

# Factsheet: On-Farm Connectivity



## On-Farm Connectivity: Environmental Monitoring Factsheet

Leveraging advanced connectivity for environmental monitoring on farms enables precise and real-time management of agricultural resources, leading to better yields and sustainable practices. Here's an overview of various environmental monitoring use cases and the type of connectivity that supports them.

### Soil Moisture Probes

**Use Case Overview:** Soil moisture probes are inserted into the ground to measure the volumetric water content of the soil. This data is critical for irrigation management, allowing farmers to apply the right amount of water at the right time.

#### Connectivity Requirement:

- Type: Low-power wide-area networks (LPWAN), broadband, or long-range (LoRa) connections.
- Reason: Efficient energy use for remote fields with infrequent data transmission.

#### Key Benefits:

- Reduces water waste.
- Enhances crop yields by preventing water stress.

### Microclimate Monitors

**Use Case Overview:** These devices collect data on localised environmental conditions, such as temperature, humidity, and light intensity, to create a detailed picture of the growing conditions experienced by specific crops or even individual plants.

#### Connectivity Requirement:

- Type: Wi-Fi, Bluetooth, or Zigbee for short-range; broadband or satellite for wider coverage.
- Reason: Quick data transfer for rapid response; extended range for large farms.

#### Key Benefits:

- Supports precision agriculture by fine-tuning growing conditions.
- Detects microclimate variances that can impact crop health.

### Weather Monitors

**Use Case Overview:** Weather monitoring stations gather a variety of meteorological data points to provide forecasts and real-time weather alerts.





### **Connectivity Requirement:**

- Type: Broadband or satellite connectivity.
- Reason: Reliable transmission of large data sets over wide farm areas.

### **Key Benefits:**

- Informs planning and preparation for adverse weather.
- Helps to mitigate risks and protect crops and livestock.

### **Plant Growth Monitors**

Use Case Overview: Utilising various sensors and imaging technologies, these monitors track plant health, growth rates, and detect potential deficiencies or diseases.

### **Connectivity Requirement:**

- Type: Wi-Fi or broadband, potentially integrating with IoT platforms.
- Reason: High data bandwidth for image and video transfer; IoT for data analysis.

### **Key Benefits:**

- Allows early detection of health issues in plants.
- Assists in the management of nutrients and disease control.

### **Water Quality Monitors**

Use Case Overview: These monitors test irrigation and livestock water sources for contaminants, pH levels, dissolved oxygen, and salinity to ensure water safety and quality.

### **Connectivity Requirement:**

- Type: LPWAN, broadband, or direct satellite connections for remote locations.
- Reason: Consistent and continuous monitoring with alerts for quality dips.

### **Key Benefits:**

- Protects plant and animal health.
- Ensures compliance with environmental regulations.

### **Water Flow and Pressure Monitors**

Use Case Overview: Flow and pressure monitors are used in irrigation systems to ensure that water is being distributed evenly and at the correct pressure, which is essential for drip and sprinkler irrigation systems.

### **Connectivity Requirement:**

- Type: Broadband, LoRa, or Wi-Fi depending on the size and location of the irrigation setup.





- Reason: Immediate alerts to changes could prevent over-irrigation or under-irrigation.

**Key Benefits:**

- Optimises water usage and reduces waste.
- Prevents damage to crops and soil from incorrect irrigation practices.

**Connectivity technologies summary:**

- **LPWAN:** Ideal for transmitting small amounts of data over long distances with low power.
- **Broadband:** Provides wide coverage and higher data rates, suitable for transferring larger datasets.
- **Satellite:** Ensures connectivity in the most remote areas without depending on ground infrastructure.
- **Wi-Fi/Zigbee/Bluetooth:** Best for short-range communication when devices are in close proximity to a central hub.

For detailed setup guides, troubleshooting tips, or to schedule an on-site consultation, please contact our technical support team at Regional Tech Hub on 1300 081 029 or visit our website at [www.regionaltechhub.org.au](http://www.regionaltechhub.org.au).

**About the Regional Tech Hub**

The Regional Tech Hub (RTH) is an Australian Government initiative run by the National Farmers' Federation. Since late 2020, we have helped more than 160,000 people across rural, regional and remote Australia to get connected and stay connected to internet and voice services.

The RTH is proud to work alongside the Australian Government to offer free and independent advice to farmers, fishers and foresters, on their connectivity options as part of the Government's new On-Farm Connectivity Program.

