

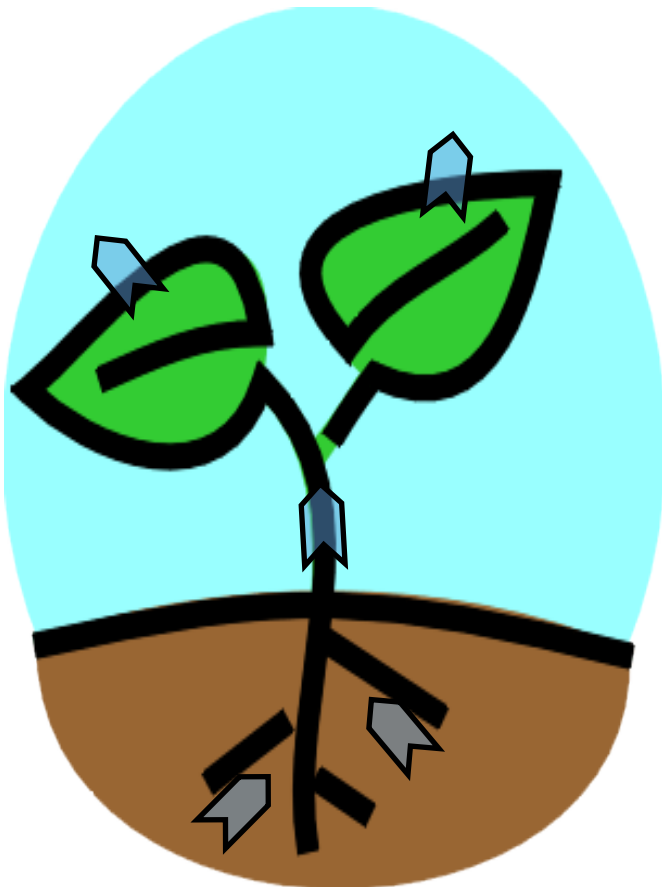
Selection of Methods

Method	Hardware	Software	Data output	Frequency	Locations	Time required	Detail and cost estimate
Atmosphere							
Water Balance (FAO56)	Rain gauge	DSI Scheduler Spreadsheet	Volume to apply and timing, record of irrigations applied	After every rainfall and irrigation	All fields	1 hr to set up 20 minutes each week	FAO56 Can be fine tuned with soil moisture data and MiniPan (\$5)
Mini Pan	Open top container Ruler Measuring	Spreadsheet	Pan Evaporation (would need to be adjusted for ET)	Every week	One in each village	20 mins to set up 10 mins each week	Good visual guide to evaporation (\$10)
Plant							
Visual assessment	Notepad Map	nil	Rough indication of plant stress	Daily	Each intervention site	10 mins each day	Feedback is too late. When the plant is showing stress, it is already reducing production (\$2)
Soil							
Soil moisture monitoring probe	(TDR probe MP406 or Theta probe) Map	Spreadsheet	mV to convert to a volumetric soil moisture measurement	Every week	At 2 depths x 2 locations per intervention site	30 mins each week	Probe should be calibrated Using the volumetric method (\$500 —\$1000)
Volumetric soil moisture monitoring	Hand tools Sampling bags Map	Spreadsheet	% volumetric soil moisture at a point in time	Once per season	At 3 depths x 3 locations per intervention site	One day per season	Very time consuming Laboratory costs will vary (\$2—\$10 per sample)
Hand feel	Hand tools Notepad Map	nil	Rough indication of soil moisture	Every week	At 2 depths x 2 locations per intervention site	10 mins each week	Unreliable as it is subjective. Should be undertaken in conjunction with other moisture monitoring

DSI Irrigation Scheduling Plan

The Soil Plant Atmosphere Continuum is the term used to describe the connected pathway that water moves from the soil through the plant roots and stems, and exists to the atmosphere via the leaves (transpiration).

To manage irrigation to match the plant water requirements we need to know the rate that this transpiration is occurring. To do this we can measure or calculate the movement of water at any of the three stages of the continuum (soil, plant or atmosphere) or better still we can take measurements at all three stages and combine them for an even better result.



Selection of Methods

	Pre-planting		Planting	Week 1, Week 2 , Week ...	Harvest/ Post harvest
Atmosphere					
Water Balance (FAO56)	Set up crops in the DSI scheduler tool. Make an estimate of the total irrigation to be applied through the season	Make adjustments to the settings in the DSI scheduler based on field measurements	Adjust the long term average ETo data based on the mini pan	Enter daily /weekly irrigation applied Enter daily /weekly rainfall applied	Enter yield information and compare water use efficiencies
Mini Pan	Position the mini pan on a level surface in the field and fill it with water		Measure the change in water level in the mini pan and how much water is added to refill it	Measure the change in water level in the mini pan and how much water is added to refill it	Measure the change in water level in the mini pan and how much water is added to refill it
Plant					
Visual assessment	Inspect each field and make note of any agronomic or other technical issues.		Inspect each field and make note of any agronomic or other technical issues.	Inspect each field and make note of any agronomic or other technical issues.	Inspect each field and make note of any agronomic or other technical issues.
Soil					
Soil moisture monitoring probe	Use the TDR probe to take surface and subsurface readings at 2 depths and 2 locations per intervention site.	Record the TDR measurement and compare with the starting soil moisture in the DSI Scheduler		Take TDR readings in the same locations as pre planting. Compare with DSI Scheduler	Take TDR readings in the same locations as pre planting. Compare with DSI Scheduler
Volumetric soil moisture monitoring	Collect soil samples for lab assessment at 3 location and 3 depths per intervention site	Check the soil moisture is close to the DSI Scheduler—if not adjust and/or calibrate the hardware and the software			Collect post harvest samples at same location as pre plant this will then become the next seasons pre plant data
Hand feel	Hand feel to develop an appreciation the look and feel at different moisture contents			Hand feel to develop an appreciation of the look and feel at different moisture contents	

Compare measured data with modelled data

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