

## **A procedure of ultra-small scale vinification for use in viticulture and oenology research**

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### **Poster Abstract**

Over several years we have been using submerged cap fermentation in the pilot winery at Tamar Ridge Estate. Initially this was with 12 L ferments in plastic buckets in temperature controlled rooms (28°C), but more recently we have used 1.5 L coffee plungers. Larger ferments provide wine for sensory evaluation, the smaller ones for chemical analysis and limited sensory analysis. We find the submerged cap method less time-consuming, as there is no need to plunge the cap as we did previously. Further, we find that there is more uniformity within replicates compared to conventional punching down, and informal tastings with local winemakers has shown preference for the more fruity style produced by submerged cap. Results of spectral analysis on a comparative trial will be presented.

This poster will also describe a system of ultra-small scale vinification, in vessels of 250 ml or smaller, able to ferment quantities as small as 50 g fruit. We have used clear plastic graduated jars approximately 6 cm diameter fitted with screw-cap lids, as fermenters. A PVC spacer with a diameter slightly less than that of the jar and of variable height, depending on the must volume is used as the plunger. A piece of circular fibreglass mesh is placed in the jar after the must and additives; the spacer is placed on top of this and held down by the lid. At completion of fermentation, pressing is done by applying a uniform weight to the PVC spacer. Materials are inexpensive, about \$3 for each fermenter. It is easy to achieve temperature control in small vessels, and fermentation progress can be monitored by weighing. Once yeast is added, there is no need to open the lid until pressing. All steps of the winemaking process can be easily standardised. Results will be shown of the utility of the technique in conjunction with chemical analysis.

The technique has been used for detailed viticultural experiments, for example a study of bunch to bunch variation in wine composition, of berry “front” versus “back” on wine composition, of berry size effects, and of maceration versus crushing of the must.

We propose the method as inexpensive, quick and easy to perform on each sample (with only a delay for fermentation) leading to representative results for wine composition. It can be considered an alternate method of berry analysis/extraction and of more relevance to wine quality studies.