

Recycled Water in Agriculture Theory to Practice

Irrigation Australia 2008

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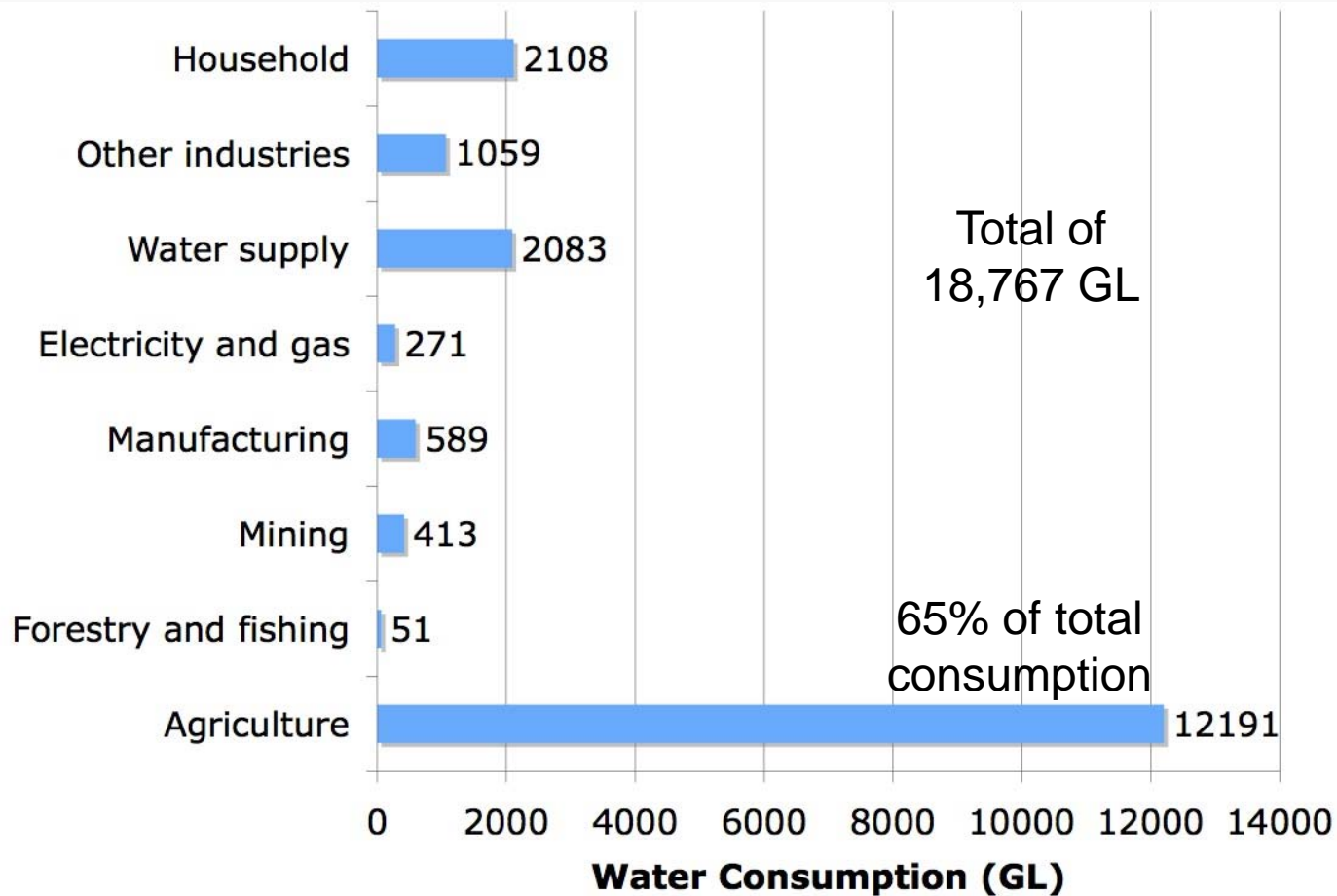
Dr Anne-Maree Boland

Overview

Water Recycling in Pastures and Crops

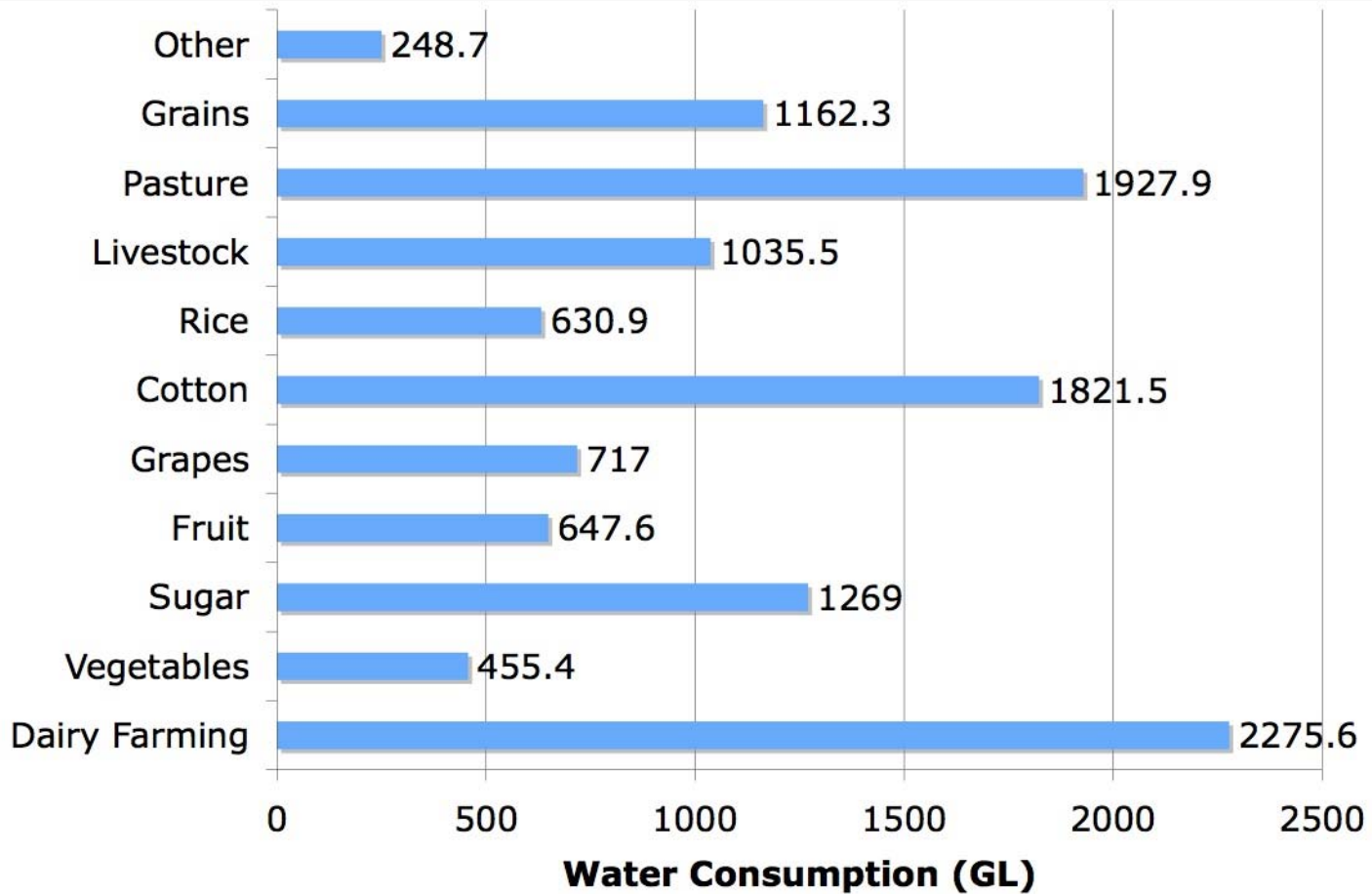
- Dairy
 - Livestock
 - Grains/Crops
-
1. Potential
 2. Recycled Water Trends
 3. Issues and Risks
 4. Water Recycling and Pastures and Crops Manual

Total Water Consumption



Agriculture Water Use

Dairy +
Livestock +
Pasture +
Grazing =
6,400 GL
Or 53%



Recycled Water Use

Total use = 425 GL (2% of total consumption)

Agriculture use = 280 GL (66% of recycled water use)

- Dairy + Livestock + Pasture + Grazing = 237 GL
- 85% of agriculture recycled water use
- 56% of total recycled water use

Potential - only 2% of total agricultural water use

Trends - Pasture and Fodder Irrigation

- Less water (drought, climate change etc.)
- Technologies and BMP's to improve on-farm WUE
- Infrastructure modernisation to improve delivery efficiencies and support on-farm efficiency

Therefore, greater importance on 'non-traditional' sources

- Fit for purpose
- Higher contaminants, specialist management requirements

Trends - Recycled Water

Similarities with traditional sources of water

- Dry - not much
- Wet - too much

Murray Goulburn Leitchville:

- Salinity: 2,010 EC ($\mu\text{S}/\text{cm}$) \Rightarrow 2,890 EC ($\mu\text{S}/\text{cm}$)
- Nitrogen: 78 mg/L \Rightarrow 95 mg/L
- Phosphorus: 23 mg/L \Rightarrow 34 mg/L

- Shandy rate - 1:5 \Rightarrow 1:8

Trends - Recycled Water (cont.)

Increased use close to urban centres:

- Production/amenity horticulture
- Industry

Why?

- Close to source (cheap delivery)
- Demand
- Can afford it - margins

Impact for pasture and fodder producers:

- Competition
- Far away
- Expensive due to treatment for public health

Trends - Recycled Water (cont.)

Water Authority	Total recycled water available for discharge	Total recycled water discharged to streams	Total recycled water discharged to ocean	Total recycled water used for reuse (land based etc.)
	(ML/annum)	(ML/annum)	(ML/annum)	(ML/annum)
Barwon Water	23770	0	20930	2840
Central Highlands Water	9130	8250	0	880
Coliban Water	9450	6270	0	3180
East Gippsland Water	2670	0	0	2670
Gippsland Water	21000	3960	15830	1210
GWM Water	2960	10	0	2950
Goulburn Valley Water	10060	2730	0	7330
Lower Murray Water	3310	0	0	3310
North East Water	8230	6040	0	2190
South Gippsland Water	3790	950	2710	130
Wannon Region Water	8670	20	6390	2260
Western Water	7360	1780	0	5580
Westernport Water	1210	0	1000	210
Total	111610	30010	46860	34740

Trends - Recycled Water (cont.)

Pasture and fodder crops are a good fit:

- Close to source
- Demand - for water and nutrients
- Existing infrastructure
- Lower Class of water = lower costs

Issues and Risks

Drought:

- Quality - MG Leitchville
- Shandy

Implications of less shandy water:

- Need better quality \Rightarrow more treatment \Rightarrow more expense
 \Rightarrow higher cost \Rightarrow squeezes the margins
- Fit for purpose
- Return on capital

Issues and Risks (cont.)

Fit for purpose

- Treatment to reflect end use
- Dairy farms - Class B
- Majority Class C

Return on capital

- Most schemes will never recover costs
- Need a broader assessment than return on capital
 - Consider alternatives
 - Environmental and social costs
 - Fit for purpose

Issues and Risks (cont.)

Salt and Nutrients

- Background levels
- Salinity tolerances & nutrient balances
- Monitoring

Manual

Water Recycling in Pastures and Fodder Crops

- Specific to pastures and fodder crops
- Funded by DEWHA
- Focused on providing advice to farmers and irrigation managers

Manual Overview

- Background information on recycled water in an agricultural context
- Information on how to access recycled water
- Description of key issues when using recycled water
 - Including case studies
- Information resources
 - For different states

Manual Reference Group

- Matt Shanahan - RMCG
- Dr Anne-Maree Boland - RMCG
- Dr Daryl Stevens - ARRIS
- Allen Gale - Goulburn Valley Water
- Sarah West - VIC EPA
- Cathy Phelps - Dairy Australia
- Annette Zurrer - Dairying for Tomorrow
- Michael Carroll - Murray Goulburn Co-op
- Elmis Amair - Bega Co-op
- Alan Murphy - Hassall & Associates
- Scott McDonald - VIC DPI
- Dr Roger Attwater - University of Western Sydney
- Alan Thomas - DEWHA
- Dr Julie Anorov - DEWHA

Questions?
