

Organic/BD versus conventional viticulture in practice

**INTRODUCTION**  
*A quick word on biodynamics*

- Preceded the organic movement;
- Steiner's lectures on agriculture (the beginnings of biodynamics) are not completely in tune with traditional science and more like a philosophy impacting agricultural practice, rather than a prescriptive method;
- Steiner takes a holistic approach viewing the soil as a living organism;
- BD requires application of homeopathic doses of plant based preparations known as 500-508;
- Works with lunar and cosmic rhythms;
- Although initiated by Steiner, further developed by many followers including Schwenk, Pfeiffer, Kolisko and Thun;



Its about working with nature, and drawing upon resources that are already on the property

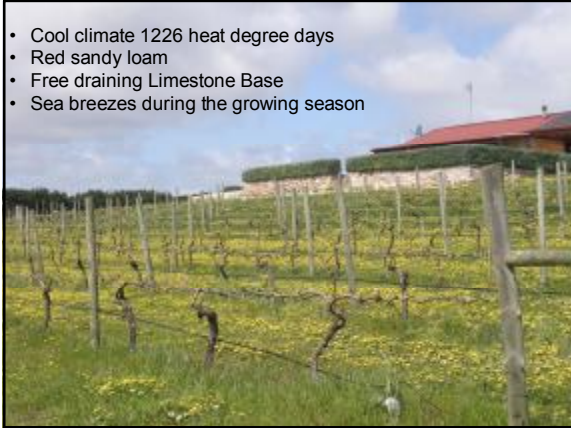
**INTRODUCTION**  
*The research*

- Traditional scientific methods based on measurement, often show positive results (1) but fall short of demonstrating how biodynamic concepts work;
- As well as Steiner's description of how the spiritual world acts on plants (2), there has been other related research on the transfer of information through water (3), on copper chloride crystallisation in BD versus conventional plants (4) and on lunar rhythms and plants (5).
- Opportunity for more research into how BD works and on which elements of the theory should be practically used by farmers.



A need for imagination, a sense of truth and a feeling of responsibility

- Cool climate 1226 heat degree days
- Red sandy loam
- Free draining Limestone Base
- Sea breezes during the growing season



### VINE HEALTH

Biggest challenge is low Organic Matter (OM) and low Nitrogen (N). Don't have an issue with vigour.

Our strategy has been to bring OM up by the following:

-Soil tests to isolate where deficiencies are;

-Biodynamic Compost – focusing on cow manure, grape marc, but blended other ingredients to cater for soils needs;

-Cover crop – biannual rotation between rye grass for Organic Carbon and legume mix for N.

-Reduced cultivation as much as possible to retain OM and soil structure.

-OM has improved over the years. According to soil tests is now more than double the roadsides where we use herbicide and 65% higher compared to non-composted control site. Organic Carbon levels showed similar increases.



### WEEDS

•We became experts in under-vine weeding;

➡ loss of OM, soil disturbance;

•Bare earth encouraged problematic weeds (eg. fat hen and deadly nightshade).

•Changed practices to running sheep from May through to December.

➡ rye grass and/or sour sobs, less of a weed problem.

### COUCH

•Difficult to control naturally.

•Control: Pine oil during warm weather, cultivation, sowing to out-compete.



**PESTS AND DISEASE**  
**POWDERY**

- Powdery mildew confined to Chardonnay;
- Control: warm drench of 500 pre-budburst to promote spores to burst prior before there is leaf area to support them;
- Sulphur regime 3- 5 fortnightly applications early in the season– no more than conventional vineyards;
- Alternate sulphur with biodynamic casuarina/501 mix for building plant resistance;
- Good spray coverage is really important;
- Not yet confident to eliminate sulphur altogether.
- Cures: whey, bi-product from cheese production, is effective on mild infections; Bicarb soda works even better but is expensive.



**PESTS AND DISEASE**  
**BOTRYTIS**

- Confined very isolated areas of Shiraz
- Much less of an issue than with conventional vineyards

**OTHER**

- We avoid taking action against pests as much as possible, so as to retain natural populations of microbes.

**WATER USE**

- 0.75 ML/Ha, compared to average of about 0.84 ML/Ha in the region (average of vineyards who shared data).



**QUALITY:QUANTITY**

- We predict up to 30% yield reduction in our case (average crop is 5 tonnes/Ha);
- Quality has consistently improved over time, as we have improved our practices. We are convinced our wines are enhanced by these practices, particularly the reds, where fruit intensity is so important;
- Our wines are easily traceable to each blocks unique characters from year to year. They are distinctive;
- We are still investing about \$1000/Ha annually in soil health to improve quality and quantity as part of our long term strategy;
- For us, its been worth it.

**WINEMAKING**

- Limited to 100ppm total sulphur;
- Not allowable: copper, PVPP  
 → minimisation of phenolic extraction during processing, nitrogen management prior to harvest for YAN;
- DAP likely to be excluded as an allowable input in future meaning more research into effective alternatives is important for the future viability of organic/BD wine producers.



## MARKETS


- It is still a niche market driven more by the health conscious than environmental concerns (6);
- Growth market! There are people who are specifically looked for organic/BD wines at the moment;
- Like any booming industry, growth in demand will soon be satisfied and may no longer be an advantage.



## ENVIRONMENT – considerations for organic producers

- Environmental footprint depends on practices and these can vary significantly between vineyards.
- Environmental trade-offs exist;
- Weed control is seemingly more difficult in organic/BD vineyards;
- Preventative sprays used by organic/BD producers may lead to vineyard passes;
- Some organic practices are similarly damaging to soil and/or microflora;
- Environmental cost considerations should be made on a tonnage or value basis, not just a per hectare basis.

## ENVIRONMENT – the benefits

- Better OHSW  increased staff morale, elimination of death and injury relating to the use of insecticides, herbicides and baits;
- Addition of compost can increase soil carbon, reducing carbon in the atmosphere;
- Reduction of nitrous oxide escape from soils: 20-80% applied is not taken up by the plant and as a result nitrous oxide contributes to 22% Australian agricultural emissions (7);
- There are many benefits to the sustainability of the soil in maintaining vegetative cover.

## DISCUSSION

- More research into the advantages of organic/BD production is required if this industry is to remain viable and convincing to the consumer, there are now more advanced methods available to follow up on some of the earlier BD research (8);
- At the moment, until we see results of such research, I feel there is still, and may always be, a place for synthetic inputs in today's viticulture and farming systems;
- Conventional farmers can learn from the organic/BD sector about their more sustainable, long term approach of dealing with causes, not just effects.
- Being certified as organic or BD alone is not enough to make any credible 'green' claims. There are many other considerations such as soil health, biodiversity, sacrificial land for native vegetation, water use, green power and sustainable waste disposal.



## CONCLUSION

- Starting from a low OM base has presented us with some challenges in terms of nutrition and yields, but certified BD production has not lead to any other major impediments at our site;
- There is no simple recipe: organic management presents many challenges and it is important for the reputation of the organic sector that these are overcome in a way that is of equal or less cost to the environment than their conventional alternative;
- Environmental trade-offs may occur in some cases (with particular regard to weed control methods, greenhouse gas emissions and water use);
- The market is there now, however it is inevitable that if supply increases there will no longer be any major marketing advantage;
- More research opportunities into the mechanisms behind BD/organic practices and their effect on plants.



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