



# Improving Surface Irrigation to Reduce Costs.

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# SISCO – surface irrigation optimisation

- Assess the performance of surface irrigation events
- Field measurements
- Impact of altering:
  - inflow rate
  - row length
  - duration of irrigation



# SISCO – surface irrigation optimisation

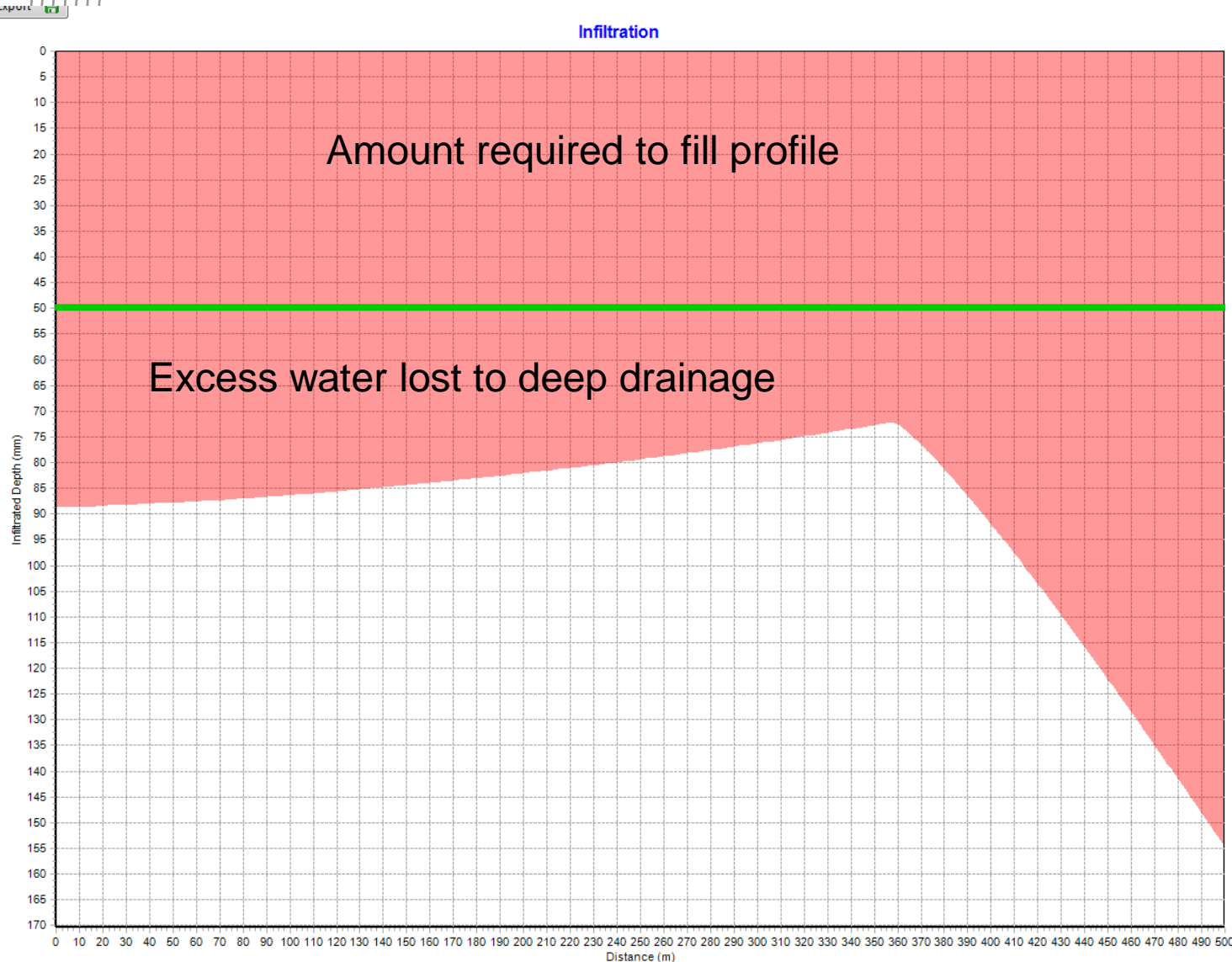
## Field measurements

- Speed water moves down the field
- Inflow rates
- Row length
- Field slope
- Furrow shape





# Over irrigation – Application Efficiency = 55%

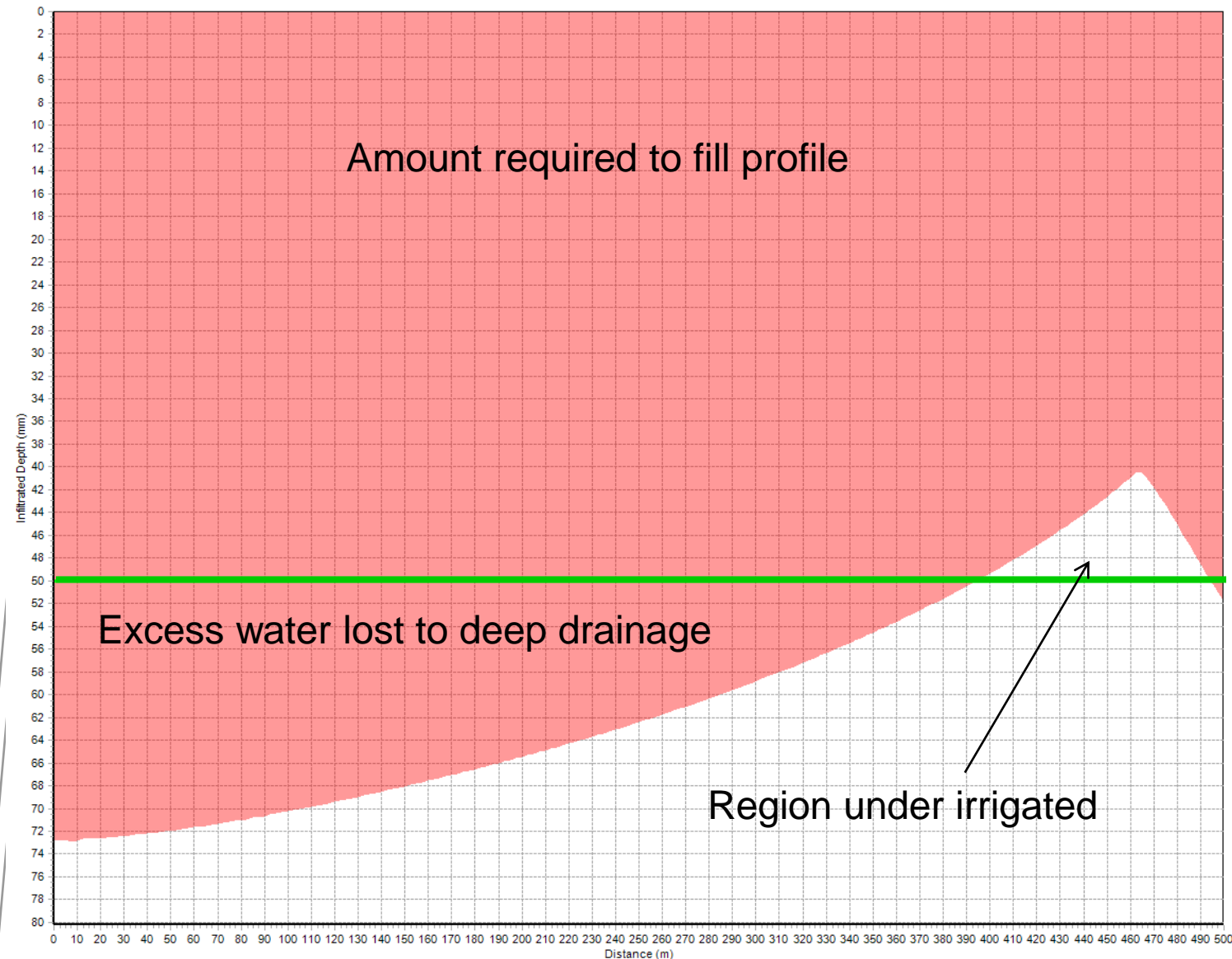


- 500m
- 0.5 L/s
- 36 hours
- Blocked end
- 90 mm applied
- 50 mm stored
- 40 mm lost

# Improved irrigation – Application Efficiency = 81%

xport

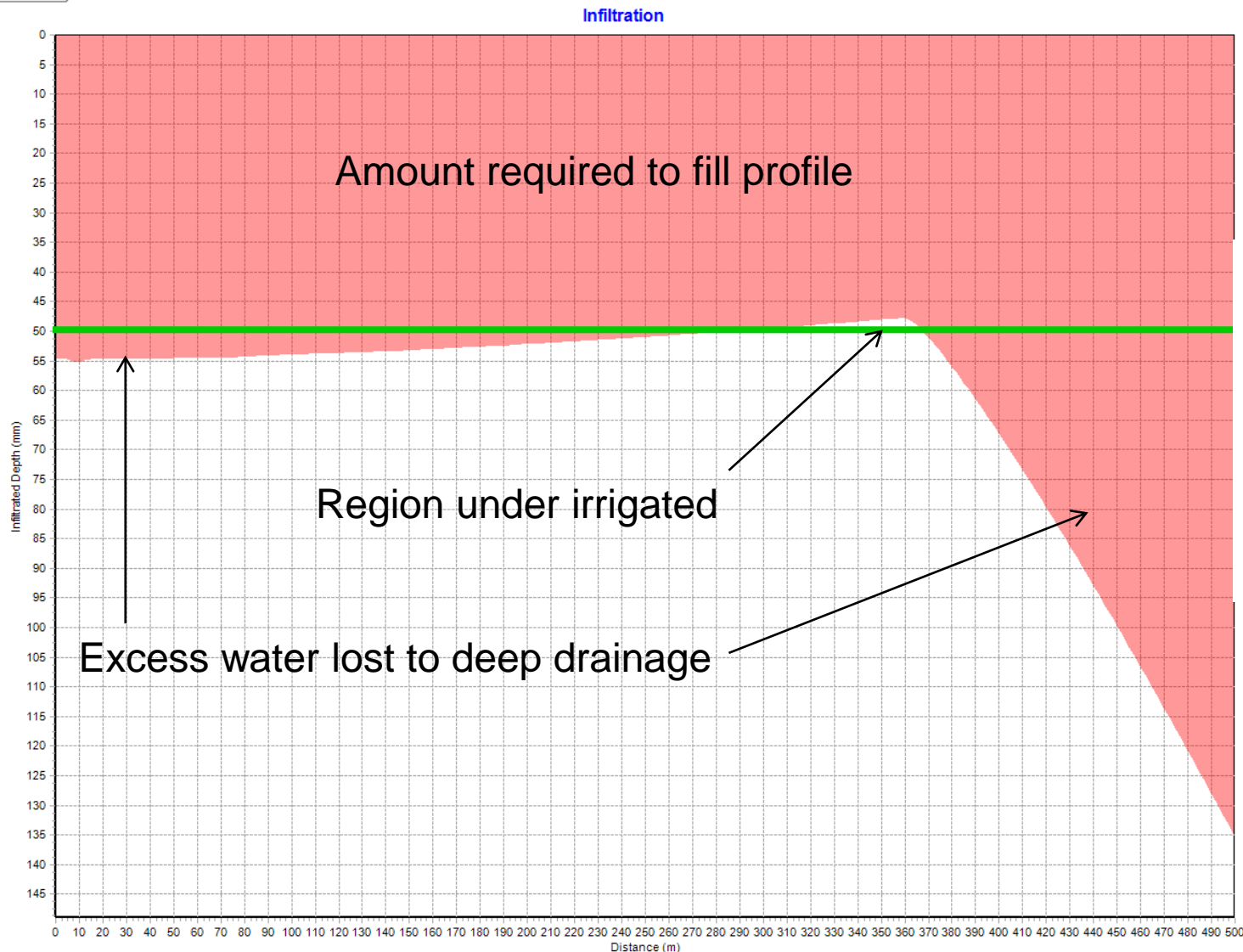
Infiltration



Infiltration  
Deficit

- 500m
- 0.5 L/s
- 24 hours
- Blocked end
- 60 mm applied
- 49 mm stored
- 11 mm lost

# Improved irrigation – Application Efficiency = 80%



- 500m
- 1.1 L/s
- 12 hours
- Blocked end
- 62 mm applied
- 50 mm stored
- 12 mm lost

# SISCO – surface irrigation optimisation

Analyse the information to determine:

- amount infiltrated into the soil
- losses to runoff and deep drainage
- opportunities to improve

Assess potential for savings

- Water costs – total amount of water applied
- Energy costs for pumping





# Furrow Irrigation – reducing irrigation time & volume

	Standard	
Total no. of Irrigations	21	
Irrigation duration (h)	18	
Inflow rate (L/s)	1.5	
Total Applied Irrig (ML/ha)	16.4	
Cane Yield (t/ha)	112	
Sugar Content (CCS)	17.0	

- Ratoon crop
- Heavy clay soil
- Slope ~ 0.3%
- Surface water supply



# Furrow Irrigation – reducing irrigation time & volume

	Standard	Improved	Difference
Total no. of Irrigations	21	21	
Irrigation duration (h)	18	11	
Inflow rate (L/s)	1.5	2.0	33%
Total Applied Irrig (ML/ha)	16.4	13.5	17%
Cane Yield (t/ha)	112	126	12%
Sugar Content (CCS)	17.0	16.9	

- Ratoon crop
- Heavy clay soil
- Slope ~ 0.3%
- Surface water supply

# Ecomonics

	Standard	Improved	Gain		\$\$ value
TCH	112	126	14	@ \$25/t after harvesting & levies	\$350/ha
Applied Irrig (ML/ha)	16.4	13.5	2.9	Water costs @ \$10/ML	\$29/ha
Tariff 62 (off peak)				Pumping costs @ 13.9 c/kWh	\$38/ha
Tariff 62 (peak)				Pumping costs @ 33.3 c/kWh	\$91/ha



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Will only increase!!