TURNING DATA INTO KNOWLEDGE

Weather Station & Soil Moisture Probe Network *Wonwondah, Vic*

Dryland farmers, agronomists, plant breeders and emergency services are among those benefitting from a network of weather stations and soil moisture probes in the Wimmera's Wonwondah district. The broad range of data, presented in real time, is helping farmers manage risks and increase profitability.

Wonwondah Landcare Group has four stations collecting readings for soil moisture, air temperature, soil temperate, dew point, DELTA T, humidity, wind direction, rainfall and detailed frost information. This data is collated into specific information which can be easily accessed from a smartphone or computer.

Group secretary and farmer Chris Guest said collecting this data across a large geographical area was creating a well- informed network of farmers, as well as benefitting others such as agronomists and emergency services. The project has also led to an increase in membership for the group, which initially formed in 1975.

"The existing weather station network, spread 8-10km apart is delivering huge benefits not only for the farmers whose paddocks are housing them, but right across the Wonwondah district and beyond."

Partnership approach

After tracking results from a weather station and soil probe installed on one Wonwondah farmer's property, the Landcare group put together a plan for a network of eight to be installed throughout the district and they:

- Developed a desired network of weather stations and soil moisture probes
- Focussed on achieving maximum benefit by selecting sites in boundary paddocks (ie a soil moisture probe in adjoining paddocks connected to the same weather station)
- Did the sums then invited merchandise stores, agronomists and others to contribute to ongoing costs in return for access to the data
- Applied for funding through Wimmera CMA for stage 1
- Invited landholders to invest private funds
- Installed three new stations
- Organised in-paddock training days

Australian Government | National Landcare Programme

Wimmera CMA

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Turning data into information
Information into knowledge

Soil moisture	cropping decisions such as rotations and crop type, guide to apply urea and other crop inputs
Rainfall	track rainfall in specific paddocks
Fire danger index	when to harvest
Frost	track potential for frost damage
DELTA T index	select ideal spraying time
Temperature	select ideal time to fertilise
Flood risk	tracks rainfall and links to flood maps
Historical data	compare to previous years to make informed decisions, track soil moisture changes over time

Risk Assessment

For low to medium rainfall zones (less than 450mm annual rainfall)

*Courtesy of **Dale Boyd***
*Project leader of 'Risk Management through Soil Monitoring Project' **Agriculture Victoria***

Production stage	Moisture Level	Management action
SOWING	High	All crop rotations possible, including higher risk crops. Examine earlier sowing of longer season varieties if the break allows. Adjust sowing rates for canopy management if the break allows. Early plans for pest monitoring and management.
	Moderate	Crop program as per paddock plans in Summer, rethink riskier crops in low rainfall environments and or a late break.
	Low	Examine exposure and risk to upfront costs. In low rainfall regions, reconsider cropping area, target lower risk crops and more productive paddocks and also in moderate rainfall districts if the break is late.
EARLY/LATE TILLERING	High	High confidence in N application, weed and disease management.
	Moderate	Revisit yield potential and crop inputs.
	Low	Low confidence level. Reduce exposure to costs/risks, consider grazing or hay later in the season if no turn around in the season. N on fodder crops or low N status crops only.
STEM ELONGATION	High	High confidence. Apply appropriate inputs to yield potential and preventative pest and disease strategies, (N, fungicides and pesticides).
	Moderate	Moderate confidence. Conservative plan. N on fodder crops or low N status crops only.
	Low	Low confidence. No N. No forward selling. Consider planning for grazing and hay production.
FLOWERING	High	High confidence. Consider marketing/forward selling options if favourable price and confident of production.
	Moderate	Moderate soil moisture at flowering, particularly at depth can still produce average to above average yields with cool finish and some rain.
	Low	Low confidence. Consider final use of crop based on yield potential and short term weather forecast.
PRE HARVEST	High Moderate Low	Determine potential yields. Adjust insurance estimates.