



Benefits of Technology in Agriculture



Long Range, Wide Area Coverage

- Long range of up to 10km.
- Devices can be placed a long way from the receiving gateways in situations with good Line of Sight (LOS) between the sensor and the gateway.
- Ideal for rural areas where other wireless options (Wi-Fi, Bluetooth) can't reach.
- A single LoRaWAN gateway can collect data from many devices for various measurements across an entire farm

Soil moisture and pH measurements from soil sensors
 Wind, rain, humidity and temperature from weather stations
 GPS asset tracking for farm vehicles and equipment



Low Power Consumption

- Sensors can run for up to 5-10+ years on a small battery before requiring a recharge or replacement, with solar charging a possibility to extend battery life.
- Low operational costs with reduced maintenance trips and labour associated with sensors.
- Perfect for remote installations without mains power (soil probes, water tanks, etc.)

Cost-Effective

- Low infrastructure cost with LoRaWAN gateways inexpensive compared to cellular base stations.
- License-free spectrum as devices operate on unlicensed ISM bands meaning no SIM cards or data plans are needed (as long as the gateway has access to the internet).
- Minimal infrastructure required for sensors to work effectively- few gateways needed for large areas.
- Suitable for smallholders or large farms.

Real-Time Monitoring and Data Insights

- Continuous data collection from distributed sensors
- Data transmitted directly to dashboards for real-time farm decisions:
 - Soil moisture and temperature
 - Weather- humidity, rainfall, wind
 - Electric fence monitoring
 - Livestock tracking and environment
 - Farm vehicle and asset tracking



Easy Integration and Automation

- Plug and Play Setup.
- Seamless data transfer as LoRaWAN networks can easily integrate with popular IoT Platforms e.g. The Things Stack.
- Simplified data analytics and real-time insights with Applications e.g. Datacake.
- Automatic control and rules can be easily setup.



Secure and Reliable Communication

- LoRaWAN is designed with security built in- end-to-end encryption, authentication, and integrity checks to protect and secure your data.
- Every sensor has unique encryption keys that protect the data collected.
- Resilient against interference, weather, and network downtime.
- Ensures consistent data even in remote or harsh farm environments.

Proven Ecosystem for Scalability and Flexibility

- New sensors or devices can be easily added to grow your LoRaWAN network on farm.
- Affordable and accessible devices and sensors.
- Widespread adoption and proven reliability across various industries.
- Extensive network of LoRaWAN gateways (private and public).



- ✓ You don't need to own a gateway to get started if you are in range of a public gateway.
- ✓ As more gateways are added into an area, this improves the resilience of the application and spreads the network further.

Suited for Remote and Rural Areas

- Works without cellular or broadband coverage.
- Gateways can use cellular, Wi-Fi, or satellite backhaul.
- Ideal for farms with limited internet infrastructure.

