DAP – a wine aroma & style tool: case studies with Albariño and Chardonnay

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Poster Abstract

Vine development can be constrained by nitrogen availability, which restricts berry amino nitrogen accumulation and leads to suboptimal fermentation performance. Consequently, DAP has become a widely used fermentation stimulant, especially when grape musts are nitrogen deficient. Despite its wide application, the impact that DAP has on wine flavour is poorly understood. This question has been explored in Albariño and Chardonnay wines.

Albariño is an aromatic variety, which requires fermentation to reveal its varietal potential. The control juice (250 mg/L YAN), sourced from Galicia, Spain, was supplemented with 0.5 and 1 g/L DAP to produce juices with 350 and 450 mg/L YAN. Moderate DAP addition produced the highest content of varietal compounds including free monoterpenes and norisoprenoids as well as most yeast-derived fermentation products. Analysis of Odour Activities suggests that wines made with moderate DAP supplementation exhibited the highest aromatic impact, whereas high addition reduced potential aromatic impact.

Unsupplemented low YAN (160 mg/L) Chardonnay produced a complex aroma profile with less desirable descriptors, such as ‘stale’ ‘beer’, ‘cheese’ and ‘artificial grape’. Moderate DAP supplementation (320 mg/L) produced cleaner and more intense fruitier/floral wines, due to increased ester and reduced higher alcohols formation. High organic nitrogen (480 mg/L; amino acids added to simulate high vineyard N) gave greatest intensity of fruitiness whereas DAP produced volatile off-odours, due to excessive ethyl acetate. These studies reveal complex interactions between DAP supplementation and grape-derived and yeast-derived aroma compounds, which can however be exploited to modulate wine aroma and style.