Attention to detail leads to record-breaking results

If you want to set a Guiness World Record, you're going to need to pay close attention to every detail of your endeavour. Just ask Eric and Maxine Watson, Kiwi crop farmers who have had outstanding results for several decades, thanks to their precision and expertise across every aspect of their operation.

Eric and Maxine Watson

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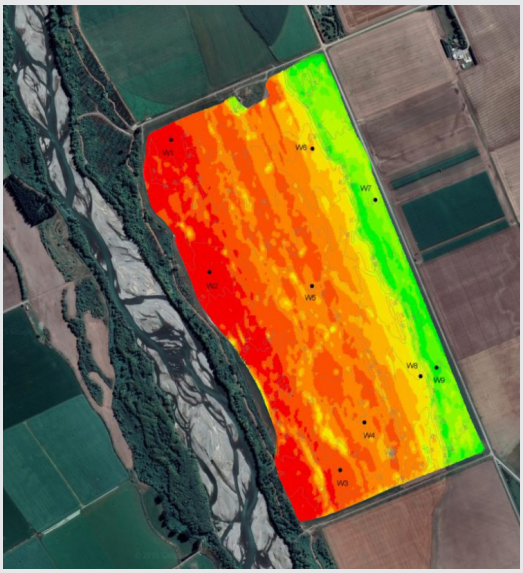
AgTech Case Study | Eric and Maxine Watson

Early adopters of precision farming techniques



EC map reflecting soil and available water holding capacity differences in one irrigated area completed by Carolyn Hedley (Manaaki Whenua - Landcare Research Group)

On the Watsons' 490-hectare farm in Wakanui, on the Canterbury Plains, the couple grow a huge range of crops. Cereals including wheat, barley and triticale; grasses for seed such as ryegrass and fescues; alternative pastures like chicory and plantain; vegetables for seed like spinach, radish and pak choi – the list goes on. The Watsons choose which crops to grow based on seed contracts and market demand, which changes from year to year.

The soils vary across the farm, and within irrigated areas. As illustrated in the EC map of an irrigated area on the property (left), a lateral-move may be irrigating deep Wakanui silt loams (green) at one end of the irrigator and Rakaia very stony sandy loams (orange/red) at the other end. And with a variety of crops and soils, plus the constant challenge of the weather, the demands of the farm are never the same from one day to the next.

Eric and Maxine have been able to thrive in an environment of constant change. They have been early adopters of precision farming techniques, measuring every aspect of their farm to drive continuous improvement. With the farm located in a drought-prone area, with water take limited to 1.4 million cubic metres of water annually, irrigation requires close attention.

Saving time, saving money and keeping people safer

In 2008, one of the country's first Zimmatic™ Precision VRI systems was installed at the Watsons farm. Despite the system being relatively untested at the time, Eric Watson says it was an easy decision to invest in Precision VRI. He had three paddocks with irrigation overlaps, which led to overwatering, and soil types with different water-holding capacities. In addition, managing all this meant taps needed turning on and off on the pivots, which was dangerous and time-consuming.

"The Precision VRI has saved time and kept us safter because we no longer spend half an hour turning taps on and off," says Eric. "And the Precision VRI has certainly helped improve yields, along with better management of crops. Where we had overlaps, we would lose yield, particularly on crops that are a bit sensitive to overwatering, like peas, spinach or red beet. We had five hectares of overlap, so that's significant."

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Along with Precision VRI, the Watsons used electromagnetic mapping, soil moisture sensors and soil analysis to schedule the exact amount of irrigation to individual zones on the property. Early trials indicated a water saving of around 15%, although in practice it varies widely, depending on weather conditions. There are additional cost savings from reduced pumping.

"We monitor closely; we have soil probes in every paddock," Eric explains. "Evapotranspiration is at 9mm right now [December 2024], which is very high, and humidity is down to 30%, so we're losing a significant amount of moisture. I can look at the data on the phone and adjust the irrigation to suit the data."

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Winning awards for farming skills and wheat yields

The results of the Watsons' efforts have been widely recognised. In 2011, Eric and Maxine won the Canterbury Ballance Farm Environment Award and the Environment Canterbury Water Efficiency Award. Then in 2017, the Watsons set a Guiness World Record for the highest wheat yield, producing 16.791 tonnes per hectare. This is considerably higher than the 10-tonne average in New Zealand, which already has one of the world's highest wheat yield rates.

"Wheat, if it yields well, is my favourite crop," says Eric. "Generally all our grass and small seeds are on contract, under plant variety rights, but if we have space we'll grow some wheat or barley. What we grow depends a lot on contracts, but also on the previous history of what's been in the paddock beforehand, so there's often a gap of seven years or so. It's quite complex."

It's no wonder wheat is his favourite – in 2020, Eric set another Guiness World Record with a wheat yield of 17.398 tonnes per hectare. Once again, attention to detail helped push the farm's performance to new heights. Between the two records, the Watsons had made some effective tweaks: they'd planted new cultivars, switched to liquid nitrogen and were monitoring plant health more often, as well as continuing to use Precision VRI. That produced a year-on-year increase of between 100 and 200 kilograms per hectare.

The Watsons set a Guiness World Record for the highest wheat yield, producing 16.791 tonnes per hectare.

"While we were thrilled with the record result in 2017, we saw ways in which we could make improvements and achieve an even higher yield," Eric told Stuff when he set the latest record. "To beat my last crop by almost 600 kilograms per hectare exceeded even my hopes."

Over 15 years of service from the Precision VRI system

After 15 years, the Precision VRI system is still delivering outstanding results for the Watsons, and so far it has only needed an upgrade to new nozzles.

"The VRI has certainly paid for itself by cutting out the overlaps and managing the different soil types," Eric says. "Water saving is the biggest benefits, preventing overwatering and potentially saving some of the annual volume – although that depends on the weather. If you've got difficult situations to water, you should certainly look at Precision VRI."

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