

Project: Irrigation research at Squire Estate (year three)

Background

The project originated after the Marlborough District Council asked HortResearch in 2001 to investigate how to optimise irrigation in Marlborough. Since then the project has been modified many times, in that more severe irrigation treatments were added and an irrigation system called Partial Rootzone Drying or PRD was introduced. Results from this research have been reported previously to the Council and to other participants such as the Marlborough Research Centre Trust, New Zealand Winegrowers and Netafim NZ.



The objective of the research is to reduce vineyard water use without reducing, or only minimally affecting, yield, while maintaining or improving fruit quality and hence wine quality. For this last year the trial was reduced to three treatments, these being control (IR-100), 60% and 20% of control (IR-60 and IR-20 respectively).

Table 1: Yield parameters for sauvignon blanc grapes

Trmt	Bunch_weight (g)	Yield (kg/vine)	Bunch no. /vine	Trunk circ. (mm)
IR-20	0.080	4.4	55	210
IR-60	0.079	4.4	55	207
IR-100	0.076	4.1	54	207
No sign of differences for any of the parameters				

Table 2: Juice quality parameters measured at harvest for sauvignon blanc

Trmt	irrig %	Berry weight (g)	Soluble sugars (Brix)	pH	TA (g/L)
IR-20	20	1.73	22.50	3.08	8.43
IR-60	60	1.82	22.70	3.05	9.09
IR-100	100	1.90	23.10	3.06	9.00
No sign of differences for any of the parameters					



Key results from this year

The 2005/06 season was warm early in the year and phenological development was considerably faster than the previous year's. During the growing season no significant differences were found between the treatments for phenological measurements as were flowering date, veraison date, canopy development as measured by Point Quadrat. Harvest was two to three weeks earlier than expected in an average year. Despite the differences in irrigation (500, 300 and 100 L/vine respectively), no differences were found in yield values (Table 1) or fruit quality parameters (Table 2). Regular rains during the season and some good rains during January and February compensated for the reduced irrigation in the IR-20 and IR-60

treatments. One half row that was irrigated at 20% had a failing irrigation valve and did not get any water in early January. Berries in this row stayed significantly smaller than anywhere else in the block, as reported in the berry size trial. After four years of differing irrigation no differences were found in stem circumference among the treatments (Table 1).

Conclusions

No significant differences were found in yield or fruit quality for sauvignon blanc grown under different levels of irrigation, whereby at the highest irrigation treatment five times the amount of water was applied compared to the lowest treatment.

For five successive years only small,

differences were found among the irrigation levels applied. These varied between 100%, 80%, 70%, 60% and 40% to 20% of control.

Publications

- Previous research from this trial is in Marlborough Research Centre annual reports 2001/02, 2002/03, 2003/04, 2004/05

Key funding sources

- Marlborough District Council
- HortResearch Bio-digital Funding

Key staff involved

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