Australia Unlimited

Using the Internet of Things to increase global food production

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The United Nations has declared a need for new ideas if we are to feed the world by 2050. Australian entrepreneur Ros Harvey is using the Internet of Things and innovative technology to help agribusinesses improve productivity and reduce waste.

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Ros Harvey's big idea is poised to make a huge impact on how we deliver food from farm to table. The short version: help growers take the guesswork out of growing. The longer version: combine sensors, apps, data and artificial intelligence to monitor and predict conditions on the ground so farmers can make faster and better decisions about their crops.

Harvey is founder and managing director of The Yield, an agriculture technology company she believes can revolutionise food production around the world. The key is technology that monitors hyper-local conditions – down to a row of growing vegetables – to enable growers to minimise risk and make informed decisions about when to plant, irrigate, feed, protect and harvest crops.

"We need to increase food production by 60 per cent to feed the world by 2050," Harvey explains. "That means improving productivity and reducing waste.

"Decisions made on a farm can have a huge impact on things like shelf life, the reduction of waste through overproduction, and optimising the supply chain," explains Harvey.

Sensors measure conditions for aquaculture safety

The Yield is an Internet of Things (IoT) and data analytics business that provides farmers with smart sensors, software and services that turn complex environmental data into simple and easy-to-use information.

First tested on oyster farms across Tasmania, The Yield uses sensors to measure salinity, water temperature and water depth every 10 minutes – information that enables aquaculture farmers and food safety regulators to manage disease risk and reduce unnecessary closures.

"Oysters are filter animals and when it rains you get run off. The oysters then accumulate contaminates that makes them dangerous to eat," says Harvey.

"Food safety regulators have traditionally used rainfall from the nearest weather station as a proxy for determining harvest closures. What we did is put real-time sensor technology into the water that oysters drink and use salinity as a proxy for run-off.

> "We can prevent unnecessary harvest closures by up to 30 per cent. For a typical grower, that means we give them back four weeks a year that they can harvest and run their business. Our technology means they only close when they have to. Our prediction capability means they know when they are going to close and can get a better return on their assets."

Another example of the technology's use is with lettuce farming. The Yield's predictive analytics can assist with scheduling planting and harvesting times to maximise shelf life – a key factor in minimising food and crop wastage.

"The minute you put lettuce into a bag it begins decomposing. Growers have to manage and predict what they plant so they can meet their forward contracts," Harvey says.

"Our technology allows growers to make specific decisions about sections of their crop: how much they plant; how they reduce waste; how they manage a harvest. All these decisions flow through the business in terms of costs associated with production," Harvey adds.

The Yield's innovative technology, which harnesses the power of the IoT (where machines – not just people – are connected to the internet), has won admirers from governments and enterprises around the world.

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Australian startup receives global investment attention

The Yield was launched in Tasmania in 2014 and has offices across in Sydney, Melbourne and Hobart. The company lists Microsoft, Intel and Bosch as technology partners (Bosch invested A$2.5 million in The Yield in 2016) and counts the New South Wales and Tasmanian governments among its customers.

In 2015, The Yield was awarded an Accelerating Commercialisation grant by the Australian Government. A year later, the company announced a A$5million investment round, and, in April 2017, completed a further Series A funding round that included financial backing from lead investor Bosch, as well as KPMG Australia and AgFunder, a US-based agricultural industry investment fund that in 2017 granted the company an innovation award for its agtech.

"We really focused on strategic investors rather than venture capital funds, because we want investors who share our values, but who also have the capacity to help us scale globally," Harvey says.

Passion for transformative tech

Harvey, who is also an Adjunct Professor at the Queensland University of Technology's Institute for Future Environments, helped found Sense-T, a collaboration between industry, government and researchers that uses data to study and improve economic, environmental and social conditions in Tasmania.

"I am an unlikely entrepreneur," Harvey admits.

> "I am not a technologist but I have a passion for the transformative capability of technology and a strong understanding that you also have to solve a business problem.

"I have spent my career looking at how to create public good with private effort. Without doubt, The Yield is a private-sector company but we have a much bigger purpose than that. We are looking at how to feed the world without wrecking the planet."

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Harvey is an adamant promoter of the power of the IoT and believes it will play a starring role in agricultural and environmental initiatives that will address future socio-economic and environmental challenges.

"You can achieve environmental sustainability not just by setting regulations but by asking what the market-based drivers for growers are for them to be able to move into sustainable production systems," she says. "If you are really going to make an impact you have to work with communities, understand what they need and solve their real problems for them or with them."

Harvey also demonstrates her commitment to technology's central role in agribusiness with her position as co-founder of the Food Agility Co-operative Research Centre – a project that brings together participants from Australia's food, technology and research sectors. The A$200 million initiative – which includes a A$50 million investment from the Australian Government – aims to use the power of digital technology to benefit different aspects of the food industry.

"Australia has an opportunity to be a world leader in this area and we are very proud to be part of that," says Harvey.

Find out more about <u>The Yield</u>.