# REDtone

## IoT-Based Smart Farming Solutions
## Agriculture Meets Technology

According to the United Nations, the world's population is estimated to increase by 29% to 9.8 billion in 2050. This will put enormous pressure on the world's resources, particularly the agriculture sector. It is therefore essential to develop sustainable measures that will significantly increase output to meet the demands of an ever-increasing global population.

The agriculture industry needs to transform to match the demand. One way to address these issues while simultaneously increasing the quality and quantity of agricultural production is to implement technology-driven farming or IoT-based farming.

In the last decade, industrialised and digitised farming has become more commonplace and is spreading fast, creating significant disruption in the agricultural landscape.

## What are REDtone IoT-Based Smart Farming Solutions?

REDtone IoT-based smart farming solutions provide an integrated platform that allows farmers to leverage sensors, smart gateways and monitoring systems to collect information, control various parameters on their farms and analyse real-time data in order to make informed decisions.

These smart solutions ensure crops are well nourished and watered without human intervention. The data collected from sensors are stored in the cloud and can be easily accessed using a phone, tablet or laptop. The solutions are aimed at increasing farming productivity and quality, reducing labour costs and maintaining the sustainability of the entire value chain.

### Smart Fertigation System
- Enables efficient nutrient monitoring and control
- Instantly selects and calculates the optimal fertiliser blend based on water/soil composition and growing needs
- Increases yield and improves crop quality while significantly reducing fertiliser costs

### Smart Irrigation System
- Helps farmers avoid water wastage and improve the quality of crop growth in their fields by irrigating at the correct times, minimising runoffs and other wastage as well as determining the soil moisture levels accurately

### Smart Greenhouse
- A self-regulating, micro-climate controlled environment is created through the use of sensors, monitoring and control systems that optimise growth, ultimately automating the growing process

### Smart Trace
- A tracking system checks the authenticity, place of origin, packaging date and logistics information
- IoT is used to facilitate real-time tracking; the solution enables farmers to trace the tree of origin for each product

### Smart CCTV
- 24/7 CCTV remote monitoring via mobile phones / tablets
- An efficient intruder and theft deterrent, especially for fertiliser inventory and daily operations monitoring

## Type of sensors used for remote monitoring and control

### Moisture detection
- Sensors are placed in the soil to measure moisture content

### Water monitoring
- Sensors are placed in misting and irrigation systems to monitor the performance of pumps and pressure lines

### Power supply monitoring
- Electricity powers critical equipment like lighting, water wells, heater fans, louvers, sprinklers as well as humidifiers and sensors will immediately detect electric outages

### Air circulation monitoring
- Sensors are placed in automatic ventilation systems like vented roofs, side vents and forced fans to alert farmers when any of these systems stop running or start operating outside preset parameters

**Water pH levels**

- Sensors are tapped into existing plumbing and can prevent nutrient deficiencies that occur in overly or less acidic water by sampling the water's pH as it runs through the pipe

**Ultrasonic Intrusion Detection Sensor**

- Ultrasonic waves attack the auditory system of animals, e.g. monkeys and squirrels, causing discomfort
- Effectively gets rid of animal menace and nuisance from early growth to fruiting stages

## Benefits

**Weather prediction as well as water and soil monitoring sensors**

- Helps maintain a perfect microclimate and environment for optimal plant growth

**Better control over internal processes**

- Helps lower production risks as the ability to anticipate production output allows farmers to plan for better product distribution

**Better cost management and waste reduction**

- Increases control over the production as being able to see any irregularities in the crop growth means the risk of losing yields can be mitigated

**Increased business efficiency through process automation from product tracking to distribution tracing and analytics**

- A tracking system checks the authenticity, place of origin, packaging date and logistics information

**Enhanced product quality and volume**

- Achieves better control over the production process and maintain higher standards of crop quality and growth capacity through automation