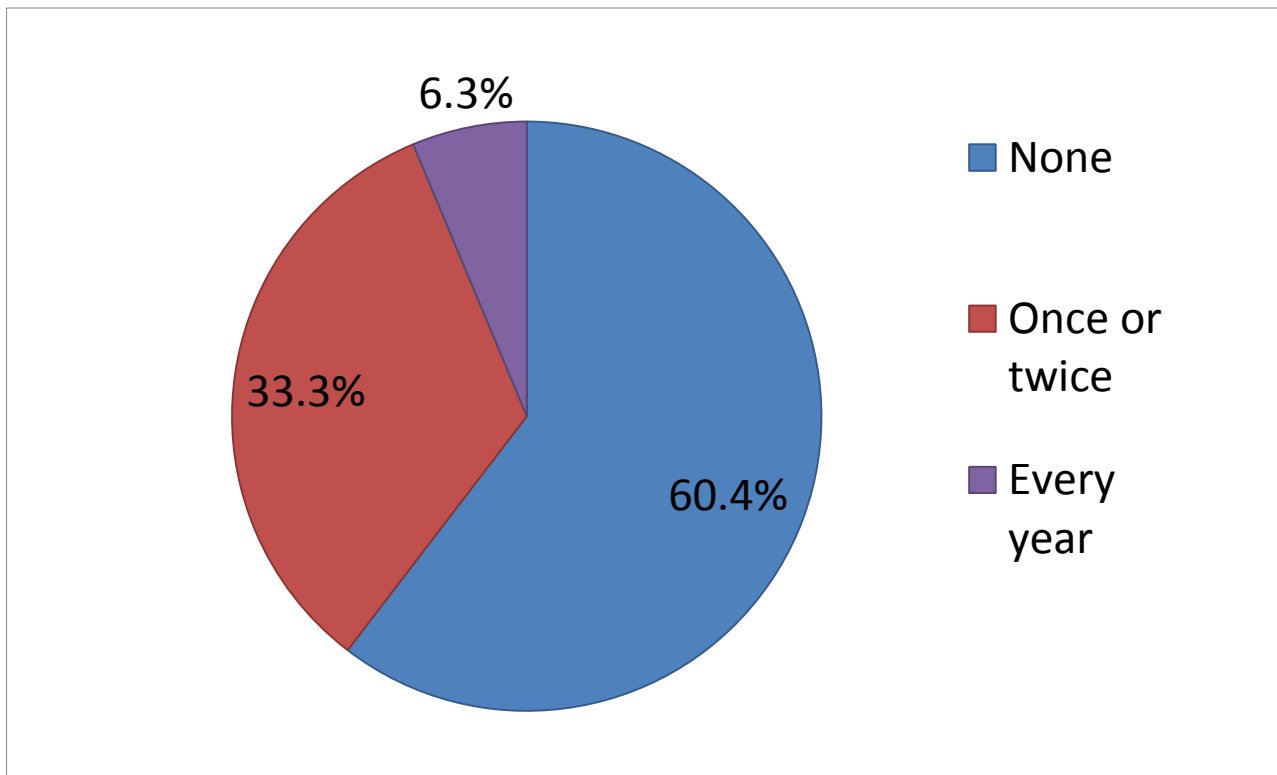
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Impact of Limited Water Availability on Irrigator Businesses in Past 5 Years – Kent Irrigators



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Tree Fruit IBR Responses : Issues and Challenges

- Major concerns about future water availability : trickle irrigation is growing rapidly and many South East catchments are already classified by the Environment Agency as over abstracted / licensed .
- Removal of the trickle license exemption / Abstraction Reform are major concerns as most licensed growers are already being impacted by water restrictions.
- Tree fruit is a long term investment and licensing changes need to be phased in gradually to enable growers to make appropriate investment decisions.
- Pressure from Retailers and Producer Organisations to ensure that growers meet stringent produce quality / standardisation requirements and use water more efficiently .

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Tree Fruit IBR Responses : Irrigation Advice and Support Needs

- More information is needed on planned changes to the Abstraction Licensing system , particularly concerning removal of the trickle exemption.
- Given the increasing automation and complexity of irrigation operations , more staff training is needed but there is a lack of suitable courses
- Many growers mentioned the need for more crop specific information / advice and local 'on the ground' support : tree / soft fruit growers less well served than vegetable producers in East Anglia.
- In the absence of government support, many growers use equipment and service providers for advice, but more integrated support is needed
- Many growers work closely with research organisations such as EMR , but there is a need to translate this knowledge into practical, commercial use



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emr
east malling research

Irrigator Support Needs / Priorities

Ranking / % of Irrigators Rating Important or Very Important

1. Learning from the experiences of other irrigators (77%)
2. Learning about planned changes to Abstraction Licensing System (72%)
3. Understanding which technologies/ techniques have the most impact on irrigation water use efficiency and financial returns (67%)
4. Visits to sites which demonstrate irrigation Best Practice (67%)
5. Understanding how own water use efficiency compares with other abstractors (58%)
6. Direct 1:1 support from irrigation specialists (58%)
7. Collaborative opportunities to improve catchment management and water demand / supply balance (52%)



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'WATERR' Project Planned Support Programme



1. IMPROVING IRRIGATION PERFORMANCE

IBR Follow Ups (May - July)

- Individual briefings for all IBR participants to highlight IBR findings, provide crop specific productivity / financial impact data , compare growers' own performance , highlight further planned project support and agree which would be of most benefit .

Crop Specific Workshops / Best Practice Demonstrations

- Hardy Nursery Stock: West Sussex - August
- Lettuce / Salad Crops : Chichester - September
- Potatoes : TBC pending outcome of Follow Up interviews

1: 1 Grower Support by EMR irrigation specialists

Best Practice Guides and Case Studies

'WATERR' Project Planned Support Programme

2. WATER AVAILABILTY

1. Abstraction Reform Workshop : 28th September at EMR

in conjunction with NFU Horticultural Board to cover :

- Update from Defra Consultation Team on latest government plans for Abstraction Reform .
- Latest information from the Environment Agency concerning the removal of the license exemption for trickle irrigation .
- Opportunities for closer EA / grower collaboration to improve catchment management .

2. Opportunities to improve water supplies

- 1:1 or Group meetings with the Water Companies to discuss opportunities to access untreated water and / or licence trading
- New Reservoir Guide



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'WATERR' Project Future Plans



New Project Proposal

UK Centre for Water Efficient Technologies at EMR

Objectives

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

- Research, develop and commercialise an integrated portfolio of technologies and systems for the tree and soft fruit sector
- Deliver a step change in irrigation water use efficiency, productivity and financial returns .
- Promote and support business growth throughout the supply chain.



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Proposal : EMR Centre for Water Efficient Technologies



Project Strategy

- Create an Irrigation Centre at EMR with the research, development and commercialisation infrastructure and critical mass required for suppliers to co-locate in Kent
- Engage directly with growers, Producer Organisations and Retailers to ensure technologies developed meet the needs of the horticultural fruit sector / supply chain
- Develop integrated / compatible products and systems
- Support commercialisation by raising awareness of the commercial benefits of these new technologies and systems through grower trials, crop specific workshops, demonstrations, training and 1: 1 support .



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Tree Fruit Grower Comments

'The main purpose of irrigation in tree fruit is to meet supermarket requirements for produce uniformity. My irrigation system paid for itself in one year'

'In North Kent we are completely dependent on abstracting water from the ground. I am constantly looking for ways to increase supply'

'We need UK sources of information based in Kent . We need to address local needs and specific crops'

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