The 1996 vintage at Amberley Estate, Yallingup, Western Australia, proved to be a difficult one for fermentation management: an experience shared by many other wineries. The main difficulties were sluggish and stuck white wine fermentations. Some wineries in the district also had problems with red wine fermentations. A number of yeast strains were represented and problems were experienced in both tank and barrel.

Recently and after three rescue attempts, Amberley Estate managed to complete a rescue on a 1996 Chardonnay which was initially inoculated with the yeast Lalvin ICV D47. Using yeast strain Maurivin PdM as the rescue yeast, a level of approximately 3.0 g/L residual sugar has been achieved. Separately, an Amberley Estate Semillon wine initially inoculated with Maurivin 796, remains in fermentation at approximately 12 g/L residual sugar. So far there have been four rescue attempts on the Semillon using Maurivin PdM.

Amberley Estate have also conducted a number of barrel ferments using so-called natural yeasts: the topic of this paper. Two points require mentioning at this stage:

- The phrase ‘so-called’ is important with reference to natural yeasts; this will be explained in more detail later. For now, when the term ‘natural yeast’ is used it means an unseeded fermentation.
- No one (least of all the author or the seminar organisers) is suggesting that choosing natural yeast is a cure for the fermentation problems. Rather it represents an alternative approach to seeding with selected wine yeast.

Certainly, natural fermentations share similar problems to those of seeded fermentations. However, compared to seeded fermentations, it is Amberley Estate’s experience (and that of others) that natural fermentations do not necessarily give rise to a greater number of stuck and immovable fermentations.

For the 1996 vintage Semillon and Chardonnay wines, Amberley Estate will be culling both seeded and natural fermentation parcels on the basis of unacceptable residual sugar levels. If this appears rather blasé it should be stated that Amberley Estate begin with more components than are needed for the final premium blends. Other wine products will benefit from those barrel ferments where rescue attempts have been abandoned.

Since the 1993 vintage, Amberley Estate has been producing wines using natural yeast. These wines have been exclusively barrel-fermented Chardonnays and Semillons. At this stage natural ferments comprise about 50% of Amberley Estate’s white barrel ferments. Amberley Estate conducted its first natural red fermentation during the 1996 vintage.

Even though Amberley Estate have been tending towards a minimalist approach with barrel-ferment whites over past years, the catalyst for the recent emphasis on natural fermentations was when the author spent the 1992 vintage with David Ramey of the Chalk Hill winery, California. David Ramey’s views on natural fermentations have been reported (1996).

Over the past four years Amberley Estate have conducted many trials, with the development of set techniques for various wine styles. Most importantly, after a two year trial, Amberley Estate now embraces the passive oxidative approach to fruit and juice handling whenever the fruit condition allows.

Typical procedure for good quality fruit is as follows:

- harvest without SO₂
- crush, destem and chill to 8–10°C
- tank press with pressings included with free-run
- add pectic enzyme and settle 36–48 hours without inert gas cover
- rack into barrels
- ‘inoculate’ in barrels; using a mixture of seeded and natural fermentations
- fermentation in barrel; without cooling (provided temperature remains below 30°C).
- post fermentation treatment includes inoculation for malolactic fermentation (MLF) and lees stirring.

Under these conditions, a PdM yeast-seeded ferment will take less than 24 hours to begin active fermentation and proceed to dryness in 7–12 days, with temperatures reaching 24–28°C.

In contrast, a natural ferment will take at least 4 days and perhaps up to 7 days to begin any significant activity. It will generally take over 3 weeks to finish fermentation, and may take up to 2 months. Temperatures during the active part of natural ferments will approach 22–25°C. It is believed that the attenuation of natural ferments, at fermentation temperatures comparable to seeded ferments, is a very important factor in determining the style and quality of the resultant wine.

The style and quality factors sought by Amberley Estate in its natural ferments include:

- greater complexity
- better integration of oak and MLF characters
- richer, fuller mouthfeel
- increased delicacy
- more supple and creamier texture, believed to result from a synergistic effect between the wine and oak giving greater delicacy plus MLF-related characters.

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In summary, following trials over a number of vintages, Amberley Estate's experiences are:

- Natural ferments are, at the very least, rated equally to seeded ferments and in most cases are significantly preferred for the reasons outlined above.

- Amberley Estate is more likely to take some rescue action with natural ferments than with seeded ferments. However, the incidence varies and it is not required in all cases or even in a majority of cases.

- Rescue attempts notwithstanding, the incidence of final problems (i.e. stuck and immovable ferments) is no greater with natural ferments.

- The attractive qualities of a natural ferment are largely retained after a rescue.

Now returning to the point emphasised earlier, the use of 'so called' when referring to natural yeasts!

In respect to natural ferments, it is often asked 'are they really natural yeasts or is it a case of cross-contamination during the winemaking process?' If contamination is the case, one would expect that cellar procedures are such that any contamination level is low.

In an effort to replicate the extended fermentation time of a natural ferment with the added surety of a seeded ferment, Amberley Estate have conducted trials over the last two years comparing natural unseeded ferments with ferments inoculated with yeast strain PdM using inoculation rates of 50, 100, and 200 mg/l.

The outcome of these trials is that the very low level inoculation of cultured yeast (at 20–25% of the recommended level) provides a resultant wine which is very similar in style and quality to the unseeded version; and that both of these are significantly preferred to the wines made with higher rates of cultured yeast. It does seem heretical to suggest at a seminar on fermentation problems that reduced inoculation levels may present some advantages, but there it is!

To pursue this further, Ramey (1996) stated that he uses 25 mg/l SO₂ pre-ferment and is still entirely happy with the resultant style and quality of wines produced. Even though logic would tend to suggest that this level of SO₂ addition is likely to prevent at least some of those natural yeasts from being active and influential in the early stages of the ferment.

There are also practitioners of natural yeast fermentations who regularly seed ferments in new oak, but then conduct 'natural' ferments in those barrels in subsequent vintages; again with similar results of style and quality.

Add Amberley Estate's experience to this, and it is believed that both the attenuation of the ferment and the avoidance of a yeast mono-culture are contributors to the desired effects of natural fermentations.

To summarise: natural ferments are not a solution to fermentation problems, but it is believed that they are technically acceptable and that they pose potential advantages if they suit fruit quality and winemaking aims.

For some time, there have been four potentially fatal problems linked to the incidence of natural fermentations:

Problem 1. Volatile acidity. Amberley Estate have not found any significant problems

Problem 2. Hydrogen sulphide. Again no significant differences found by Amberley Estate

Problem 3. Residual Sugar. Yes, this is a problem at times, but not significantly worse than seeded ferments; it is generally manageable

Problem 4. Poor wine of unacceptable quality results. This has not been the experience at Amberley Estate.

Reference