

CASE STUDY: PROSPECT VINEYARD

Growing grapes the SMART Irrigation way

You can't imagine the Hawke's Bay without grapes. For both overseas tourists and New Zealanders – the region is synonymous with good food and wine. But while the area's dry and hot climate helps produce world-class Sauvignons, Chardonnays and Merlots, without water none of these grape varieties would make it to harvest.

Ten kilometres west of Hastings, in the Bridge Pa triangle, Prospect Vineyard specialises in producing top wine grapes, particularly Merlot.

Prospect Vineyard owner Chris Howell is proud of the family business which began twenty years ago when he and wife Catherine bought 15.8 hectares of bare land in the area. "There was nothing on the property apart from a couple of trees. We put in all the infrastructure, including the water supply and bore."

Right from the start, Chris says it was clear their land would need water to get the best out of it.

"It's all very light soils, alluvial silt and sand loam over red metal gravels and the soils are quite shallow (typical depth 50cm). It can hold quite a lot of moisture for a while but when it starts to dry out, it dries out quite quickly."

Within a few years, the couple had invested in a surface drip irrigation system using inline emitters that they can control automatically. By now they were leasing an additional 15 hectares to expand their grape growing so the drip system was carried over onto these properties as well.

Drip irrigation may not be as well known as other irrigation systems such as spray and border dyke. But it's popular in many parts of the world for horticulture and viticulture.

"Drip irrigation is very precise and grapes are a highly efficient user of water. So overall we use far less water than orchards or cropping."

Prospect Vineyards normally starts irrigating in November, depending on how dry it is, and goes through until mid-March "though some seasons we don't have to irrigate much at all."

"But I prefer it when we have to irrigate because you can control your fruit growth and size," says Chris.

Over time, Chris has added monitoring technology to ensure they're using no more water than needed.

"We have times we use irrigation consistently but we're always aiming for better use of water. We're now much more targeted than when we started irrigating and this has influenced how much we put on."

In 2013, despite drought conditions that plagued much of the North Island, Prospect Vineyards applied 400ml of water per hectare – in a summer where the Hawke's Bay received 98ml of rain in the whole growing season. Water metering showed 320ml of water per hectare was received as 'effective water'. Effective water is the water available to the plant – after any which has evaporated or gone below the root zone.

"That showed us how efficient we had become with our water use," says Chris.

A series of soil moisture probes on their properties provide weekly reports on soil moisture levels.

"It's not a cheap option. If I dug holes and made visual assessments it would be cheaper. But the probes make a big difference to the quality of the crop in the end. We don't get the rapid drying out of the root zone or over-excessive watering of the crop."

"The advantage is the soils on our property are quite variable and monitoring enables irrigation to be more targeted. We do our best to split growing blocks by soil type and irrigate accordingly. We know what a differential you can get when you do this."

New environmental regulations requiring telemetered information from bores (groundwater takes) has provided further insights into their water management.

"We always second guess what the season is going to do but the bore information has actually been very useful. Combined with monitoring, we now get to see what water has gone on and its effect. We're still getting to grips with the information and how best to use it."

With unpredictable rainfall in the Hawke's Bay, Chris says an irrigation season can range from one or two sporadic weeks during a wet season to three months of daily application during a dry summer – as experienced in the past two years.

But even with soil moisture and bore data to plan irrigation schedules, Chris says if plant growth exceeds expectations he won't automatically irrigate.

"If we think we've got enough cane elongation we may not irrigate. We use a lot of visual assessments and don't strictly follow irrigation recommendations because they are only approximates. I'm much more interested in what's going on above ground and how the crop is reacting."

Chris supports SMART Irrigation and says most winegrowers are keenly aware of the need to demonstrate responsible water use.

"I think the onus is on smaller growers as well as larger ones to irrigate responsibly. We are big on sustainability in the wine industry. It's all about getting the best out of what you use. If more people aim for sustainable water use that will mean more people can use the resource."

He uses the example of neighbours who have moved away from border dyke irrigation to centre pivots for broad acre cropping.

"Centre pivots are very efficient users of water. These guys are reducing their water use while getting better crops."

Despite an established drip irrigation system, Chris has considered burying his drip lines for greater efficiency but isn't confident it will significantly cut water use. He has also evaluated other soil moisture probes on the market, but hasn't found anything else as efficient as the probes he already has.

For those people who struggle to understand the role of irrigation in grape growing, Chris says all crops need water and grapes are just another crop.

"If we couldn't irrigate our soils we wouldn't be able to produce what we do and employ another permanent staff member. Most growers and farmers in this area employ a few people and all of these jobs wouldn't be possible without irrigation. It's vital to areas like this which had very poor performing land beforehand, barely allowing sheep grazing."

"Irrigation gives us more certainty for the crop's value and means we're not so reliant on getting rain out of the sky. It opens up opportunities for regions and creates employment."

