



# Optimising strategies for control of powdery mildew through whole of block experimentation

Rob Bramley<sup>1</sup>, Kathy Evans<sup>2</sup>, David Gobbett<sup>1</sup>, Kerstin Panten<sup>1</sup> and Eileen Scott<sup>3</sup>

<sup>1</sup> CSIRO Sustainable Ecosystems, PMB No. 2, Glen Osmond, SA 5064, Australia. [Rob.Bramley@csiro.au](mailto:Rob.Bramley@csiro.au)

<sup>2</sup> Tasmanian Institute of Agricultural Research (TIAR), University of Tasmania, New Town Research Labs, 13 St. Johns Avenue, New Town, TAS 7008, Australia.

<sup>3</sup> School of Agriculture, Food and Wine, University of Adelaide, Waite Campus, PMB 1, Glen Osmond, SA 5064, Australia.

## BACKGROUND

Application of high rates of sulfur (S) for control of powdery mildew is a common grower practice in Tasmania. Given concerns at the possible negative consequence of high rates of S use, an experiment was established to evaluate alternative reduced S spray programs for control of powdery mildew in a 4.5 ha block of Pinot Noir at Frogmore Creek.

## WHOLE OF BLOCK EXPERIMENTATION

A mixture of Synertrol Horti-oil® (2.5 ml/L) plus Ecocarb® (4 g/L) was applied from E-L stage 16 until the beginning of capfall. The next two applications of fungicide comprised either two applications of S (8 g/L; treatment S2) or one application of S followed by an application of the Ecocarb/oil mixture (S1). The Ecocarb/oil mixture was then applied to the whole block for the remainder of the season until veraison. Treatments were applied in alternating strips, each of 6 rows, over the whole block (Figure 1). Responses were measured in February in terms of the incidence and severity of disease on bunches on 120 target vines per treatment located throughout the block (Figure 1).

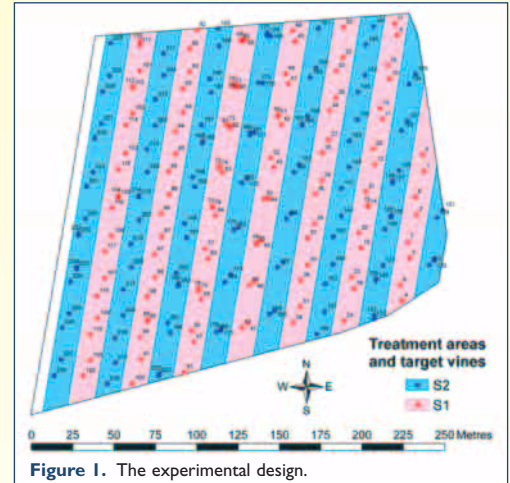


Figure 1. The experimental design.

Spatial variation in treatment responses was analysed using geostatistical methods. As Figure 2 shows, whilst treatment S2 generally provided greater control over powdery mildew than S1, the significance of treatment differences was strongly controlled by topography. Upslope sites showed no significant difference between the treatments whereas S2 performed significantly better ( $p < 0.01$ ) at downslope sites; overall disease pressure was also lower downslope. A possible reason for this is that upslope sites had greater daily hours of shading. The severity of powdery mildew at harvest was considered commercially acceptable.

## CONCLUSIONS

This work demonstrates that whole of block experimentation has the potential to both assist in identification of disease 'hot spots', and also those areas with little disease pressure and which may not need to be sprayed. It is therefore a useful tool in promoting sustainable vineyard management practices.

## ACKNOWLEDGMENTS

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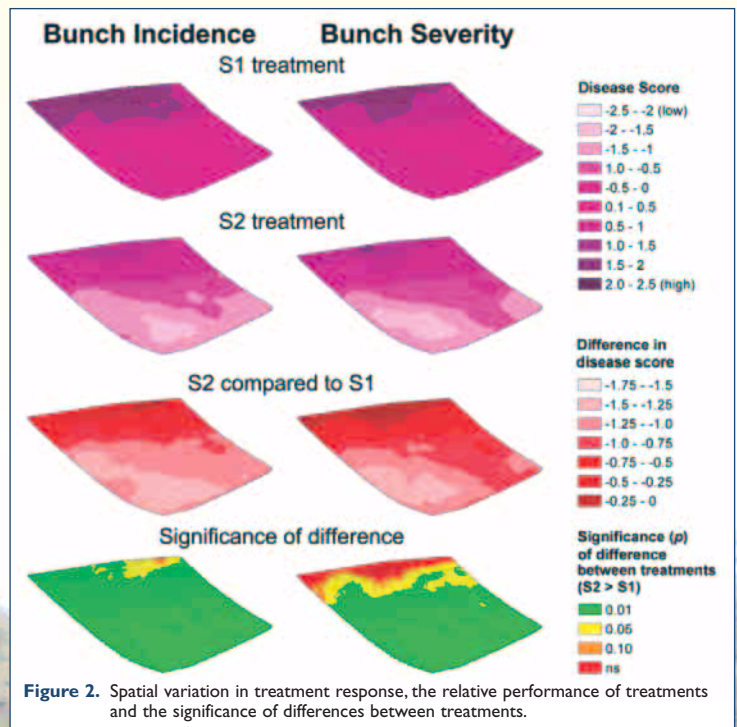


Figure 2. Spatial variation in treatment response, the relative performance of treatments and the significance of differences between treatments.

