

## CASE STUDY: RICHARD DAKINS

# Smart water brings bigger footprint

***Irrigating more land with the same amount of water has Richard Dakins pushing irrigation efficiency to its maximum after he expanded his irrigation footprint three years ago. Richard Rennie reports.***

The Takapau property where Richard and wife Kimberly Dakins crop 340ha is characterised by two contrasting soil types.

One is a lighter, volcanic sourced Takapau silt loam. Prone to drying off and with only 32mm available water capacity, it is underlain by a red metal seam. This contrasts with the Poporangi sedimentary type soil, which at 400mm deep has an impermeable clay pan and has a similar water holding capacity to the Takapau, but the tendency to perch water and pug once that capacity is reached in wet conditions.

The majority of the property is the Takapau silt loam, a versatile soil type well suited to growing the high value crops Dakins opts for. They include processing beans and peas, high quality malting barley and wheat, with occasional plantings of seed crops, maize for silage and grass seed.

Initially only a lateral irrigator was utilised for water application, linked to some smart monitoring technology including Sentek sensor probes supplied by Waterforce. The sensors provide real time data on moisture across five levels into the soil profile. Updates are done every 10 minutes and internet uploads are completed every two hours. The profile data is fed into his Aqualinc data logging and planning programme. The sensors are used alongside monitoring services provided by HydroServices.

“We soon realised with this technology hooked in we had the potential to spread our irrigation footprint further, thanks to the efficiency gains the technology brought, through good, timely information on moisture levels.”

The sensors were not the cheapest, but their 10cm sensing spaces into the profile and ability to be moved relatively easily between cultivations, made them a good investment.

Expanding the footprint resulted in going from 100ha irrigated with the lateral alone, to installing a 250m centre pivot and covering 150ha. After plentiful rainfall in the 2012 summer, last summer marked the first full test of the system.

Dakins' original allocation was 2.4mm/ha/day, but with the expansion that has been pushed out to a “ridiculously low” 1.6mm/ha/day. This is in an area where some farms are

operating with 5mm/ha/day. His “doing more with the same” approach is founded not only on timely application based on good data, but also careful crop rotation plans.

The cereal crops of wheat and barley are planted to match their lower shoulder irrigation demand for water in spring when their moisture requirements are greatest, while he has also grown maize for silage which has its greatest moisture demand after December.

Lucerne plantings help lower summer water demand, capable of having applications postponed until nearer autumn in dry years.

Dakins has found through analysing the Aqualinc data the cereal crop water demands are playing out accurately to what researchers have predicted and is building an accurate picture valuable for predicting future use.

This summer he used an average of 2800cum per ha across the 150ha of crops despite the drought conditions, without significantly sacrificing crop yield. Wheat averaged 8.6t/ha, malting barley 8t/ha and peas 7.7t/ha. Processing beans leapt from around 11.5t/ha last season to 17.3t/ha.

Beans and peas are particularly tricky crops to irrigate accurately and the probe data is invaluable for timely applications. Given the soil's limited 32mm available capacity and pea's tendency to increase water uptake overnight from 4mm a day to 8mm a day, timely data is critical to maintain crop growth rates.

“For the cereals the HydroServices data is good, as the demand is steadier, you can get the data once a week.”

Like many in the region Dakins is closely watching the progress of the Ruataniwha scheme, one he sees with significant potential to lift the area's contribution of high value crops for processing.

“My feeling is it could be similar to how Ophua developed with farmers initially just irrigating some of their properties. We may see some dairying, but the costs are high per hectare for water use compared to cropping.”