Introduction
For reasons associated with flavour, corporate social responsibility and taxation, the wine industry is actively seeking technologies that facilitate the production of wines with lower alcohol content. Non-conventional yeast, in particular non-Saccharomyces yeast, have shown potential for producing wines with lower alcohol concentration.

Methodology
• Lab-scale trials: Non-conventional yeasts (50 strains) were screened in semi-aerobic and anaerobic conditions to determine ethanol yield.

Triplicate confirmation experiments for semi-aerobic conditions were performed in chemically defined grape juice (CDGJ) and for anaerobic conditions in Chardonnay and Shiraz.

• Pilot-scale trials: Five yeast treatments were performed in Velcorin®-treated Merlot must (30L) in triplicate. Wines were analysed for volatile composition and sensory profile.

Results: lab-scale trials
Torulaspora delbrueckii AWR1152 and Zygosaccharomyces bailii AWR11578 showed potential for the production of reduced-alcohol wine under semi-aerobic conditions.

Metschnikowia pulcherrima AWR1149/AWR3050 and Saccharomyces uvarum AWR12846 produced wines with reduced alcohol concentration under anaerobic conditions.

Results: pilot-scale
M. pulcherrima and S. uvarum produced Merlot wines with 1.0% (v/v) and 1.7% (v/v) respectively less ethanol concentration than S. cerevisiae wines.

Wines fermented with S. uvarum AWR12846 were associated with unpleasant sensory descriptors.

Wines fermented with M. pulcherrima and uninoculated wines showed higher scores for ‘red fruit flavour’ and ‘red fruit aroma’ than S. cerevisiae wines.

Conclusions
Several non-conventional yeasts showed potential for producing reduced-ethanol wines when using sterile/treated must (lowering the native microflora).

M. pulcherrima AWR1149/AWR3050 produced reduced-ethanol wines with a favourable sensory profile.

Other varieties need to be tested to determine if it is possible to produce wines with reduced ethanol concentration using M. pulcherrima AWR1149/AWR3050.