



FOOD+AGRICULTURE

2

REDTONE INTERNATIONAL BHD

Farming in the digital age

REDtone rolls out Internet of Things-enabled smart applications to help farmers reduce costs and improve productivity and efficiency

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Photos by Kenny Yap/The Edge

IMAGINE a farm where there are sensors in the fields and soil that ensure that the watering and fertilising of the crops take place not only at the precise time but also in the quantities required.

There are also drones that monitor the soil and overall crop health so you can prevent diseases or crop infestations, as well as tracking devices that monitor the health of the livestock.

All the data collected are then used to help you achieve better control of the production process, which allows you to reduce waste and manage costs more effectively.

This is not a far-fetched scenario. The Internet of Things (IoT), which lies at the heart of the Fourth Industrial Revolution, is already making such scenarios a reality.

IoT is the concept of connecting any device to the internet and other connected devices — for example, smart TVs, wearables such as smart watches, and self-driving cars. In the agriculture sector, IoT-based farming or smart farming is beginning to change agricultural practices and predictions.

Globally, smart farming equipment is being deployed in the US, Australia, New Zealand and

Lau (right) with Mohd Firdaus at the latter's rock melon farm in Hulu Langat

Europe, from robots capable of identifying and picking fruit to autonomous robot weeders.

In Malaysia, REDtone International Bhd's smart farming solutions allow farmers to leverage sensors, smart gateways and monitoring systems to collect data, control various parameters on their farms and analyse real-time data to make informed decisions.

"We have grown from a voice service provider to an integrated telco and digital infrastructure services provider. We have been helping our customers transport, store and compute data. So, it was a natural evolution for us to help customers make sense of the data," says group CEO Lau Bik Soon.

The group is driven by the technology and expertise it has developed and honed over the years as well as global trends. "By 2050, with the world's population expected to rise to 9.8 billion, food production will have to grow by 70%. This will put great pressure on our natural resources. So, increasing output and productivity is the way to go," says Lau.

By taking advantage of the real-time data captured by IoT sensors, farmers can predict the weather, check soil and water conditions, prevent diseases and manage crop conditions. These smart solutions ensure crops are well nourished and watered with-

out human intervention. The data collected from sensors are stored in the cloud and can be easily accessed using a smartphone, tablet or desktop computer from anywhere in the world.

REDtone's smart farming solutions, which were rolled out early this year, include Smart Fertigation, Smart Irrigation and Smart Greenhouse. With the smart fertigation solution, dissolved fertilisers are distributed to the crops through the irrigation system — delivering just the right combination of water and nutrients directly to the roots of each plant according to the crop development cycle. According to the company, the system has been proved to achieve higher yields and quality for high-value crops such as lettuce and tomatoes.

With agriculture and farming consuming about 70% of the world's freshwater supply, irrigation management is crucial. With the smart irrigation solution, farmers can ensure that their crops are getting the right amount of water at the right time.

With REDtone's smart greenhouse solution, farmers can equip their greenhouses with sensors and actuators that are connected to a smart control panel, which has been programmed to send data to a cloud-hosted control centre. The system then evaluates changes in the environment and takes the necessary action to maintain optimal conditions for plant growth.



Farmers can be assured that their crops are getting the right amount of water at the right time

Positive feedback

REDtone has received many enquiries from farms keen to reduce costs and their dependence on foreign labour and, at the same time, increase production.

Early adopters of the company's smart farming solutions have given encouraging feedback, says Lau. He points to the case of a greenhouse farmer in Sarawak, who has reduced the application of fertilisers for the leafy greens he grows from three times a week to just once a week.

"The farm has also managed to reduce water usage by half. And crop damage has been reduced from 15% to 3%. So, the benefits are twofold — reduced costs and increased yields," he says.

In the case of another customer — a chilli farm — costs have dipped 15% for every acre while yields have risen 15% to 20%.

The company has also been recognised for its smart farming solutions- receiving the MSC Malaysia APICTA Award 2019 for Industrial Agriculture.

As excited as he is about the positive feedback, Lau says awareness of smart farming solutions is generally low. Farmers still hold on to the idea that they need to be out in the field, monitoring the land and condition of the crops. But the rising cost of labour means that traditional farming approaches are unsustainable.

However, the younger generation of farmers, being more exposed to technology and IoT, are beginning to embrace the concept of smart farming. Take for example, Mohd Firdaus Mohd Gazali, a



Sensors and actuators are connected to a smart control panel, programmed to send data to a cloud-hosted control centre



The mixing and distribution of fertiliser and water are automated and undertaken based on set parameters



partner at Fiegrow Enterprise. At the company's half-acre rock melon farm in Hulu Langat, the mixing and distribution of fertilisers and water is automated and carried out based on set parameters.

Sensors are placed in the individual polybags in which the fruit is grown to monitor the soil condition by taking readings of the water content, pH levels and electric conductivity (EC). These sensors are connected to sensor hubs, some of which are solar-powered, which then send the data wirelessly to the control panel. With the data collected, the ratio of fertiliser and water can be monitored and adjusted accordingly.

"In the past, our workers would have to mix the fertiliser manually and then calibrate the EC manually. It was repetitive and time-consuming. There was also a lot of waste in the amount of fertilisers used," says Mohd Firdaus.

With the smart farming solution, he has been able to save 35% on fertilisers. "We are just halfway through a planting cycle and we have already saved about RM800 in fertiliser cost," he says.

The farm produces rock melons over four cycles a year, with each cycle yielding about seven tonnes of fruit.

Mohd Firdaus, who has been farming rock melons for the past five years, points to the savings in manpower. With rock melon farming being fairly labour-intensive, workers — who have been freed from the mixing and distribution of fertiliser — can now focus on plant maintenance.

There is peace of mind too. The 33-year-old

Sensors are placed in individual polybags to monitor soil conditions

The smart applications are ideal for greenhouse farming

farmer can now attend to the needs of his other farms or other aspects of the business. "Even if I am not physically at the farm, I can access REDtone's smart farming app through my mobile phone and check the salinity and water content. And if necessary, call my workers to address the issues that have cropped up," he says.

ROI in a year or two

As with any equipment, farmers want to see a return on investment (ROI) when they buy a smart farming solution. REDtone says IoT-based farming solutions have become more affordable as the sensors are now smaller, more sophisticated and cheaper. Additionally, the network infrastructure and connectivity are more accessible, intelligent and secure than ever before.

Typically, farmers can see an ROI within a year, says Lau, adding that the cost per acre for a total smart farming solution is about RM25,000 to RM35,000. In Mohd Firdaus' case, he reckons that there will be an ROI in about two years.

If it is a high-value crop like rock melons or chilli, and if the farm spans about three to five acres, then there are economies of scale to be enjoyed, says Lau.

To raise awareness of the merits of smart farming, REDtone actively participates in trade shows and is exploring opportunities to work with the Ministry of Agriculture in promoting its applications. Lau feels that the availability of incentives or financing would help spur more farmers to embrace smart or precision farming solutions.

"This is the future. The demand for food is increasing and the only way to increase production with the available resources is through technology, and that means smart farming," he says. ♦



Photos by Kerry Yap/The Edge