



# WORKING WITH NATURE TO SAVE WATER

**Family-owned wine company  
Villa Maria is prioritising water  
use efficiency in their vineyards.**

To better understand the water requirements of their vines, Villa Maria has adopted the use of a machine called a pressure chamber. The pressure chamber is commonly used in science research because it is considered one of the best available indicators of plant water status. This information on the vine's water status ensures that Villa Maria only irrigate their 400 hectares of Hawke's Bay vineyards when absolutely necessary.

"Managing water is an essential part of achieving exceptional wine quality and environmental sustainability," says John van der Linden, Villa Maria's Vineyard Systems Manager, seen checking the vines with Raquel Kallas, Vineyard Research Viticulturist.

"Some vineyards irrigate based only on the readings from soil moisture probes, but the vine roots typically have deeper and wider contact with the soil than a probe does. That's why it's better to 'ask the vine' how thirsty it is," says Raquel.

The pressure chamber measures how strongly the vine has to work to pull water out of the soil. A leaf is plucked, placed in the chamber, and pressurised with nitrogen until water droplets appear at the end of the stalk. A well-watered vine will only take light pressure to expel a droplet; in contrast, a water stressed vine will take a lot more pressure.

"We can measure vine water status more accurately, rather than just relying on soil moisture probes or visual assessments. **It means we only irrigate when the vines tell us they need water,**" says John.

"The soil may appear to be drying out, but the vines can still be thriving because they're still accessing water from deep in the soil. We only know this because of the pressure chamber readings. Once a vine gets to a certain trigger point, and for all grape varieties that point is different, we will consider irrigating. The other advantage is that, by only watering when the vines actually require it, we are encouraging deeper rooting which makes the vines more resilient and less reliant on water at the top of the soil profile."

The irrigation management decisions based on readings from the pressure chamber also **contribute to improved wine quality**. John explains that too much water will stimulate excessive vine growth, which can result in large, dilute fruit, which is not optimal.

"By using less water, we reduce vegetative growth, get better wine quality and reduce the need for some vineyard tasks - leaf plucking, weed management, mowing - which in turn creates a lighter footprint on the earth."

**"By working with nature and  
using new technology, we are  
saving water and caring for the  
environment - it's a win win."**

**SAVING H<sub>2</sub>O  
IS THE WAY TO GO**

  
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