Soil Moisture Monitoring

Soil moisture tech helps KI growers save water and boost productivity

Through the Department of Primary Industries and Regions' (PIRSA) Kangaroo Island AgTech Demonstration Program, local producers trialled new technologies to improve decision-making and on-farm performance. Among them were vineyard and sheep producer Peter Foster, and potato grower Peter Cooper—two farmers with very different operations who both trialled Sentek soil moisture probes for the first time. Their experiences show how access to live soil data can transform irrigation from guesswork into precision, saving water, time and money in the process.

Cutting water use and gaining confidence with soil moisture tech

Peter Foster

TECHNOLOGY:	Sentek soil moisture probes
LOCATION:	Bay of Shoals, Kingscote
PROPERTY SIZE:	13 hectares
ENTERPRISES:	Vineyard, sheep, accommodation

Peter Foster had never used soil moisture monitoring in his vineyard before joining the Kangaroo Island AgTech Demonstration Program program.

"In the past, we just used a visual assessment. if the vines looked a bit sad or the leaves drooped, we'd water them," Peter says.

"I'd irrigate each block once a week."

After attending an agtech field day, Peter decided to trial Sentek soil moisture probes.

"I didn't have a particular interest in this technology beforehand, but I figured it could be a good idea."

With one probe provided through the PIRSA demonstration and three more funded separately, Peter placed sensors across different grape varieties and soil types to better understand the needs of each block. Installation was handled by a contractor.

"If I had to set it up myself, I would've had no idea. Getting help was essential to make sure it worked properly," Peter says.

The probes send data via SIM card to the cloud, which Peter checks from his laptop every few days.

"Now we know exactly what's going on in the soil profile," he says.

"It turns out we were over-watering before, so this has saved a lot of money on water."

Peter has halved his irrigation time—going from an average of four hours per block per week to just two—by shifting to shorter, more frequent waterings based on real soil needs.

"We're on mains water, so reducing our use has been a big relief, especially after three years of drought and low yields across the island," Peter says.

However, the benefits of the soil moisture probes go beyond water savings.

"We expect better quality in our red grape varieties now that we can apply more precise deficit irrigation," Peter explains.

"It also tracks soil temperature, so we can predict things like budburst.

"After having no interest in the technology, I now think it's essential.

"If you're irrigating without measuring soil moisture, probes like this could save you a lot of water and give you a better understanding of your vineyard."

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Using soil moisture data to sharpen potato irrigation

Peter Cooper

TECHNOLOGY:	Sentek soil moisture probes
LOCATION:	Parndana
PROPERTY SIZE:	200 hectares
ENTERPRISES:	Seed potatoes, summer irrigated potatoes, sheep, winter cropping


Peter Cooper

Parndana potato grower Peter Cooper trialled a Sentek soil moisture and temperature probe over the 2023-24 summer irrigation season as part of the PIRSA Kangaroo Island AgTech Demonstration Program—his first time using this technology in a commercial setting.

"I'd played around with soil probes before and seen a demo from my agronomist, but this was the first time I had live data to work with across a full irrigated potato crop," Peter says.

The probe was installed from October to February, capturing moisture and temperature data down to 55 centimetres in the soil profile.

Peter's first year with the soil moisture probe was all about observation.

"I was advised not to change anything in my operation during the first year—just watch the data, learn from it and use that to make decisions next season," he says.

As the season progressed, Peter noticed patterns in the data that will inform his future irrigation strategy.

"We saw when the crop really started using water as it matured," he says.

"It turns out it's better to split irrigation into two five-millimetre events on hot days rather than one 10mm event.

"We also noticed that bare soil causes big temperature swings before canopy closure. After that, it evens out."

The data from the probe has helped Peter to better understand when plants are under stress.

"At first, the numbers didn't mean much. But over time, I could see the point where stress started to show up in the soil moisture levels," he says.

"That's really useful during tuber set when stress can be costly."

One unexpected benefit of the probe has been the time saved in the paddock.

"These crops only grow for 80 to 90 days, so every day counts," Peter says.

"The probe means I don't have to be in the field constantly touching the soil—I can check from the computer and actually know more, because I'm seeing deeper than I can dig."

"It's another tool to make better decisions. Any information is good information."

Peter says the support he received made the tech easy to adopt.

"George Dridan from Integrated Precision Viticulture at McLaren Vale helped with installation and training, so now I know how to reinstall it myself.

"Next time, I won't forget a marker peg. It took three of us half an hour to find the thing once the crop grew over it!"

About the program

The KI AgTech Demonstration Program, funded by the Australian Government Regional Recovery Partnerships program, allowed KI primary producers to road test technologies free of charge on-farm and share their experiences with other producers on the use and benefits of the technologies.

More information: www.pir.sa.gov.au

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