



Waikato University engineering professor Mike Duke expects the kiwifruit industry to adopt robotics over the next decade.

A robot revolution on the way

Robotics and other new technology will result in big efficiency gains for New Zealand agriculture, Gerald Piddock writes.

Rural robotics and other technologies are set to become mainstream on New Zealand farms.

It's no longer a case of if, but rather when, everyday robotics are accepted, according to industry experts at this year's Fieldays.

Waikato University Professor of engineering Mike Duke says robotic technology is much more affordable with more people taking an interest in new technology.

The university's stand at Fieldays featured the prototype Autonomous Multipurpose Mobile Platform robot (AMMP) designed to harvest kiwifruit.

The prototype robot was developed in partnership with Bay of Plenty business Robotics Plus and Plant and Food Research.

Duke says it is time for the kiwifruit industry to embrace the robot revolution.

"Robots never sleep, which makes them ideal workers. They'll do the menial work humans should no longer be expected to do, and they work through the night without any extra cost."

He predicts that robots will be commonplace on orchards or cropping farms in about a decade as the price of the technology drops over that time.

"It will happen, it's just a case of how long. You just have to look at this machine and the speed that it's working at. It's getting close." This process will be accelerated if machines are created that

become a 'must have', he says. Duke says they designed the AMMP as solution to issues around labour shortages in the kiwifruit industry at harvest time.

"It will stop, look up at the canopy, look up and using computer vision will find out exactly where the kiwifruit are and will send an arm to that location and harvest."

Duke estimates one robot can do the work of at least 12 workers and can harvest one kiwifruit every 1.5 seconds. Over the next year they aim to reduce that time to one second for every fruit harvested, making it at a commercial rate.

"We just need to tweak it up a bit." Duke says the benefits of the robot are twofold. While it solves the staffing issues the kiwifruit industry faces around harvest time, it also creates a business opportunity to export the technology to overseas markets.

"You are not only exporting the machine, you're exporting the service. New Zealand companies can not just build the machinery but run the service."

Rather than kiwifruit growers buying a robot, they will be hired out to growers to harvest the crop similar to a contractor.

"The key to this is that this is not just a bunch of academics sitting in an ivory tower playing around with toys. We're actually trying to solve a problem for the industry."

Duke says they are also devel-



The Autonomous Multipurpose Mobile Platform robot is a prototype designed to harvest kiwifruit.

oping similar robotic technology for the asparagus, apple and forestry industries.

The wider use and adoption of new technology is one of the themes in KPMG's Agribusiness Agenda, released at Fieldays on June 14.

Financial company KPMG says emerging technologies have "irreversibly changed the agri-food sector".

"In a future where change will be the only constant, the ability to identify and adopt emerging technologies quickly and early will be critical to maintaining an edge in premium markets," it says.

ANZ's managing director of commercial and agri Mark Middleton said the higher dairy payout had put dairy farmers in good position to take advantage of new technologies.

"While dairy and other commodity markets remain changeable, a higher payout provides an opportunity for our dairy farming customers to pay down some of the debt they've built up, and to reinvest in their businesses."

"We are seeing the next agricultural revolution where technology and innovation will drive improvements in farm productivity, efficiency, while reducing environmental impact."

One such emerging technology

is using wireless sensors on farms as a management tool.

Tony Walters has been piloting this technology for telecommunications company Spark.

It uses wi-fi sensors to monitor and collect data on his Waituku dairy farm for everything from milk temperature in the vat, whether his yard gate is open, wind speed, his water intake, air temperatures, rainfall, soil temperature and soil moisture levels. The sensors enable him to make better farming decisions about how to grow grass.

"We know how much grass is going to grow based on our soil conditions. It's easier to make decisions around getting more out of your property because you have got the ability to analyse the data."

It also electronically records compliance, saving him a huge amount of time.

Spark have expanded the pilot from farm scale to an entire district and have begun trialling the sensors on about 30 farms at Richmond Downs in the Matamata-Piako region.

The pilot started in March and will finish in January, providing the company with four seasons worth of data, Spark's David Walker said.

But a wider roll out of the tech-

nology on a country wide scale will take time because of the preparation involved, he says.

Farmers are slow to uptake new technology because many older farmers are able to run their businesses with a minimal understanding of computers and other technologies, Walters says.

"A lot of the stuff now is getting simpler for us to use and simpler for us to install. Instead of before where we had to read something, take that information and do something with it, now it's automatically been done by the systems that are in place."

It also does not have the same 'feel good factor' when compared to buying a new tractor.

"You buy what you are comfortable with and some people may go and spend \$100,000 on a tractor without adding any value to your property yet they won't go and spend \$10,000 on technology to understand their farm and see how they may get more out of it."

Concerns around the lack of connectivity are issues for many farmers, making them reluctant to invest in this type of technology, Walker says.

But the affordability of this technology will change dramatically over the next few years, making it much easier for farmers to adopt.