

# Precision VRI keeps delivering for more than a decade

When your water supply is limited, every drop is valuable. North Otago farmer Peter Mitchell has understood this for decades, and knows how to distribute water with superb precision across his 85 hectares of crops.



Mitchell was one of the earliest New Zealand adopters of variable rate irrigation (VRI). In 2012, he retrofitted Zimmatic™ Precision VRI to a 700m 'windscreen wiper'

style pivot. This long pivot has a large command area, irrigating a range of crops including wheat, barley, rye grass, radish and rape.

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*"Precision VRI helps a lot - there's a large range of soil types and water holding capacity under the command area of that pivot," says Mitchell. "We have a heavy soil known as Waiareka complex, which is around 50% clay and has a fairly high water-holding capacity, but also gets very sticky. Then down towards the creek there's a more gravelly type soil."*

***"The Precision VRI ensures evenness of watering for the crops."***

## **Saving six litres of water per second on the pivot**

Mitchell's farm, Rosedale, is supplied by water via the North Otago Irrigation Company. It allows for a water take of 34 litres per second, at a cost of NZD\$737 per hectare. If the farm used its full water take, the total cost would be around NZD\$62,500.

*"The pivot is designed to put out 34 litres per second to match our take, but with the Precision VRI our instantaneous water take doesn't get that high very often," Mitchell explains. "It operates at closer to 28 litres per second, which saves us six litres per second. It also means we can spread that water across other areas, using other methods, without increasing our take. It makes our water use even more efficient, and we pay quite a lot of money per hectare for our water, so by being able to spread it further, we dilute our fixed overhead costs which makes us more efficient."*

With Precision VRI, fixed costs per hectare at Rosedale are down to around NZD\$568 over the whole farm, which drops Mitchell's total water cost to around NZD\$48,000, a saving

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2012 System Retrofit



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of approximately NZD\$14,000. The Precision VRI initially cost NZD\$96,900, but it quickly paid for itself and it just keeps delivering.

It also improves the conditions for Mitchell's crops, helping them grow optimally. By carefully applying the right level of irrigation, the Precision VRI ensures soil has the right mix of moisture and aeration. This means less likelihood of "drowned out patches" which lead to a lower yield, especially on sensitive crops like barley, which doesn't like having wet feet. Precision VRI is ideal on a long pivot, Mitchell explains, because the first couple of spans tend to overwater, even with small nozzles. With Precision VRI, it simply switches the spans off once they have applied the right amount of water.



## Several factors combine to make Precision VRI an excellent investment

Put it all together and the Precision VRI has been a superb investment: *"The less water you apply, the more you save, and those savings continue on forever - and it's less water you've got to pump, so less electricity consumed, so all those factors become part of the equation."*

Mitchell believes the agronomic and environmental gains are the major advantages of Precision VRI. Simply using less water helps reduce our environmental footprint and create a more sustainable agricultural sector.

Beyond that, Precision VRI also helps protect our waterways and retain nutrients on farm. Overwatering stony ground, for instance, causing leaching, where water-soluble nutrients

are swept from the soil into waterways. This is a problem for both the farm and the waterways, and leads to a higher requirement for fertilisers, which adds more costs and exacerbates the damage done to water quality.

*"We are under an environmental farm plan, and the variable rate irrigation lets us demonstrate that we're using water more efficiently, which is a plus for environmental outcomes and audit outcomes," Mitchell says.*

*"The variable rate irrigation delivers genuine positive results for environmental outcomes."*



## Installing Precision VRI was "kind of a no-brainer"

For Mitchell, with his precise approach to water analysis, it was easy to see that variable rate irrigation would be worthwhile:

*"It wasn't too hard to work out the numbers, and you can dilute those costs over 20 years. It seemed like kind of a no-brainer, even though it was a relatively big investment."*

How can other farmers assess whether Precision VRI might be right for their property?

*"I think if someone's got a limited water take they should definitely consider Zimmatic's Precision VRI because it helps takes risk away from reaching that limit. If they have a really long pivot, there are particular benefits there, and if there's a big range of soil type underneath that pivot, there's the potential for savings there as well. If they have really high-value sensitive crops, something that's sensitive to overwatering or ponding, that variable rate would definitely worth considering. The return on investment is there."*