Performance through collaboration

THE BILBY® WIRELESS COMMUNICATION NODE

Below-ground node for soil sensor data transmission

INNOVATIVE SOILTECH FOR AUSTRALIAN FARMERS

The Soil CRC's BILBY® wireless communication node can be installed entirely below ground and sends data from soil moisture sensors to an above-ground receiver. By locating it below ground, it is kept safe from damage by stock, machinery or pests.

SNAPSHOT

- **Wire-free technology:** Eliminates the need for above ground in-paddock wires and solar panels. Prevents damage to sensors from tractors, stock and wildlife.
- **Farm-ready application:** Ready for easy installation and has a five-year battery life.
- **Data-driven decision-making:** Enables soil data insights from the actual production zone, sending data to a receiver between 100 m and 1000 m away.
- **Made for compatibility:** No need to upgrade existing probes.
- **Proven market demand:** Developed in consultation with commercial and industry partners. Field tested by Sentek to confirm the device's performance.

The BILBY® wireless communication node being installed in the field (source: Tasmanian Institute of Agriculture).

INDUSTRY CHALLENGE

Traditional soil sensor setups connect buried probes to above-ground telemetry units using cables, often requiring a solar panel, antenna and enclosure at the surface.

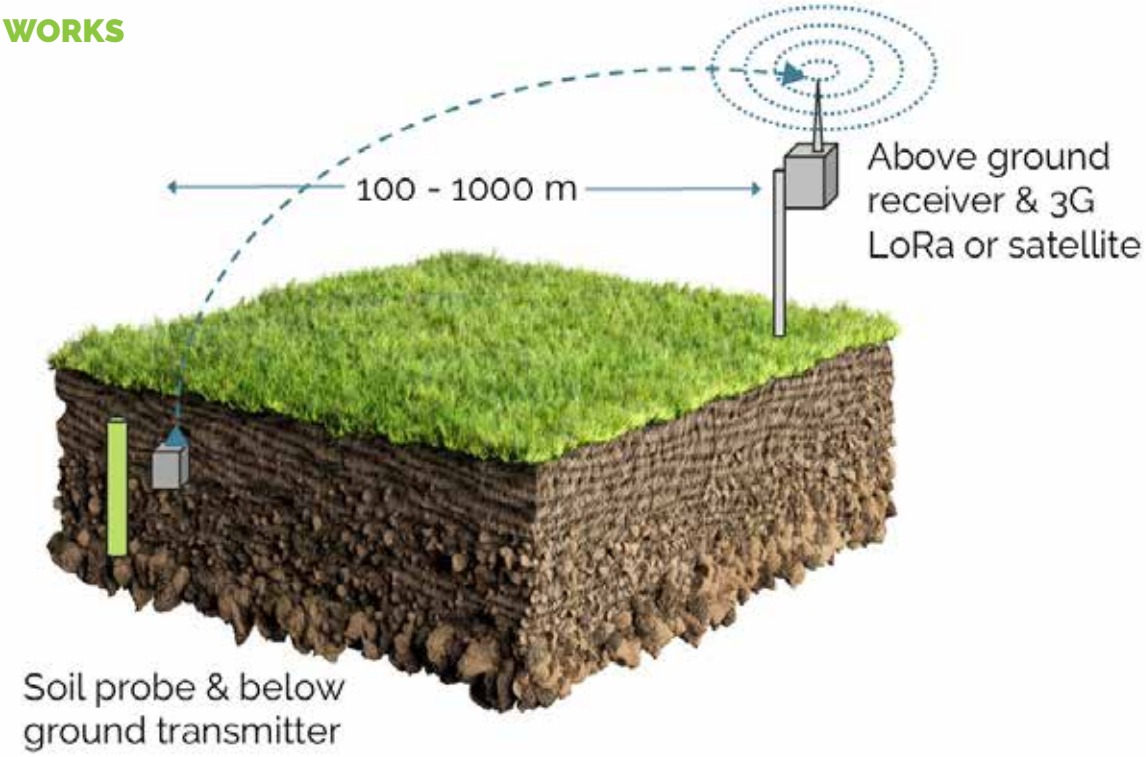
This infrastructure restricts routine farming operations like tillage, harvesting and grazing. It also restricts where probes can be installed. As a result, farmers may end up monitoring part of the paddock which does not reflect the true point of interest.

THE SOLUTION

Unlike traditional soil sensors that need cables and bulky above-ground units, the BILBY® wireless communication node is a fully buried, self-contained telemetry device. It transmits data wirelessly via LoRaWAN over distances up to 1 km – with no need for exposed infrastructure.

This means sensors can be placed exactly where needed, even in the middle of cropping or grazing zones, without disrupting machinery or animals. The result is better placement, better data and more confidence in on-farm decisions.

HOW IT WORKS



The BILBY® wireless communications node sends data from soil sensors to an above ground receiver between 100 m and 1000 m away.

KEY FEATURES

- Long-term deployment of sensor telemetry below the 'disturbance zone'
- Optimised antenna and enclosure design enables subsurface radio frequency transmission over hundreds of metres, even in challenging soil conditions.
- Proven performance in the toughest of real-use trials
- Installation method to optimise performance
- Compatible with common sensor types including SDI-12 and digital serial protocols (tested with probes from Sentek, EnviroPro and others)
- Five-year battery life

NEXT STEPS

The Soil CRC project team are in discussions with an Australian company to manufacture and distribute the BILBY® wireless node for scalable adoption by Australian growers.

GET IN TOUCH

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